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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.
On behalf of all the faculty and staff of Montana State University - Northern, I want to welcome you to one of the most career focused universities in the Montana University system. Our program offerings and multiple certificates and degrees are designed to meet the needs and interests of individuals wanting to further their education.

The MSUN community comes in three flavors, Havre, Great Falls, and Lewistown. All three campuses are unique in their own way but there are a few special traits that all share....friendliness, caring, mentoring, and most important success.

Friendliness! It’s important to know you are not alone in your quest to achieve a higher education at MSUN. We are a Caring faculty and staff who know the difficulties in starting college, whether you are a recent high school graduate, an older returning student, or a current student who may be working and juggling studies and the various academic and social pursuits MSUN offers. We are here not only to educate students but to serve and assist students in a Mentoring way that provides solutions to real problems, issues and concerns. We want to work with all students in creating and formulating their unique strategic plan for a life of Success upon graduating from MSU-Northern.

As Chancellor and Chief Executive Officer I am very pleased and proud that you have selected MSUN as your new academic, social, and athletic home away from home. And hopefully over the next coming year we will have many opportunities to engage in dialogue about how to improve the university experience so that we may raise the bar in maintaining the spirit of Friendliness, Caring, Mentoring and Success.

And again with warmest regards and wishes of good luck I welcome you...and remember, as in the tortoise and the hare story, consistency is more important than quickness....so set your goals, study consistently, and perform to your best ability.

Dr. Frank Trocki
Chancellor
2009-2010 UNIVERSITY CALENDAR

Fall Semester 2009 thru Summer Semester 2010

FALL SEMESTER 2009
August 29, Saturday, 9:00 a.m. ................................................................. Residence Halls Open
August 29-30, Saturday & Sunday ............................................................... Orientation and Registration
August 31, Monday, 8 a.m. ................................................................. Classes begin
September 7, Tuesday ........................................................................... Labor Day Holiday (no classes; offices closed)
November 11, Wednesday ....................................................................... Veteran’s Day Holiday (classes & offices closed)
November 25, Wednesday ....................................................................... (no classes; offices open)
November 26-27, Thursday & Friday ................................................... Thanksgiving Day Holiday (classes & offices closed)
December 11, Friday ............................................................................... Classes End
December 14-18, Monday through Friday ............................................. Final Examinations
December 18, Friday ............................................................................. Fall Semester Ends
December 22, noon ................................................................................ Grades Due in Registrar’s Office

SPRING SEMESTER 2010
January 11, Monday ................................................................. Residence Halls Open
January 12, Tuesday ................................................................. Orientation and Student Registration
January 13, Wednesday ................................................................. Classes Begin
January 18, Monday ........................................................................... Martin Luther King Day
February 15, Monday ........................................................................... President’s Day (no classes, offices closed)
March 15-19, Monday through Friday .................................................. Spring break (no classes)
April 2, Friday ................................................................................... University Day (Friday)(no classes; offices open)
April 30, Friday ................................................................................... Classes End
May 3-7, Monday through Friday .......................................................... Final Examinations
May 7, Friday ...................................................................................... Spring Semester Ends
May 8, Saturday .................................................................................. Commencement
May 11, Tuesday ................................................................................ Grades Due in Registrar’s Office

SUMMER SEMESTER 2010
Pre-Summer Session ................................................................................. May 10– June 3
May 10, Monday ................................................................................... Classes Begin
May 31, Monday ................................................................................ Memorial Day No Classes- Offices Closed
June 3, Thursday ................................................................................ Pre-session Ends

Regular Summer Session ........................................................................ June 7 – August 5
July 5, Monday ................................................................................ Independence Day (no classes, offices closed)
August 5, Thursday ................................................................................ Regular session Ends
August 10, Tuesday ................................................................................ Grades Due in Registrar’s Office

Extended Summer Session ....................................................................... May 10 – August 20
(Primarily BSN Nursing students)
### Degrees, Majors and Minors

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<th>Master of Science Degree (MS)</th>
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<td>Mathematics (5-12)</td>
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<td>Social Science (5-12)</td>
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<td>Traffic Education (K-12)</td>
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<td>Native American Studies</td>
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<td>Accounting</td>
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<td>Agricultural Mechanics Technology</td>
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<td>Diesel Technology: Field Maintenance</td>
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<td>Health Promotion</td>
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<td>Mathematics (non-teaching)</td>
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Completed and signed applications for graduation are due in the Registrar’s Office at least one full semester prior to the end of the semester in which the student intends to graduate or participate in Commencement. The applications for graduation and programs sheets are available on-line and in the Registrar’s Office.

MINIMUM COURSE GRADES FOR GRADUATION

In accordance with Board of Regents Policy 301.5.3, students graduating from Montana State University-Northern must earn the following minimum grades:

1. a “D-” or better in all classes that are used to satisfy so-called free or elective credits in an associate or baccalaureate degree program;
2. a “C-” or better in all classes that are used to satisfy a general education program;
3. a “C-” or better in all classes that are used to satisfy the pre-requisites or required courses for a major, minor, option or certificate.

GENERAL EDUCATION COURSE PLACEMENT

Course placement procedures ensure students are academically prepared for successful higher level course completion.

The following determines general education course placement:

1. Evaluation of previous higher education courses completed.
2. Students who earn the following minimum scores on tests taken during high school will be placed directly into a college-level freshman composition course without further testing.
   a. 7 on the Writing Subscore or 18 on the Combined English/Writing section of the Optional Writing Test of the ACT; or
   b. 7 on the Essay or 440 on the Writing Section of the SAT; or
   c. 3.5 on the Montana University System Writing Assessment (MUSWA).
   d. 3 on the AP English Language or English Literature Examination; or
   e. 4 on the International Baccalaureate Language A1 Exam.
   f. In lieu of the indicators set out above, students may offer CLEP Subject Examinations in Composition if their scores on the examination meet or exceed the ACE Recommended Score for Awarding Credit of 50.
   g. For students without writing placement examination scores, see Board of Regent Policy 301.17 for placement information.

3. Mathematics proficiency policy grants full admission to students with minimum mathematics scores of:
   a. 18 on the ACT,
   b. 440 on the SAT, or
   c. 3 or above on the AP Calculus AB or BC Subject Examinations
4. Students with scores below these thresholds are placed into developmental courses.

Details about placement testing are available from the Academic Advising Center in the Library.

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 term (Fall and Spring) in a year.

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 and elective course work.

Course work that falls outside these guarantee periods may be included in the evaluation, at the discretion of the University. Since it is a discretionary decision, it cannot be challenged by students.

THE COLLEGE OF TECHNICAL SCIENCES

DEPARTMENTAL CERTIFICATES

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.

RELATED INSTRUCTION

All certificates of applied science and associate of applied science degrees must include instruction in program related areas of communications, computation (math), and human relations. This instruction may be included as separate coursework, or embedded in courses that are part of the degree. Courses containing embedded related education coursework must be identified and related education subjects clearly identified as part of course syllabi.

CERTIFICATE OF APPLIED
SCIENCE

The Certificate of Applied Science is a one-year program authorized by the Montana Boards of Regents. Students completing the Certificate of Applied Science will receive a diploma and participate in commencement ceremonies.

ASSOCIATE OF ARTS, ASSOCIATE OF SCIENCE, 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 fifteen (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 is normally limited to sixty (60) credits and requires a minimum 2.00 cumulative grade point average.

3. An associate of applied science degree has a minimum of sixty (60) credits and a maximum of seventy-two (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 X92) may be applied towards an associate or associate of applied science degree.

BACHELOR OF APPLIED SCIENCE 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 courses and the specialized study 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 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 X92).

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 thirty (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 catalog and subsequent catalog need 120 credits to earn a bachelor’s degree, unless their degree specifies more credits. Students graduating
under a catalog 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 thirty-nine (39) upper division level credits (300 – 400 level courses) for graduation.

6. No more than 9 credits total of independent study courses (x92) 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. Teaching majors require teaching minors and non-teaching majors require non-teaching minors.

Minor Requirements:

1. They must consist of eighteen to thirty (18 to 30) semester hours of credit.
2. At least one-third of the credits must be at the upper division level.
3. At least ten (10) of the total credits must be taken at Montana State University-Northern.
4. Students must have at least a 2.25 GPA in their minor.

**COMMENCEMENT WITHOUT GRADUATION POLICY**

University policy allows students who have six (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 requirements 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**

MSU-Northern develops articulation agreements with other post secondary institutions. For current information on these agreements, please see the Registrar’s website.

**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. 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 substitute or waive a general education requirement. Therefore, any request to substitute or waive a general education requirement must be submitted on a petition form to the Admissions and Standards Committee for approval.

The Lower Division general education requirements defined on pages 10-13 are waived for students who already have an associate of art, associate of science, or bachelor’s degree from Montana State University-Northern or another Montana institution’s Board of Regent approved general education core.

To qualify for the waiver, students must meet the following conditions:

1. Their previous degree must be from a regionally accredited institution.
2. The 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.

3. If the degree is a prior MSU-Northern associate of art or associate of science degree, the degree must have been earned in accordance with the Fall 2005 catalog or later.

4. The degree must not be an Associate of Applied Science or Associate Degree Nursing.

General Education programs at institutions whose general education core is not Montana Board of Regents approved will be evaluated on a course by course basis.

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 14 of this catalog. When reviewing that policy, students should pay particular attention to the IMPORTANT LIMITATION language.

This waiver does not constitute a waiver of any other graduation requirements.
Montana State University-Northern

General Education Core

The general education core allows you (the student) to reaffirm your common experiences, to redefine your common goals, and to provide a foundation for confronting your common problems. The courses selected for inclusion in the general education core emphasize communication and techniques of creative inquiry that are used in all disciplines.

Montana State University-Northern defines seven (7) categories within the general education core. The categories and the outcomes for each category are defined below.

Category I – Communication
You (the student), upon successful completion of course(s) within this category, should be able to:

1. Write clear, accurate sentences and paragraphs in standard American English
2. Write extended papers which effectively develop and support theses, tell stories, describe events, and/or express feelings, insights and personal values
3. Demonstrate the ability to communicate effectively in written form through the forms of writing most common in the student’s chosen career area
4. Identify and incorporate research materials into informative and analytical writing
5. Demonstrate the ability to select, develop and deliver an effective oral presentation to a target audience for specific purposes
6. Demonstrate an awareness of the oral communication process, including critical listening skills

Category II - Mathematics
You (the student), upon successful completion of course(s) within this category, should be able to:

1. Solve problems through mathematical reasoning using calculators and computers
2. Describe or demonstrate how mathematical models or statistical designs are used to obtain knowledge in several disciplines
3. Perform mathematical applications beyond intermediate algebra
4. Demonstrate understanding of the discipline of mathematics through multiple means of oral, written and visual assessment

Category III - Natural Sciences
You (the student), upon successful completion of course(s) within this category, should be able to:

1. Describe the processes of observation, problem identification, hypothesis formulation, experimentation and verification which underlie scientific advancement
2. Systematically develop principles for comprehension of the natural world
3. Demonstrate an appreciation for Laboratory Practice:
   a. Demonstrate the ability to design an experiment
   b. Identify a properly designed experiment
   c. Study physical objects in a direct manner which yields verifiable knowledge
   d. Utilize laboratory equipment in a way that helps one appreciate both the power of technology and the dependence of contemporary scientific insight on the technology

Category IV - Social Sciences/History
You (the student), upon successful completion of course(s) within this category, should be able to:

1. Describe the diversity of focus, methodology and intention among the social sciences
2. Discuss the role and impact in daily existence of such major social institutions as the family, education, business, government, and religion
3. Analyze how institutions and traditions are born, evolve, and die, and how they shape the lives of individuals
4. Identify how the social sciences study human development, behavior, and health (sickness), and set forth influential psychological and sociological theories about these issues
5. Gather information, analyze data, and draw conclusions in selected areas of the social sciences
6. Recognize processes of continuity and change which have shaped events up to the present
7. Identify and describe the characteristics of a major era in world history or international relations, thereby providing a framework for comprehending aspects of human experience

8. Explain how human experiences give rise to movements, institutions, traditions, and ideas which have a subsequent influence

9. Analyze factors leading to the dominance or suppression of selected racial, gender, ethnic, class, and religious groups

10. Analyze the extent to which individuals (in contrast to physical or social forces) are able to influence events, making reference to illuminating examples

11. Use factual and interpretive data to support historical or political hypotheses

**Category V - Cultural Diversity**

You (the student), upon successful completion of course(s) within this category, should be able to:

1. Describe and compare the political, socio-economic, philosophical-spiritual, historic, scientific and literary-creative perspectives of various ethnic groups or cultures

2. Analyze social problems, social structures and human behaviors of ethnic groups and cultures

3. Examine how generalizations are developed and how stereotyping and prejudice are being addressed currently and historically

**Category VI- Humanities/Fine Arts**

You (the student), upon successful completion of course(s) within this category, should be able to:

1. Discuss great works of literature, drama, or visual art which have decisively influenced or been influenced by the course of history

2. Describe and critically assess prominent theories about the nature of reality, the qualities of the good life, and the ways in which life may be meaningful

3. Compare the beliefs of different cultures reflected by literature, music, art and language

4. Articulate a tentative personal philosophy of life informed by experience and study

5. Demonstrate skills in practice of a fine art such as visual art, performing art, or literary art

6. Describe the basic elements and practices of a fine art during the important eras of its development

7. Make informed judgments concerning the aesthetic, entertainment, and intellectual value of a work in an area of fine art

8. Recognize contributions of literature, music, theatre, and visual arts

9. Develop an appreciation for the creative process in developing concepts in a fine art work

**Category VII - Technology**

You (the student), upon successful completion of course(s) within this category, should be able to:

1. Explain the impact of technology on society and conversely, how society impacts technology in a historical, present and future sense

2. List technology’s role in problem solving and communication

3. Describe the ethical, legal and social concerns stemming from advances in technology

4. Demonstrate an ability to use technology within a discipline

5. Demonstrate an introductory level of technology literacy
**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 15 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 seven 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/History</td>
<td>6 credits</td>
</tr>
<tr>
<td>CAT V: Cultural Diversity</td>
<td>3 credits</td>
</tr>
<tr>
<td>CAT VI: Humanities/Fine Arts</td>
<td>6 credits</td>
</tr>
<tr>
<td>CAT VII: 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.

<table>
<thead>
<tr>
<th>Category I (CAT I)</th>
<th>-- Communication (6 credits)</th>
<th>WRIT 101 AND SPCH 141 OR 142 OR WRIT 350</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-- General Education Code: C1</td>
<td></td>
</tr>
<tr>
<td>Category II (CAT II)</td>
<td>-- Mathematics</td>
<td>M 121 or higher content level math</td>
</tr>
<tr>
<td></td>
<td>-- General Education Code: C2</td>
<td></td>
</tr>
<tr>
<td>Category III (CAT III)</td>
<td>-- Natural Sciences (6 credits)</td>
<td>AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
</tr>
<tr>
<td>Students must take one science course that includes a lab. See course descriptions to verify this requirement.</td>
<td>-- General Education Code: C3 and C3L</td>
<td></td>
</tr>
<tr>
<td>Category IV (CAT IV)</td>
<td>-- Social Sciences/ History (6 credits)</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOSCI 201</td>
</tr>
<tr>
<td></td>
<td>-- General Education Code: C4 and C5</td>
<td></td>
</tr>
<tr>
<td>Category V (CAT V)</td>
<td>-- Cultural Diversity (3 credits)</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 230, NAS 310, NAS 330, NASL 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
</tr>
<tr>
<td></td>
<td>-- General Education Code: C6</td>
<td></td>
</tr>
<tr>
<td>Category VI (CAT VI)</td>
<td>Humanities/Fine Arts (6 credits)</td>
<td>General Education Code: C7 and C8</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td></td>
<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309 LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
<td></td>
</tr>
<tr>
<td>Category VII (CAT VII)</td>
<td>Technology (3 credits)</td>
<td>General Education Code: C9</td>
</tr>
<tr>
<td></td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
<td></td>
</tr>
</tbody>
</table>
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:

<table>
<thead>
<tr>
<th>Discipline Area</th>
<th>Maximum Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communications</td>
<td>6 semester</td>
</tr>
<tr>
<td>Cultural Diversity</td>
<td>3 semester</td>
</tr>
<tr>
<td>Humanities/Fine Arts</td>
<td>6 semester</td>
</tr>
<tr>
<td>Mathematics</td>
<td>3 semester</td>
</tr>
<tr>
<td>Natural Sciences (with labs)</td>
<td>6 semester</td>
</tr>
<tr>
<td>Social Sciences/History</td>
<td>6 semester</td>
</tr>
<tr>
<td><strong>Total Semester Credits Maximum</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

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 six (6) 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:
The Montana University System Core
Course List from
MONTANA STATE UNIVERSITY-NORTHERN

* In order to satisfy the MUS core, students must successfully complete at least one course that includes significant content related to the cultural heritage of American Indians and are designated with an asterisk (*) following title. OL after the Course No. Indicates an On-Line Course.

<table>
<thead>
<tr>
<th>NATURAL SCIENCE - 6 credits</th>
<th>CREDITS</th>
<th>SOCIAL SCIENCES/HISTORY - 6 credits</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Students must successfully complete at least one lab course.)</td>
<td></td>
<td>(Students must successfully complete coursework in written and oral communications.)</td>
<td></td>
</tr>
<tr>
<td>BIOL 140 Cell Biology</td>
<td>4</td>
<td>CMSV 101 Introduction to Community Leadership</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 141 Cell Biology Lab</td>
<td>1</td>
<td>ECNS 201 Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 151OL Essentials of Biology</td>
<td>4</td>
<td>ECNS 202 Principles of Macroeconomics #</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 204 Essentials of Anatomy and Physiology</td>
<td>4</td>
<td>ECNS 372 Economic History of the US</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 217 Microbiology #</td>
<td>4</td>
<td>HSTA 101 American History I</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 221 Botany I</td>
<td>3</td>
<td>HSTA 102 American History II</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 222 Botany I Lab</td>
<td>2</td>
<td>HSTR 101 Western Civilization I</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 241 Anatomy and Physiology I #</td>
<td>4</td>
<td>HSTR 102 Western Civilization II</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 242 Anatomy and Physiology II#</td>
<td>4</td>
<td>HSTA 255 Montana History</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 250 Undergraduate Research</td>
<td>3</td>
<td>HIST 330 History of Mexico</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 314 General Ecology</td>
<td>4</td>
<td>HIST 374 Intellectual History of Western Civilization</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 322 Botany II #</td>
<td>4</td>
<td>PSCI 210 Introduction to American Government</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 324 Entomology</td>
<td>3</td>
<td>PSCI 250 Introduction to Political Theory</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 334 Ornithology</td>
<td>3</td>
<td>PSCI 471 American Constitutional Law</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 348 Zoology</td>
<td>3</td>
<td>PSYX 100 Introduction to Psychology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 350 Zoology Laboratory</td>
<td>2</td>
<td>PSYX 230 Developmental Psychology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 406 Molecular Biology Techniques</td>
<td>3</td>
<td>SOCI 101 Introduction to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 407 Flowering Plants of the Plains and Mountains</td>
<td>3</td>
<td>SOCI 241 Introduction to Social Psychology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 415 Ecological Methods</td>
<td>3</td>
<td>SOCS 201 Introduction to the Social Sciences</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 460 Advanced Microbiology #</td>
<td>3</td>
<td>MATHEMATICS - 3 credits</td>
<td></td>
</tr>
<tr>
<td>BIOL 468 Molecular Biology and Genetics#</td>
<td>4</td>
<td>M 112OL Trigonometry and Complex Numbers #</td>
<td>2</td>
</tr>
<tr>
<td>CHMY 121 Introduction to General Chemistry</td>
<td>3</td>
<td>M 145 Mathematics for the Liberal Arts</td>
<td>4</td>
</tr>
<tr>
<td>CHMY 122 Introduction to General Chemistry Lab</td>
<td>1</td>
<td>M 121OL College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>CHMY 123 Introduction to Organic &amp; Biochemistry</td>
<td>3</td>
<td>M 130OL Mathematics for Elementary Teachers I</td>
<td>3</td>
</tr>
<tr>
<td>CHMY 124 Intro to Organic &amp; Biochemistry Lab</td>
<td>1</td>
<td>M 131 Mathematics for Elementary Teachers II</td>
<td>3</td>
</tr>
<tr>
<td>CHMY 141 College Chemistry I</td>
<td>3</td>
<td>M 151 Precalculus</td>
<td>4</td>
</tr>
<tr>
<td>CHMY 142 College Chemistry I Lab</td>
<td>1</td>
<td>M 162 Applied Calculus #</td>
<td>3</td>
</tr>
<tr>
<td>CHMY 143 College Chemistry II</td>
<td>3</td>
<td>M 171 Calculus II#</td>
<td>5</td>
</tr>
<tr>
<td>CHMY 144 College Chemistry II Lab</td>
<td>1</td>
<td>M 172 Calculus II #</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 311 Quantitative Analysis #</td>
<td>4</td>
<td>M 273 Multivariable Calculus #</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 312 Quantitative and Instrumental Analysis #</td>
<td>4</td>
<td>M 311 Ordinary Differential Equations/System #</td>
<td>3</td>
</tr>
<tr>
<td>CHMY 321 Organic Chemistry I</td>
<td>3</td>
<td>M 326 Number Theory #</td>
<td>3</td>
</tr>
<tr>
<td>CHMY 322 Organic Chemistry I Lab</td>
<td>2</td>
<td>M 329 Modern Geometry #</td>
<td>3</td>
</tr>
<tr>
<td>CHMY 323 Organic Chemistry II #</td>
<td>3</td>
<td>M 333 Linear Algebra #</td>
<td>3</td>
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<tr>
<td>CHMY 324 Organic Chemistry II Lab</td>
<td>2</td>
<td>M 351 Algebraic Structures I #</td>
<td>3</td>
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<tr>
<td>CHEM 351 Instrumental Analysis #</td>
<td>3</td>
<td>M 440 Numerical Analysis #</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 356 Physical Chemistry</td>
<td>3</td>
<td>STAT 216OL Introduction to Statistics</td>
<td>3</td>
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<tr>
<td>GEO 101 Introduction to Physical Geology #</td>
<td>4</td>
<td>STAT 217 Intermediate Statistical Concepts #</td>
<td>4</td>
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<tr>
<td>GEO 102 Introduction to Physical Geology Lab</td>
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<td></td>
<td></td>
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<tr>
<td>GEO 206 Dinosaur Paleobiology</td>
<td>4</td>
<td></td>
<td></td>
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<tr>
<td>GEO 211 Earth History and Evolution#</td>
<td>4</td>
<td></td>
<td></td>
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<tr>
<td>GEO 212 Earth History and Evolution Lab</td>
<td>0</td>
<td></td>
<td></td>
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<tr>
<td>GEO 314 Introduction to Paleontology</td>
<td>3</td>
<td></td>
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<tr>
<td>GPHY 111 Introduction to Physical Geography</td>
<td>4</td>
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<tr>
<td>PHYS 114 Foundations of Physical Science</td>
<td>3</td>
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<tr>
<td>PHYS 231 Fundamentals of Physics I</td>
<td>3</td>
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<tr>
<td>PHYS 234 Fundamentals of Physics I Lab</td>
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<tr>
<td>PHYS 232 Fundamentals of Physics II</td>
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<tr>
<td>PHYS 235 Fundamentals of Physics II Lab</td>
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</tbody>
</table>

Continued on next page
### HUMANITIES/FINE ARTS - 6 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 100</td>
<td>Introduction to Art</td>
<td>3</td>
</tr>
<tr>
<td>ART 115</td>
<td>Ceramics</td>
<td>3</td>
</tr>
<tr>
<td>ART 120</td>
<td>Drawing I</td>
<td>3</td>
</tr>
<tr>
<td>ART 150</td>
<td>Two-Dimensional Design I</td>
<td>3</td>
</tr>
<tr>
<td>ART 151</td>
<td>Two-Dimensional Design II</td>
<td>3</td>
</tr>
<tr>
<td>ART 204</td>
<td>Printmaking</td>
<td>3</td>
</tr>
<tr>
<td>ART 353</td>
<td>Metal Sculpture</td>
<td>3</td>
</tr>
<tr>
<td>ART 361</td>
<td>Art History of Western Civilization I</td>
<td>3</td>
</tr>
<tr>
<td>ART 362</td>
<td>Art History of Western Civilization II</td>
<td>3</td>
</tr>
<tr>
<td>DRMA 109</td>
<td>Drama Participation</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 311</td>
<td>Creative Writing</td>
<td>3</td>
</tr>
<tr>
<td>GDSN 270</td>
<td>Introduction to Photography</td>
<td>3</td>
</tr>
<tr>
<td>HUM 201</td>
<td>Introduction to the Humanities</td>
<td>3</td>
</tr>
<tr>
<td>LIT 110</td>
<td>Introduction to Literature</td>
<td>3</td>
</tr>
<tr>
<td>LIT 210</td>
<td>American Literature I</td>
<td>3</td>
</tr>
<tr>
<td>LIT 211</td>
<td>American Literature II</td>
<td>3</td>
</tr>
<tr>
<td>LIT 230</td>
<td>World Lit Survey</td>
<td>3</td>
</tr>
<tr>
<td>LIT 223OL</td>
<td>British Literature I</td>
<td>3</td>
</tr>
<tr>
<td>LIT 224</td>
<td>British Literature II</td>
<td>3</td>
</tr>
<tr>
<td>LIT 309OL</td>
<td>Popular Genres</td>
<td>3</td>
</tr>
<tr>
<td>LIT 382</td>
<td>Literature for Children and Adolescents</td>
<td>3</td>
</tr>
<tr>
<td>LIT 363</td>
<td>Modern Poetry</td>
<td>3</td>
</tr>
<tr>
<td>LIT 327OL</td>
<td>Shakespeare</td>
<td>3</td>
</tr>
<tr>
<td>MUS 101OL</td>
<td>Introduction to Music History</td>
<td>3</td>
</tr>
<tr>
<td>MUS 110</td>
<td>Introduction to Music Theory</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 200</td>
<td>Introduction to Philosophy</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 210</td>
<td>Ethics</td>
<td>3</td>
</tr>
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</table>

### CULTURAL DIVERSITY - 3 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 335</td>
<td>Introduction to Latin America</td>
<td>3</td>
</tr>
<tr>
<td>NAS 220</td>
<td>Introduction to Ethnic Indian Studies</td>
<td>3</td>
</tr>
<tr>
<td>NAS 230</td>
<td>Native American Beliefs and Philosophy</td>
<td>3</td>
</tr>
<tr>
<td>NAS 310</td>
<td>Native Cultures of North America</td>
<td>3</td>
</tr>
<tr>
<td>NAS 330</td>
<td>American Indian Oral Tradition</td>
<td>3</td>
</tr>
<tr>
<td>NASL 331</td>
<td>American Indian Literature</td>
<td>3</td>
</tr>
<tr>
<td>NAS 350</td>
<td>Indian Law</td>
<td>3</td>
</tr>
<tr>
<td>NAS 364</td>
<td>History of American Indians</td>
<td>3</td>
</tr>
<tr>
<td>NASL 120</td>
<td>Native American Language I</td>
<td>3</td>
</tr>
<tr>
<td>NURS 331OL</td>
<td>Cultural Diversity in Healthcare</td>
<td>3</td>
</tr>
<tr>
<td>SOCI 315</td>
<td>Race, Gender and Ethnic Relations</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 245</td>
<td>Intercultural Communication</td>
<td>3</td>
</tr>
<tr>
<td>SPNS 101</td>
<td>Elementary Spanish I</td>
<td>4</td>
</tr>
</tbody>
</table>

#Course carries a college-level pre-requisite, and/or requires permission of the instructor.
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

**Bachelor of Arts Degrees**
- Community Leadership
- Graphic Design
- Liberal Studies

**Bachelor of Science Degrees**
- Biology
- Mathematics (non-teaching)

**Associate of Applied Science Degrees**
- Graphic Design
- Water Quality Technology:
  - Environmental Health

**Associate of Arts Degree**
- Program of Study in General Education

**Minors**
- Biology
- Community Leadership
- Native American Studies

*Office: Cowan Hall Room 104*

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

**Advising Information**
Students are encouraged to meet with their assigned 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 students to plan schedules that will meet their needs and assist them in completing requirements in an efficient manner.
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.

Montana State University-Northern’s bachelor and associate nursing programs are accredited by the National League for Nursing Accrediting Commission, (NLNAC), 3343 Peachtree Rd N.E., Suite 500, Atlanta, GA 30326, 1-404-975-5000 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
Nursing students are encouraged to meet with advisors at the beginning of each semester to confirm plans of study and make any necessary adjustments. Meeting with an advisor before registering for classes each semester will allow students to plan a schedule that will meet student needs and assist in completing requirements in an efficient manner.

The program prepares men and women for entry-level Registered Nurse positions in hospitals and other healthcare agencies. The ASN qualifies the graduate to write 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.

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

All students in the MSU-Northern Associate of Science program are required to take standardized proficiency examinations during the program. 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 for these examinations. These fees will be paid during the semester of the examination 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 online and are scheduled innovatively to meet the needs of adult, non-traditional learners. 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 Degree**
The following is the policy for admission to the Associate 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. 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 extracted GPA and completed the following courses with a “C” or better: Anatomy and Physiology I and II, College Algebra, English, Nutrition, Chemistry, General Psychology and Introduction to Nursing.

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 1** for admission to NURS 212 and Level II.

8. Applicants not admitted into the Nursing Program by their expected date of admission must reapply for future consideration. There is no waiting list.

9. The following prerequisite 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 Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 241</td>
<td>Anatomy &amp; Physiology I</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 242</td>
<td>Anatomy &amp; Physiology II w/Lab</td>
<td>4</td>
</tr>
<tr>
<td>CHMY 121</td>
<td>Introduction to General Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHMY 122</td>
<td>Introduction to General Chemistry Lab</td>
<td>1</td>
</tr>
<tr>
<td>M 121</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>NURS 117</td>
<td>Nutrition</td>
<td>2</td>
</tr>
<tr>
<td>NURS 118</td>
<td>Introduction to Nursing</td>
<td>1</td>
</tr>
<tr>
<td>PSYX 100</td>
<td>Introduction to Psychology</td>
<td>3</td>
</tr>
<tr>
<td>WRIT 101</td>
<td>College Writing I</td>
<td>3</td>
</tr>
</tbody>
</table>

10. Prior to starting NURS 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
2009-2010 Catalog

Montana State University - Northern

(4) had the hepatitis B vaccination series, including titer, or has a valid waiver on file
(5) is free of tuberculosis (annual update)
(6) has professional liability insurance (provided by the Department of Nursing) (annual update)
(7) has health insurance (annual update)
(8) has current class C CPR certification (CPR for Healthcare Providers) (annual update)

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.

11. 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.

12. 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.

13. Faculty members have an obligation to the client to ensure that nursing students who care for them are competent to do so. In the interest of safeguarding the 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 client safety and comfort
   b. demonstrate emotional stability
   c. demonstrate sensitivity to 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 client care assignments with the required knowledge and skill as determined in classroom theory and laboratory demonstrations
   g. complete fingerprint and background checks

Students Note: You cannot 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). Also, please note that all associate degree nursing students pay a $175/semester program fee.

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. 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 licensed registered nurses and 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 are 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>CAPP 120</td>
<td>Introduction to Computers</td>
<td>3</td>
</tr>
<tr>
<td>M 121</td>
<td>College Algebra OR higher level math</td>
<td>3</td>
</tr>
<tr>
<td>STAT 216 or 217</td>
<td>Statistics OR Intermediate Statistical Concepts</td>
<td>3/4</td>
</tr>
<tr>
<td>OR</td>
<td>Bus 250 Business Statistics</td>
<td>3</td>
</tr>
<tr>
<td>WRIT 101</td>
<td>College Writing I</td>
<td>3</td>
</tr>
<tr>
<td>Cultural Diversity elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Humanities/Fine Arts elective</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>History/Social Science electives</td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

8. Prior to starting the clinical practicum courses 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
          (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) proof of freedom from tuberculosis (annual update)
      (6) has professional liability insurance (provided by the Department of Nursing) (annual update)
      (7) has health insurance (annual update)
      (8) has current Class C CPR certification (CPR for Healthcare Providers) (annual update)
      (9) has current RN licensure in the state where the clinical practicum will be conducted
   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.

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 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.
   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 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 in 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. 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
   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 who drop out of the nursing program must petition for reinstatement (See Nursing Student Handbook for Procedure).
   a. A required nursing course may be repeated only once on a space available basis. 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. If the student is unable to complete the program within five (5) years and is making progress toward the degree, faculty will review each case on an individual basis.

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
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 e-mail, 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 (provided by the Department of Nursing).
   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 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 EDUCATION

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

Teaching Minors
Art (K-12)
English (5-12)
Health & Physical Education (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 104

Montana State University-Northern’s education programs are accredited by the Montana Board of Public Education.

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 on-campus 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 candidate’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. Candidates 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. Candidates who complete majors with no minor (40-60 credits) will be licensed to teach subjects within the area encompassed by that discipline. Candidates 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.

Candidates for initial licensure in Elementary Education must successfully complete the Praxis II examination.
Elementary Education

The University-wide General Education Requirements and Teacher Education Program pre-requisites provide Elementary Education majors with 50 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 planned on an individual basis and is subject to the Dean’s approval. 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 candidates must possess. Candidates should consult with the Dean of Education, Arts and Sciences, and Nursing if there are questions regarding the middle and/or high school courses which their major or minor will permit them to teach.

Several majors and minors (Art, General Science Broadfield, Health and Physical Education, Industrial Technology, Traffic Education, Reading Specialist, Social Science-Broadfield) 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. Candidates 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 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. Candidates seeking to teach in a reimbursed career technical education program should check with their advisor early in their program.

Admission to Teacher Education

Upon declaring an education major, candidates will be classified as a pre-education major. All candidates are assigned an education advisor. With the assistance of an advisor, all candidates should plan a program of study and work toward Level One Admission to Teacher Education. All teacher education candidates 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 candidates prior to their enrolling in any professional education core courses at the 300 level or above. After admission to Level One, they 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. WRIT 101 College Writing I
B. M 121 College Algebra and M 130 Math for Elementary Teachers I
C. SPCH 142 Interpersonal Communication
D. CIS 320 Computers in Education

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 or better
C. Completion of EDPY 215, EDUC 100, HPE 235, and PSYX 230 with a minimum grade of “C-”
D. Demonstration of ability to communicate verbally in a fluent and understandable manner
E. Recommendation by the candidate’s major advisor
F. Submission of references from supervisors or faculty
G. Background check
H. Candidate insurance required
I. Educational Philosophy
Admission to Level One of the Teacher Education program 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 and online at http://www.msun.edu/academics/coeasn/index_files/forms.htm.

Student applicants will be notified according to the following classifications:
1. Approved for Level One admission
2. Granted provisional admission (one semester only)
3. Disapproved

Candidates who are 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. Candidates who are not approved or who are 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 Montana State University-Northern Student Handbook. It is the responsibility of candidates to familiarize themselves with the policy. Additional copies of the handbook are available from the education department. Other department information is available at http://www.msun.edu/academics/coeasn/index_files/education.htm.

Candidates 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 Dean.

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).
- Candidates not admitted to the program, candidates who do not have the required prerequisites, or are 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. Candidates 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, candidates 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. Student teaching candidates 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**

Credits identified as Teacher Education Program prerequisites should be 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.

**Praxis II Required for Licensure**

Candidates seeking an initial educator license in the State of Montana must successfully complete the Praxis II requirement.

**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 Introduction 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>2</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 Indian Education for All 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 and Wellness</td>
<td>3</td>
</tr>
<tr>
<td>PSYX 230 Developmental Psychology</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>
<tr>
<td><strong>TOTAL 64</strong></td>
<td></td>
</tr>
</tbody>
</table>

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

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 Introduction 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 321 Integrating Technology into Education</td>
<td>1</td>
</tr>
<tr>
<td>EDUC 376 Assessment in Education</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 445 Teaching Reading, Writing &amp; Critical Thinking Across the Curriculum</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 455 Advanced Practicum in Education</td>
<td>3</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>PSYX 230 Developmental Psychology</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL 39</strong></td>
<td></td>
</tr>
</tbody>
</table>

VOED 350 Principles of Industrial/Technology Education, VOED 360 Analysis and Preparation Lab Management, and VOED 370 Methods of Teaching Industrial/Technology Education are suggested for Industrial Technology majors 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 Administration
Civil 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)
Automotive Technology Fast Track
Carpentry Technology
Civil Engineering Technology
Computer Information Systems
Design Drafting Technology
Diesel Technology
Electrical Technology
Plumbing Technology

Bachelor of Applied Science Degree

Associate of Science Degree
With a program of study in Business

Minors
Accounting
Agricultural Mechanics Technology
Applied Agriculture
Automotive Technology
Business Technology

Certificate of Applied Sciences
Automotive Technology
Carpentry Technology
Welding Technology
Wind Energy (Proposed Fall 2009)

Departmental Certificates
Agricultural Mechanics Technology
Automotive Technology: Auto Body
Electrical Technology
Land Survey Technology

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
Candidates are encouraged to meet with advisors at the beginning of each semester to confirm plans of study and make any necessary adjustments. Meeting with advisors 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.
PROGRAMS IN GRADUATE STUDIES

Master of Education Degree
Counselor Education

Master of Science Degree
Learning Development

Endorsement:
K-12 Principal

Office: Cowan Hall Room 104

The graduate program “Policy and Procedure Manual” is subject to change. Please check with your advisor regarding the most current policy.

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, assessment and evaluation, interpretation, and application.

Students who hold Class II licensure, have three years teaching experience, and have successfully completed the Master 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
2. Master of Science in Education in:
   • Learning Development
3. Other certification or education 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.

Transfer, Extension, Special Topic, and Independent Study 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.

A maximum of six (6) credits of special topics or independent study course work may be applied to the graduate degrees. Special topics courses include workshops and continuing education courses offered on other campuses within the limits of transferability.

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 full-time 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. Full-time is considered 9 credits.
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 a Master 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 consists of both written and oral evaluation of competency. Candidates should notify their advisor and the Graduate Programs Office of their intention to complete the examinations and complete their application for graduation. The comprehensive 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 examination for each degree candidate and shall assign 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 (6) consecutive years or seven (7) 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.

Graduate Endorsement Program
K-12 Principal Endorsement Program
Candidates who successfully complete the K-12 Principal Program and hold a Montana Class I Professional Teacher’s License or Class II Standard Teacher’s License, have three-years teaching experience, and have successfully completed a Masters degree are eligible to be recommended for a Class III Administrative License-K-12 Principal Endorsement.

Residence, Transfer, and Extension Credit
A maximum of 25% of the required credit hours to complete the endorsement 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.

Admission to K-12 Principal Endorsement Internship
Candidates seeking admission into the Internship phase of the K-12 Principal Endorsement program must have completed / provide the following:

1. Earned Master’s Degree
   Candidates must have on record with the MSU-Northern Registrar’s Office a Master’s degree, preferably in a field of study related to K-12 Public Education.

2. Teaching Experience
   Candidates must have completed a minimum of three (3) years of successful professional teaching experience as an appropriately licensed and assigned teacher at the level within K-12.

3. Background Check
   Candidates must submit a complete MSU-Northern Background Check packet with the associated finger print card and state and federal fee by the end of Spring Semester in order to allow time for the check to be done, received, and reviewed by the Education Department. A previous official state and federal level background check can be substituted for consideration if it is no more than eighteen (18) months old at the time of application.

4. Letters of Recommendation
   Candidates must provide the following current (within the last two [2] years) letters of recommendation:
   a. Two (2) letters from teaching peers
   b. One (2) letter from the immediate school administrator
   c. One (1) letter from the District Superintendent and/or School Board wherein they wish to complete the internship
      i. This letter must declare their willingness to support the candidate in a one-year part-time or full-time internship.

5. Scholarship
   Students must have successfully completed EDUC 625, 630, 640, 670, and 672 with a grade point average (GPA) of 3.00 or above for all graduate work applied to fulfilling the requirements for the program (EDUC 633 may be taken during the Fall semester of the Internship but must also receive a 3.00 or above to be considered). In order to be endorsed by MSU-Northern, 75% of all required coursework must be taken from MSU-Northern.

K-12 Principal Endorsement Capstone Project
Each candidate is required to complete a digital Internship Document and associated presentation that demonstrates satisfactory performance in a minimum of seven (7) of the nine (9) Areas of Responsibility as defined in the Administrative Intern Candidate Handbook.

K-12 Principal Endorsement Program Completion
It is the responsibility of the Certification Officer of K-12 Principal Endorsement Programs to certify that a candidate has met all the requirements for recommendation to the Montana Office of Public Instruction (OPI).
It is the candidate’s responsibility to submit a completed Montana Class III Administrative License - K-12 Redissemination of Background Check Information, and an official/sealed transcript (with all required coursework posted) to the Certification Officer. Once all documentation has been received and reviewed, the Certification Officer will complete an Institutional Evaluation and Recommendation and submit all materials to OPI’s Licensure Office.
AGRICULTURE

Bachelor of Science
Agricultural Operations Technology – Minor Required

<table>
<thead>
<tr>
<th>MSU-Northern’s Required General Education Core</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I (CAT I)--Communication</td>
<td>6</td>
<td>WRIT 101 AND SPCH 141 OR 142 OR WRIT 350</td>
</tr>
<tr>
<td>Category II (CAT II)--Mathematics</td>
<td>3</td>
<td>M 121 or higher content level math</td>
</tr>
<tr>
<td>Category III (CAT III)--Natural Sciences</td>
<td>6</td>
<td>AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
</tr>
<tr>
<td>Students must take one science course that includes a lab. See course descriptions to verify this requirement.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category IV (CAT IV)--Social Sciences/History</td>
<td>6</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOCI 291</td>
</tr>
<tr>
<td>Category V (CAT V)--Cultural Diversity</td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NASL 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
</tr>
<tr>
<td>Category VI (CAT VI)--Humanities/Fine Arts</td>
<td>6</td>
<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309 LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
</tr>
<tr>
<td>Category VII (CAT VII) – Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
<tr>
<td><strong>Total General Education Core Credits</strong></td>
<td>33</td>
<td></td>
</tr>
</tbody>
</table>

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 Introduction to Agricultural Computing ..............................3
AG 204 Soils (CAT III) ..................................................................3
Meets CAT III Requirement
AG 218 Crop Production ....................................................................4
AG 230 Agricultural Pest Management ............................................4
AG 244 Livestock Feeding & Nutrition ............................................4
AG 245 Livestock Production ..........................................................3
AG 254 Forage & Range Management ..............................................4
AOT 300 Economic Development in Rural Areas ..............................4
AOT 301 Global Positioning Systems (CAT VII) ...............................3
AOT 305 Ag Commodity Marketing ...............................................3
AOT 310 Soil & Water Management ...............................................3
AOT 315 Geographic Info Systems ...............................................3
AOT 420 Agriculture Technology Management ................................4
AOT 440 Trends & Issues in Agriculture .......................................3
AOT 498 Cooperative Education ..................................................3
IT 100 Introduction to Technology (CATVII) .................................3

Continued on next page
AGRICULTURAL OPERATIONS TECHNOLOGY - MINOR REQUIRED (CONTINUED)

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
ATDE 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 Introduction to Agricultural Computing ....................................... 3
AOT 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 & Nutrition .................................................... 4
AG 254 Forage and Range Management ................................................ 4

Choose a minimum of six (6) (UD) upper division level credits from the following:
AG 498 Cooperative Education ............................................................... 3
AOT 300 Economic Development in Rural Areas ..................................... 2
AOT 301 Global Positioning Systems (CAT VII) ....................................... 3
AOT 305 Ag Commodity Marketing ......................................................... 3
AOT 310 Soil & Water Management ......................................................... 2
AOT 315 Geographic Information Systems .............................................. 2
AOT 420 Agriculture Technology Management ..................................... 4

Total minimum credits required for minor ............................................... 26
Associate of Applied Science
Agricultural Mechanics Technology

Credits
WRIT 108 Elementary Technical Writing (1) ........................................................................................................................................................... 3
M 111 Technical Mathematics OR M 145 OR M 121 (2) ...................................................................................................................................... 3
SPCH 141 Fundamentals of Speech OR SPCH 142 Interpersonal Communication (3) ......................................................................................... 3

Required Courses
AGMT 110 Introduction to Agricultural Machines and Equipment ......................................................................................................................... 2
AGMT 120 Forage Implements ................................................................................................................................................................................ 3
AGMT 130 Introduction to Agricultural Tractors ................................................................................................................................................ 3
AGMT 205 Grain Harvesting Equipment ................................................................................................................................................................. 3
ATDI 134 Auto/Diesel Electrical/Electronic Systems I ........................................................................................................................................... 4
ATDI 264 Auto/Diesel Electrical/Electronic Systems II ........................................................................................................................................... 4
ATDI 265 Heating and Air Conditioning ........................................................................................................................................................... 4
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 Intro to Hydraulics and Pneumatics ......................................................................................................................................................... 2
DIES 214 Intro to Hydraulics and Pneumatics Lab ....................................................................................................................................................... 2
DIES 216 Heavy Duty Power Trains ................................................................................................................................................................. 4
DIES 262 Diesel Engine Diagnosis and Repair .................................................................................................................................................... 2
DIES 272 Diagnosis of Diesel Engine and Repair Lab ............................................................................................................................................. 4
METL 140 Introduction to Welding ....................................................................................................................................................................... 3
METL 260 Repair and Maintenance Welding......................................................................................................................................................... 3

Total minimum required credits for degree ........................................................................................................................................................ 65

(1) Meets Communications Requirement
(2) Meets Computation Requirement
(3) Meets Human Relations Requirement
## Agricultural Technology

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRIT 108 Elementary Technical Writing (1)</td>
<td>3</td>
</tr>
<tr>
<td>M 111 Technical Mathematics OR M 145 OR M 121 (2)</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 141 Fundamentals of Speech OR SPCH 142 Interpersonal Communication (3)</td>
<td>3</td>
</tr>
</tbody>
</table>

### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG 101 Animal Science</td>
<td>3</td>
</tr>
<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 Introduction to 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 &amp; Nutrition</td>
<td>4</td>
</tr>
<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</td>
<td>3</td>
</tr>
<tr>
<td>Advisor Approved Electives</td>
<td>12</td>
</tr>
</tbody>
</table>

**Total minimum required credits for degree**: 62

(1) Meets Communications Requirement  
(2) Meets Computation Requirement  
(3) Meets Human Relations Requirement
### Departmental Certificate*

**Agricultural Mechanics Technology**

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGMT 120 Forage Implements</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>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 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>
</tr>
<tr>
<td>DIES 219 Heavy Duty Chassis</td>
<td>4</td>
</tr>
</tbody>
</table>

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

---

* Total credits required for certificate: 32
ASSOCIATE OF ARTS

This is a degree designed for students who expected 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>
</tr>
</thead>
<tbody>
<tr>
<td>Category I (CAT I)--Communication</td>
<td>6</td>
<td>WRIT 101 AND SPCH 141 OR 142 OR WRIT 350</td>
</tr>
<tr>
<td>Category II (CAT II)--Mathematics</td>
<td>3</td>
<td>M 121 or higher content level math</td>
</tr>
<tr>
<td>Category III (CAT III)--Natural Sciences</td>
<td>6</td>
<td>AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
</tr>
<tr>
<td>Category IV (CAT IV)--Social Sciences/ History</td>
<td>6</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOSC 201</td>
</tr>
<tr>
<td>Category V (CAT V)--Cultural Diversity</td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NASL 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
</tr>
<tr>
<td>Category VI (CAT VI)--Humanities/Fine Arts</td>
<td>6</td>
<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309 LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
</tr>
<tr>
<td>Category VII (CAT VII) – Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

Total General Education Core Credits: 33

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

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

*Students must be careful NOT to mix the MSU-Northern General Education Core with the Montana University System Transferable Core (see pages 15-16). Please see the Dean or your advisor for more information.
ART
Minor
Teaching, K-12

Required Courses
ART 100 Introduction to Art (CAT VI) .................................................................................................................................................................................. 3
ART 115 Ceramics (CAT VI) .............................................................................................................................................................................................. 3
ART 120 Drawing I (CAT VI) ........................................................................................................................................................................................... 3
ART 150 Two Dimensional Design I (CAT VI) ......................................................................................................................................................... 3
ART 254 Painting I OR ART 256 Watercolor Painting I ................................................................................................................................. 3
ART 361 Art History of Western Civilization I (CAT VI) OR ART 362 Art History of Western Civilization II (CAT VI) ............... 3
EDUC 259 Field Experience ...................................................................................................................................................................................... 1
EDUC 310 Methods of Teaching Integrated Creative Arts ........................................................................................................................................ 2

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

PLEASE NOTE: Students enrolled in this program may pay between $10 - $30/semester in course fees. Those fees are in addition to tuition and other mandatory fees.
AUTOMOTIVE TECHNOLOGY
Bachelor of Science
Automotive Technology

<table>
<thead>
<tr>
<th>MSU-Northern’s Required General Education Core</th>
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<th>Course Prefix &amp; #</th>
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<td>WRIT 101 AND SPCH 141 OR 142 OR WRIT 350</td>
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<td>Category II (CAT II)--Mathematics</td>
<td>3</td>
<td>M 121 or higher content level math</td>
</tr>
<tr>
<td>Category III (CAT III)--Natural Sciences</td>
<td>6</td>
<td>AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
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<td>Category IV (CAT IV)--Social Sciences/ History</td>
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<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOCI 245</td>
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<tr>
<td>Category V (CAT V)--Cultural Diversity</td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NASL 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
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<tr>
<td>Category VI (CAT VI)--Humanities/Fine Arts</td>
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<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309 LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
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<tr>
<td>Category VII (CAT VII) – Technology</td>
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<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

**Total General Education Core Credits** 33

**Required Courses**
ATDI 134 Auto/Diesel Electrical/Electronic Systems I .........................................................4
ATDI 220 Automotive Diesel & Hybrid Vehicles ........................................................................4
ATDI 257 Automatics ..............................................................................................................3
ATDI 264 Auto/Diesel Electrical/Electronic Systems II ............................................................4
ATDI 265 Heating and Air Conditioning ..................................................................................4
ATDI 383 Alternative Automotive Power Systems ....................................................................4
ATDI 384 Auto/Diesel Electrical/Electronic Systems III ........................................................4
ATDI 400 Shop Procedures .......................................................................................................3
AUTO 115 Introduction to Automotive Service ..........................................................................1
AUTO 117 Automotive Manual Power Trains ............................................................................4
AUTO 119 Automotive Braking Systems ....................................................................................4
AUTO 120 Automotive Steering and Suspension ....................................................................4
AUTO 128 Engines ..................................................................................................................5
AUTO 151 Diagnosis and Tune Up ..........................................................................................4
AUTO 210 ASE Certification I ..................................................................................................1
AUTO 211 ASE Certification II ..............................................................................................1
AUTO 251 Computerized Engine Control Systems ................................................................4
AUTO 408 Current Trends in Mobility Technology ..................................................................2
AUTO 450 Dynamometer Testing/Computer System Data Analysis .........................................3

Continued on next page
BACHELOR OF SCIENCE AUTOMOTIVE TECHNOLOGY (CONTINUED)
AUTO 457 Advanced Power Trains ............................................................................................................................................................................4
AUTO 498 Cooperative Education ............................................................................................................................................................................3
AUTO 488 Automotive Practicum ............................................................................................................................................................................3
Electives or Minor ..............................................................................................................................................................................................................14

NOTE: Students must take a total of 11 credits of upper division coursework from the electives or general education core.

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

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

**Required Courses**
- 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 ................................................................................................. 3
- AUTO 115 Introduction to Automotive Service ................................................................. 1
- AUTO 117 Automotive Manual Power Trains .................................................................... 4
- AUTO 151 Diagnosis and Tune Up .................................................................................... 4

**Total minimum credits required for minor**........................................................................ 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.
Associate of Applied Science
Automotive Technology

WRIT 108 Elementary Technical Writing (1) ................................................................. 3
M 111 Technical Mathematics OR M 145 Math for the Liberal Arts OR M 121 College Algebra (2) ........................................................................ 3
SPCH 141 Fundamentals of Speech OR SPCH 142 Interpersonal Communication (3) ......................................................................................... 3

Required Courses
ATDI 134 Auto/Diesel Electrical/Electronic Systems I .................................................... 4
ATDI 220 Automotive Diesel & Hybrid Vehicles ................................................................ 3
ATDI 257 Automatics ....................................................................................................... 4
ATDI 264 Auto/Diesel Electrical/Electronic Systems II .................................................. 4
ATDI 265 Heating and Air Conditioning ......................................................................... 4
AUTO 115 Introduction to Automotive Service ............................................................... 1
AUTO 117 Automotive Manual Power Trains ................................................................... 4
AUTO 119 Automotive Braking Systems .......................................................................... 4
AUTO 120 Automotive Steering and Suspension ............................................................. 4
AUTO 128 Engines ........................................................................................................... 5
AUTO 151 Diagnosis and Tune Up .................................................................................. 4
AUTO 210 ASE Certification I ......................................................................................... 1
AUTO 211 ASE Certification II ....................................................................................... 1
AUTO 251 Computerized Engine Control Systems ......................................................... 4
AUTO 298 Cooperative Education ................................................................................... 3
Advisor Approved Elective .............................................................................................. 3

Total minimum credits required for degree ..................................................................... 62-63

(1) Meets Communications Requirement
(2) Meets Computation Requirement
(3) Meets Human Relations Requirement

TOYOTA T-TEN PROGRAM
Students enrolled in the T-Ten Program will complete these requirements above as listed above for the Associate of Applied Science 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.

Associate of Applied Science
Fast Track Automotive Technology

Required Courses
ATDI 134 Auto/Diesel Electrical/Electronic Systems I (2) ............................................... 4
ATDI 220 Automotive Diesel & Hybrid Vehicles ............................................................. 3
ATDI 257 Automatics ....................................................................................................... 4
ATDI 264 Auto/Diesel Electrical/Electronic Systems II (1) ............................................ 4
ATDI 265 Heating and Air Conditioning ....................................................................... 4
AUTO 115 Introduction to Automotive Service (3) ....................................................... 1

Continued on next page
AAS FAST TRACK AUTOMOTIVE TECHNOLOGY (CONTINUED)
AUTO 117 Automotive Manual Power Trains ................................................................. 4
AUTO 119 Automotive Braking Systems ................................................................. 4
AUTO 120 Automotive Steering and Suspension ......................................................... 4
AUTO 128 Engines ........................................................................................................ 5
AUTO 151 Diagnosis and Tune Up .............................................................................. 4
AUTO 210 ASE Certification I ..................................................................................... 1
AUTO 211 ASE Certification II .................................................................................. 1
AUTO 251 Computerized Engine Control Systems ..................................................... 4
AUTO 298 Cooperative Education ............................................................................... 9
Advisor Approved Elective ......................................................................................... 6

Total minimum credits required for degree .................................................................. 62

(1) Meets Communications Requirement
(2) Meets Computation Requirement
(3) Meets Human Relations Requirement

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)

WRIT 108 Elementary Technical Writing (1) .............................................................. 3
M 111 Technical Mathematics OR M 145 Math for the Liberal Arts OR M 121 College Algebra (2) .................................................................................... 3
SPCH 141 Fundamentals of Speech (3) ......................................................................... 3

Credits

Required Courses
ATDI 134 Auto/Diesel Electrical/Electronic Systems ................................................. 4
ATDI 265 Heating and Air Conditioning ....................................................................... 4
AUTO 120 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 243 Shop Production ....................................................................................... 3
BODY 244 Shop Production Lab ................................................................................ 3
CAPP 120 Introduction to Computers ........................................................................ 3
METL 140 Introduction to Welding and Cutting ....................................................... 3
METL 154 Gas Arc Welding Processing ..................................................................... 3
Electives ...................................................................................................................... 4

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

(1) Meets Communications Requirement
(2) Meets Computation Requirement
(3) Meets Human Relations Requirement

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 of Applied Science
Automotive Technology

Required Courses
ATDI 134 Auto/Diesel Electrical/Electronic System I ................................................................. 4
ATDI 265 Heating and Conditioning ......................................................................................... 4
AUTO 115 Introduction to Automotive Service ..................................................................... 1
AUTO 117 Automotive Manual Power Trains ......................................................................... 4
AUTO 119 Automotive Braking Systems ................................................................................. 4
AUTO 120 Automotive Steering and Suspension ................................................................. 4
AUTO 128 Engines .................................................................................................................. 5
AUTO 151 Diagnosis and Tune Up ......................................................................................... 4

Choose one (1) course from the following:
WRIT 108 Elementary Technical Writing ............................................................................. 3
SPCH 141 Fundamentals of Speech ....................................................................................... 3
SPCH 142 Interpersonal Communication ............................................................................. 3

Total minimum credits required for certificate ........................................................................ 33

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

Departmental Certificate*
Automotive Technology (Automotive Body)

Required Courses
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 243 Shop Production .................................................................................................. 3
BODY 244 Shop Production Lab ............................................................................................ 3
METL 154 Gas Arc Welding Processing .............................................................................. 3

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>MSU-Northern's Required General Education Core</th>
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<th>Course Prefix &amp; #</th>
</tr>
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<tbody>
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<td>6</td>
<td>WRIT 101 AND SPCH 141 OR 142 OR WRIT 350</td>
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<tr>
<td>Category II (CAT II)--Mathematics</td>
<td>3</td>
<td>M 121 or higher content level math</td>
</tr>
<tr>
<td>Category III (CAT III)--Natural Sciences</td>
<td>6</td>
<td>AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
</tr>
<tr>
<td>Students must take one science course that includes a lab. See course descriptions to verify this requirement.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category IV (CAT IV)--Social Sciences/History</td>
<td>6</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOSCI 201</td>
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<tr>
<td>Category V (CAT V)--Cultural Diversity</td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NASL 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
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<tr>
<td>Category VI (CAT VI)--Humanities/Fine Arts</td>
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<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309 LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
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<tr>
<td>Category VII (CAT VII) – Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

Total General Education Core Credits 33

Common Science Core (35 credits):

BIOL 140 Cell Biology .................................................................4
BIOL 141 Cell Biology Lab ...........................................................1
BIOL 221 Botany 1 .................................................................3
BIOL 222 Botany 1 Lab .............................................................2
BIOL 348 Zoology .................................................................3
BIOL 350 Zoology Lab .............................................................2
CHMY 141 College Chemistry I ..................................................3
CHMY 142 College Chemistry I Lab ..........................................1
CHMY 143 College Chemistry II ..............................................3
CHMY 144 College Chemistry II Lab .........................................1
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
CHMY 321 Organic Chemistry I ..............................................3
CHMY 322 Organic Chemistry I Lab .........................................2
NSCI 301 Essence of Science (CAT III) ...................................Meets CAT III Requirement
NSCI 450 Undergraduate Research I .........................................Meets CAT I Requirement
SPCH 141 Fundamentals of Speech (CAT I) ............................Meets CAT II Requirement
STAT 216 Introduction to Statistics (CAT II) ...........................Meets CAT II Requirement

Continued on next page
BIOLOGY -NO MINOR REQUIRED (CONTINUED)

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
- GEO 314 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)

- BIOL 140 Cell Biology ....................................................................... 4
- BIOL 141 Cell Biology Lab ............................................................... 1
- BIOL 217 Microbiology ..................................................................... 4
- BIOL 221 Botany I ........................................................................... 3
- BIOL 222 Botany I Lab ................................................................. 2
- BIOL 322 Botany II ........................................................................... 4
- BIOL 348 Zoology ............................................................................ 3
- BIOL 350 Zoology Lab ................................................................. 2
- BIOL 407 Freshwater Biology ....................................................... 4
- NSCI 301 Essence of Science ......................................................... 3

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 Administration – Minor Required**

<table>
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<th>MSU-Northern’s Required General Education Core</th>
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<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

**Total General Education Core Credits**: 33

**Required Courses**

- ACTG 201 Principles of Financial Accounting ................................................................. 3
- ACTG 202 Principles of Managerial Accounting ................................................................. 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 450 Business Senior Seminar ..................................................................................... 3
- ECNS 201 Principles of Microeconomics OR ECNS 202 Principles of Macroeconomics (CAT IV) ....... Meets CAT IV Requirement Advisor Approved Elective ........................................................................ 9

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

**Total credits required for degree** ......................................................................................... 120
## Associate of Science
### Program of Study in Business

<table>
<thead>
<tr>
<th>MSU-Northern's Required General Education Core</th>
<th>Credits</th>
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<tbody>
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<tr>
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<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, PSYC 315, SOCI 101, SOCI 241, SOSC 201</td>
</tr>
<tr>
<td><strong>Category V (CAT V)--Cultural Diversity</strong></td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NASL 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
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<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309 LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
</tr>
<tr>
<td><strong>Category VII (CAT VII) – Technology</strong></td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

**Total General Education Core Credits**: 33

ACTG 201 Principles of Financial Accounting ................................................................. 3
ACTG 202 Principles of Managerial Accounting ................................................................. 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
CAPP 151 MS Office .......................................................................................................... 3
ECNS 201 Principles of Microeconomics (CAT IV) ......................................................... 3
Elective ............................................................................................................................. 3

**Total minimum credits required for degree**: 60
Minors

Accounting

Required Courses
ACTG 201 Principles of Financial Accounting.......................................................................................................................... 3
ACTG 202 Principles of Managerial Accounting.......................................................................................................................... 3
ACTG 205 Computerized Accounting*........................................................................................................................................ 3
ACTG 301 Intermediate Accounting I*........................................................................................................................................ 3
ACTG 302 Intermediate Accounting II*........................................................................................................................................ 3
ACTG 401 Principles of Fed Taxation—Individuals......................................................................................................................... 3
ACTG 410 Cost/Mgmt Acct I**.................................................................................................................................................... 3
ACTG 441 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:
Category IV Social Sciences: ECNS 201 Principles of Microeconomics (CAT IV)......................................................................................... 3
Category IV Social Sciences: ECNS 202 Principles of Macroeconomics (CAT IV)......................................................................................... 3

Business Technology

Required Courses
ACTG 201 Principles of Financial Accounting.......................................................................................................................... 3
ACTG 202 Principles of Managerial Accounting.......................................................................................................................... 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
ECNS 201 Principles of Microeconomics (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 337 Consumer Behavior...................................................................................................................................................... 3
BUS 341 Advanced Marketing Application....................................................................................................................................... 3
BUS 436 Sales and Sales Management........................................................................................................................................... 3
SBM 338 Advertising and Promotion................................................................................................................................................. 3
TSS 222 Customer Service............................................................................................................................................................. 3
TSS 248 Retail/Distributorship......................................................................................................................................................... 3

Continued on next page
MARKETING: TECHNICAL SALES AND SERVICE (CONTINUED)

Suggested selective General Education courses:
Category IV Social Sciences: SOCI 101 Introduction to Sociology .................................................................3
Category IV Social Sciences: PSYC 100 Introduction to Psychology .................................................................3

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

Small Business Management

Required Courses
ACTG 201 Principles of Financial Accounting...........................................................3
ACTG 202 Principles of Managerial Accounting........................................................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 Advertising and 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 Applied Science
### Carpentry Technology

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRIT 108 Elementary Technical Writing (1)</td>
<td>3</td>
</tr>
<tr>
<td>M 111 Technical Mathematics (2)</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 141 Introduction to Speech OR SPCH 142 Interpersonal Communication (3)</td>
<td>3</td>
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**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BUS 120 Leadership</td>
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</tr>
<tr>
<td>CARP 120 Carpentry I</td>
<td>4</td>
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<tr>
<td>CARP 130 Carpentry II</td>
<td>3</td>
</tr>
<tr>
<td>CARP 131 Carpentry Level 2b</td>
<td>3</td>
</tr>
<tr>
<td>CARP 150 Carpentry Practicum</td>
<td>3</td>
</tr>
<tr>
<td>CARP 210 Introduction to Finish Carpentry</td>
<td>3</td>
</tr>
<tr>
<td>CARP 220 Interior Finishing</td>
<td>4</td>
</tr>
<tr>
<td>CARP 230 Advanced Roof, Floor, Wall, &amp; Stair Systems</td>
<td>4</td>
</tr>
<tr>
<td>CARP 240 Advanced Topics &amp; Commercial Applications</td>
<td>3</td>
</tr>
<tr>
<td>CARP 250 Carpentry Practicum II</td>
<td>3</td>
</tr>
<tr>
<td>DRFT 131 Technical Graphics</td>
<td>3</td>
</tr>
<tr>
<td>DRFT 156 Introduction to CAD</td>
<td>3</td>
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<tr>
<td>ELEC 133 Basic Wiring</td>
<td>5</td>
</tr>
<tr>
<td>IT 111 Industrial Safety/Waste Management</td>
<td>2</td>
</tr>
<tr>
<td>IT 115 Construction Technology &amp; Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>IT 125 Concrete Forms, Reinforcement &amp; Handling</td>
<td>5</td>
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<tr>
<td>IT 131 Metal Building Construction</td>
<td>1</td>
</tr>
<tr>
<td>IT 135 Basic Rigging</td>
<td>1</td>
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<tr>
<td>METL 140 Welding</td>
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</table>

Total credits required for degree .................................................. 68

(1) Meets Communications Requirement  
(2) Meets Computation Requirement  
(3) Meets Human Relations Requirement

**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.
Certificate of Applied Science

Carpentry Technology

Required Courses

- CARP 120 Carpentry I ......................................................................................................................... 4
- CARP 130 Carpentry II .......................................................................................................................... 3
- CARP 131 Carpentry Level 2b .................................................................................................................. 3
- CARP 150 Carpentry Practicum ............................................................................................................. 3
- DRFT 131 Technical Graphics .................................................................................................................. 3
- ELEC 133 Basic Wiring ............................................................................................................................. 5

General Education ..................................................................................................................................

- IT 111 Industrial Safety/Waste Management .......................................................................................... 2
- IT 115 Construction Technology & Fundamentals .................................................................................... 3
- M 111 Technical Mathematics .............................................................................................................. 3

Total credits required for certificate ........................................................................................................ 32
## COMMUNITY LEADERSHIP

### Bachelor of Arts

Community Leadership-Minor Required

<table>
<thead>
<tr>
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</tr>
<tr>
<td>Category IV (CAT IV)--Social Sciences/ History</td>
<td>6</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOSC 201</td>
</tr>
<tr>
<td>Category V (CAT V)--Cultural Diversity</td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NAS 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
</tr>
<tr>
<td>Category VI (CAT VI)--Humanities/Fine Arts</td>
<td>6</td>
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<tr>
<td>Category VII (CAT VII) – Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
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</table>

**Total General Education Core Credits**

33

### Required Courses

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BUS 215 Managerial Planning in Not-For-Profit Enterprises</td>
<td>3</td>
</tr>
<tr>
<td>BUS 445 Managing the Not-For-Profit Organization</td>
<td>3</td>
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<tr>
<td>CMSV 101 Introduction to Community Leadership</td>
<td>3</td>
</tr>
<tr>
<td>CMSV 260 Foundations of Non Profit Service</td>
<td>3</td>
</tr>
<tr>
<td>CMSV 301 Concepts in Community Leadership</td>
<td>3</td>
</tr>
<tr>
<td>CMSV 310 Grants</td>
<td>3</td>
</tr>
<tr>
<td>CMSV 350 Conflict Management</td>
<td>3</td>
</tr>
<tr>
<td>CMSV 355 Assessment and Design of Community Programs</td>
<td>3</td>
</tr>
<tr>
<td>CMSV 360 Evaluation of Community-Based Programs</td>
<td>3</td>
</tr>
<tr>
<td>CMSV 401 Seminar in Community Leadership</td>
<td>3</td>
</tr>
<tr>
<td>CMSV 498 Cooperative Education</td>
<td>6</td>
</tr>
<tr>
<td>PSYX 100 Introduction to Psychology</td>
<td>3</td>
</tr>
<tr>
<td>SOCI 201 Introduction to Sociology (CAT IV)</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 141 Fundamentals of Speech OR SPCH 142 Interpersonal Communication (CAT I)</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 240 Small Group/Organizational Communication</td>
<td>3</td>
</tr>
<tr>
<td>WRIT 338 Public Relations Writing</td>
<td>3</td>
</tr>
<tr>
<td>Electives in Social Science or Business</td>
<td>9</td>
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<tr>
<td>Electives</td>
<td>0 - 12</td>
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<tr>
<td>Minor</td>
<td>21-30</td>
</tr>
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</table>

Continued on next page
COMMUNITY LEADERSHIP - MINOR REQUIRED (CONTINUED)

NOTE: In addition to the coursework listed above, community leadership 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 Leadership majors should work with their faculty advisor to select the appropriate classes.

Total minimum credits required for degree: 120

Minor

Community Leadership

Required Courses
CMSV 101 Introduction to Community Leadership (CAT IV) ...................................................................................................................................3
CMSV 201 Volunteer Services Practicum OR CMSV 298 Cooperative Education .................................................................................................3
CMSV 260 Foundations of Non Profit Service ........................................................................................................................................3
SOSI 101 Introduction to Sociology (CAT IV) ........................................................................................................................................3

Choose one of the following 3 credit upper-level CMSV courses:
CMSV 301 Concepts of Community Leadership ........................................................................................................................................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:
SOCI 241 Introduction to Social Psychology (CAT IV) ........................................................................................................................................3
SOCI 315 Race, Ethnic & Gender Relations (CAT IV) ..................................................................................................................................3

Area Two:
PSYX 230 Developmental Psychology (CAT IV) ........................................................................................................................................3
PSYX 385 Psychology of 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
PSCI 210 Introduction to American Government (CAT IV) ....................................................................................................................3
PSCI 260 Introduction to State and Local Government .......................................................................................................................3

Total minimum credits required for minor: 24
COMPUTER INFORMATION SYSTEMS

Bachelor of Science

Computer Information Systems

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<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NAS 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
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<tr>
<td>Category VII (CAT VII) – Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
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Total General Education Core Credits 33

Required Courses
ACTG 201 Principles of Financial Accounting ............................................................ 3
CAPP 151 MS Office .................................................................................................................. 3
CAPP 158 MS Access ............................................................................................................... 3
CAPP 266 Advanced MS Excel Applications ........................................................................... 3
CIS 112 Web Site Development ............................................................................................ 3
CIS 115 Visual Basic Programming ...................................................................................... 3
CIS 155 Java Programming ................................................................................................... 3
CIS 235 Computer Hardware Support .................................................................................. 3
CIS 270 Systems Analysis and Design .................................................................................. 3
CIS 300 Operating Systems Introduction ............................................................................. 3
CIS 350 Advanced Java Programming ................................................................................. 3
CIS 410 Enterprise Resource Planning .............................................................................. 3
CIS 471 Information System Engineering .......................................................................... 3
M 121 College Algebra OR M 145 Math for the Liberal Arts ................................................... 3
WRIT 350 Technical Editing (CAT I) .................................................................................... 3

Take 24 credits from the list below:
CIS 355 Data Structures ........................................................................................................ 3
CIS 360 Bus Telecommunications & Networking ................................................................. 3
CIS 365 Software Engineering ............................................................................................. 3
CIS 371 Enterprise Databases Using Oracle .......................................................................... 3

Continued on next page
COMPUTER INFORMATION SYSTEMS (CONTINUED)
CIS 401 Interfacing ......................................................................................................................................................................................................3
CIS 440 Network Routing and Security ......................................................................................................................................................................3
CIS 455 E-commerce Programming ............................................................................................................................................................................3
CIS 498 Cooperative Education ...................................................................................................................................................................................3
Advisor Approved Electives .....................................................................................................................................................................................24
Total minimum credits required for degree .........................................................................................................................................................120

Minor

Computer Information Systems

Required Courses
CAPP 158 MS Access ............................................................................................................................................................................................... 3
CAPP 266 Advanced MS Excel Applications ........................................................................................................................................................... 3
CIS 115 Visual Basic Programming ......................................................................................................................................................................... 3
CIS 155 Java Programming ...................................................................................................................................................................................... 3
CIS 235 Computer Hardware Support ...................................................................................................................................................................... 3
CIS 350 Advanced Java Programming ..................................................................................................................................................................... 3
CIS 360 Business Telecommunications & Networking ............................................................................................................................................ 3
CIS 410 Enterprise Resource Planning ..................................................................................................................................................................... 3
Choose six (6) credits from the following:
CIS 300 Operating Systems Introduction ................................................................................................................................................................. 3
CIS 305 Digital Systems ........................................................................................................................................................................................... 3
CIS 355 Data Structures ............................................................................................................................................................................................ 3
CIS 371 Enterprise Database Using Oracle .............................................................................................................................................................. 3
CIS 440 Network Routing and Security .................................................................................................................................................................... 3
CIS 455 E-Commerce Programming ........................................................................................................................................................................ 3
Total minimum credits required for minor ......................................................................................................................................................... 30
Associate of Applied Science

Computer Information Systems

Required Courses
- ACTG 201 Principles of Financial Accounting .............................................. 3
- CAPP 120 Introduction to Computers ................................................................. 3
- CAPP 151 MS Office .......................................................................................... 3
- CAPP 158 MS Access ......................................................................................... 3
- CAPP 266 Advanced MS Excel Applications .................................................. 3
- CIS 112 Web Site Development ......................................................................... 3
- CIS 115 Visual Basic Programming .................................................................... 3
- CIS 155 Java Programming ............................................................................... 3
- CIS 235 Computer Hardware Support ............................................................... 3
- CIS 270 Systems Analysis and Design ............................................................... 3
- CPET 260 Networking I ..................................................................................... 3
- EET 210 Embedded Controller I ......................................................................... 3

Take one of the following clusters: (18-19 credits):

Business Cluster:
- 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
- ACTG 202 Principles of Managerial Accounting ........................................ 3

Drafting Cluster:
- 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

Electronics Engineering Cluster:
- EET 101 Introduction to Electricity/Electronics ............................................. 5
- EET 103 Electronic Fundamentals I ............................................................... 5
- EET 205 Communications Fundamentals ....................................................... 4
- EET 207 Digital Fundamentals ...................................................................... 5

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

(1) Meets Communications Requirement
(2) Meets Computation Requirement
(3) Meets Human Relations Requirement
DIESEL TECHNOLOGY

Bachelor of Science

Diesel Technology

<table>
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</tr>
<tr>
<td>Students must take one science course that includes a lab. See course descriptions to verify this requirement.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category IV (CAT IV)--Social Sciences/History</td>
<td>6</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HISTA 101, HISTA 102, HISTR 101, HISTR 102, HISTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOSC 201</td>
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<td>3</td>
<td>AOT 301, APAP 120, APAP 151, CIS 320, IT 100</td>
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</table>

Total General Education Core Credits 33

PLEASE NOTE: In addition to WRIT 350 and TSCI 304, four (4) credits of the General Education Core must be at the upper division level.

Required Courses

ATDI 134 Auto/Diesel Electrical/Electronic System I ................................................................. 4
ATDI 257 Automation ..................................................................................................................... 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 ........................................................................................................... 3
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 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 498 Cooperative Education............................................................................................... 6

Continued on next page
BACHELOR OF SCIENCE IN DIESEL TECHNOLOGY (CONTINUED)

M 145 Math for the Liberal Arts CAT II ............................................................................................................................ Meets CAT II Requirement
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) ......................................................................................................................... Meets CAT III Requirement
WRIT 101 College Writing I (CAT I) ................................................................................................................................... Meets CAT I Requirement
WRIT 350 Technical Editing (CAT I) ....................................................................................................................................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>
<thead>
<tr>
<th>MSU-Northern’s Required General Education Core</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I (CAT I)--Communication</td>
<td>6</td>
<td>WRIT 101 AND SPCH 141 OR 142 OR WRIT 350</td>
</tr>
<tr>
<td>Category II (CAT II)--Mathematics</td>
<td>3</td>
<td>M 121 or higher content level math</td>
</tr>
<tr>
<td>Category III (CAT III)--Natural Sciences</td>
<td>6</td>
<td>AAG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
</tr>
<tr>
<td>Students must take one science course that includes a lab. See course descriptions to verify this requirement.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category IV (CAT IV)--Social Sciences/ History</td>
<td>6</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTTR 101, HSTTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOCI 201</td>
</tr>
<tr>
<td>Category V (CAT V)--Cultural Diversity</td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NAS 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
</tr>
<tr>
<td>Category VI (CAT VI)--Humanities/Fine Arts</td>
<td>6</td>
<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309, LIT 382, ENGL 311, LIT 363, LIT 372, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
</tr>
<tr>
<td>Category VII (CAT VII) – Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
<tr>
<td><strong>Total General Education Core Credits</strong></td>
<td>33</td>
<td></td>
</tr>
</tbody>
</table>

**PLEASE NOTE:** In addition to WRIT 350 and TSCI 304, four (4) credits of the General Education Core must be at the upper division level.

### Required Courses

- 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 ..................................................................................................... 3
- 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 434 Current Model Year Technology (Capstone) ........................................................... 3
- DIES 440 Advanced Fuel Systems .......................................................................................... 4
- DIES 450 Diagnosis of Power Shifts & Heavy Duty Automatics ........................................... 4
- IT 111 Industrial Safety & Waste Management .................................................................... 2
- M 145 Math for the 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

Continued on next page
DIESEL TECHNOLOGY: FIELD MAINTENANCE (CONTINUED)

- 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) ...................................................................... Meets CAT III Requirement
- WRIT 101 College Writing I (CAT I) ................................................................................. Meets CAT I Requirement
- WRIT 350 Technical Editing (CAT I) ............................................................................... Meets CAT I Requirement
- Advisor Approved Elective ............................................................................................... 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 Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRIT 108 Elementary Technical Writing (1)</td>
<td>3</td>
</tr>
<tr>
<td>M 111 OR M 145 OR M 121 (2)</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 141 Fundamentals of Speech OR SPCH 142 Interpersonal Communication (3)</td>
<td>3</td>
</tr>
</tbody>
</table>

### Required Courses

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Credits</th>
</tr>
</thead>
<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>CAPP 120 Introduction to Computers</td>
<td>3</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>3</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>
</tr>
<tr>
<td>METL 140 Introduction to Welding and Cutting</td>
<td>3</td>
</tr>
</tbody>
</table>

Total minimum credits required for degree: 63

(1) Meets Communications Requirement
(2) Meets Computation Requirement
(3) Meets Human Relations Requirement

**PLEASE NOTE:** Students enrolling in this program may pay between $15 - $40/semester in course fees. These fees are in addition to tuition and other mandatory fees.
## DRAFTING (DESIGN) TECHNOLOGY

**Bachelor of Science**

**Design Drafting Technology**

<table>
<thead>
<tr>
<th>MSU-Northern's Required General Education Core</th>
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</tr>
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<tbody>
<tr>
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<td>6</td>
<td>WRIT 101 AND SPCH 141 OR 142 OR WRIT 350</td>
</tr>
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</tr>
<tr>
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</tr>
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</tr>
<tr>
<td><strong>Category V (CAT V)--Cultural Diversity</strong></td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NASL 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
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<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309, LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
</tr>
<tr>
<td><strong>Category VII (CAT VII) – Technology</strong></td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

**Total General Education Core Credits**: 33

**Required Courses**

- CAPP 151 MS Office .................................................................................................................. Meets CAT VII Requirement
- CAPP 158 MS Access .................................................................................................................. 3
- CET 173 Architectural Construction & Materials ........................................................................... 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 346 CAD Management ........................................................................................................ 3
- DRFT 356 CAD Presentation ........................................................................................................ 3
- DRFT 409 Industrial Product Design ......................................................................................... 3
- DRFT 456 CAD Presentation II .................................................................................................... 3
- DRFT 457 Architectural CAD ...................................................................................................... 3
- M 112 Trigonometry & Complex Numbers .................................................................................. 2
- M 121 College Algebra (CAT II) .................................................................................................. 3
- METL 155 Machining Processes ................................................................................................... 3
- MFGT 200 Manufacturing Processes ......................................................................................... 3
- MFGT 254 CAD/CAM Applications ............................................................................................. 3
- MFGT 342 CAD/CAM II .............................................................................................................. 3
- MFGT 427 Quality Assurance .................................................................................................... 3
- PHYS 114 Fundamentals of Physical Science (CAT III) ............................................................... Meets CAT III Requirement
- SPCH 141 Fundamentals of Speech (CAT I) ................................................................................ Meets CAT I Requirement

Continued on next page
## Design Drafting Technology (Continued)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRIT 101 College Writing I (CAT I)</td>
<td></td>
<td>Meets CAT I Requirement</td>
</tr>
<tr>
<td>WRIT 350 Technical Editing (CAT I)</td>
<td></td>
<td>Meets CAT I Requirement</td>
</tr>
<tr>
<td>Advisor Approved Electives (must include nine (9) credits of 300-400 level courses)</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Selectives</td>
<td>3</td>
<td></td>
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</tbody>
</table>

Choose one of the following tracks:

### Design Drafting Track

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CET 181 Surveying</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CET 221 Engineering Mechanics I</td>
<td>3</td>
<td>Meets CAT III Requirement</td>
</tr>
<tr>
<td>PHYS 231 Fundamentals of Physics (CAT III)</td>
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<td>Meets CAT III Requirement</td>
</tr>
<tr>
<td>PHYS 234 Fundamentals of Physics Lab (CAT III)</td>
<td>3</td>
<td></td>
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</table>

### Drafting Technology Track

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT III Natural Science</td>
<td>4</td>
<td>Meets CAT III Requirement</td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Selectives</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Choose 6 credits from the following selectives:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 110 Creative Problem Solving</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BUS 120 Leadership</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CAPP 266 Advanced MS Excel Applications</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CET 220 Construction, Management, and Bid Estimating</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CIS 115 Visual Basic Programming</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TSS 222 Customer Service</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TSS 246 Technical Sales and Service</td>
<td>3</td>
<td></td>
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</tbody>
</table>

**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.
2009-2010 Catalog

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 316 Industrial CAD Modeling ................................................3
DRFT 356 CAD Presentation ............................................................3
DRFT 409 Industrial Product Design ................................................3
DRFT 428 Technical Illustration ......................................................3
DRFT 457 Architectural CAD ..........................................................3
MFGT 341 CAD/CAM Applications .................................................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

Credits
WRIT 108 Elementary Technical Writing OR WRIT 101 College Writing I (1) .....................................................................................3
M 121 College Algebra (2) ....................................................................3
SPCH 141 Fundamentals of Speech OR SPCH 142 Interpersonal Communication (3) .............................................................3

Required Courses
CAPP 151 MS Office .............................................................................3
CAPP 158 MS Access ...........................................................................3
CET 173 Architectural Construction & Materials ................................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
M 112 Trigonometry & Complex Numbers ......................................2
METL 155 Machining Processes .......................................................3
MFGT 200 Manufacturing Processes .................................................3
PHYS 114 Foundations of Physical Science .....................................3

Choose one of the following tracks:
Design Drafting Track
CET 181 Surveying .............................................................................3
CET 221 Engineering Mechanics I ....................................................3
PHYS 231 Fundamentals of Physics ..................................................3
PHYS 234 Fundamentals of Physics Lab ............................................3
Elective .............................................................................................3

Continued on next page
(AAS DESIGN DRAFTING TECHNOLOGY CONTINUED)

Drafting Technology Track

Electives .......................................................................................................................................................................................................................................................... 7

Choose 6 credits from the following selectives:

- BUS 110 Creative Problem Solving ................................................................................................................................. 3
- BUS 120 Leadership ................................................................................................................................................................. 3
- CAPP 266 Advanced MS Excel Applications ......................................................................................................................... 3
- CET 220 Construction, Management, and Bid Estimating ........................................................................................................... 3
- CIS 115 Visual Basic Programming ............................................................................................................................................... 3
- TSS 222 Customer Service ......................................................................................................................................................... 3
- TSS 246 Technical Sales and Service ........................................................................................................................................... 3

Total Selectives ....................................................................................................................................................................................... 6

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

(1) Meets Communications Requirement
(2) Meets Computation Requirement
(3) Meets Human Relations Requirement

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.

EDUCATION (TEACHING)

Professional Education

Core Requirements

Upper division Elementary Education Core Requirements must be taken in a block. Please see below.

Elementary Education Core Requirements: Credits
- 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 ............................................................................................................ 2
- EDUC 334 Teaching the Integrated Language Arts ....................................................................................................................... 3
- EDUC 335 Fundamental and Corrective Strategies in the Elementary Reading Program .......................................................... 3
- EDUC 336 Integrated Field Experience ........................................................................................................................................ 2
- EDUC 351 Diversity and Technology in the Classroom .................................................................................................................. 3
- EDUC 353 Health Enhancement for Elementary Education ........................................................................................................... 3
- EDUC 376 Assessment in Education ................................................................................................................................................. 3
- EDUC 380 Classroom Environment and Management ................................................................................................................... 3
- EDUC 430 Integrating Indian Education for All Across the Curriculum .......................................................................................... 2
- EDUC 448 Reading Materials for the Elementary Child .................................................................................................................... 3
- EDUC 455 Advanced Practicum in Education ............................................................................................................................... 3
- HPE 235 Principles of Health & Wellness ........................................................................................................................................... 3
- EDUC 400 Elementary Teaching Practicum and Seminar ........................................................................................................... 12
- OR
- EDUC 475 Elementary and Secondary Teaching Practicum and Seminar* .................................................................................. 12

TOTAL 63
EDUCATION CORE REQUIREMENTS CONTINUED:

Secondary Education Professional Education Core Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPY 215 Introduction 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 321 Integrating Technology into Education</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 376 Assessment in Education</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 445 Teaching Reading, Writing &amp; Critical Thinking Across the Curriculum</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 455 Advanced Practicum in Education</td>
<td>3</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>PSYX 230 Developmental Psychology (CAT IV)</td>
<td>3</td>
</tr>
</tbody>
</table>

TOTAL 39

VOED 350 Principles of Industrial/Technology Education, 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.
Bachelor of Science in Education

Elementary Education K-8

Refer to transfer guide or articulation agreement if you are a transfer student.

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<thead>
<tr>
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<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOFC 201</td>
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<td>Category V (CAT V)--Cultural Diversity</td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NASL 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
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</tr>
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<td>Total General Education Core Credits</td>
<td>33</td>
<td></td>
</tr>
</tbody>
</table>

Prerequisites for admission to Elementary Education Program refer to page 28.

Required Courses

BIOL 151 Essentials of Biology (CAT III Lab Science) OR
BIOL 204 Essentials of Anat. & Phys. (HPE Minors) (CAT III Lab Science) ................................................................. Meets CAT III Requirement
CIS 320 Computers in Education (CAT VII) ................................................................................................................. Meets CAT VII Requirement
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* .................................................................2
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* OR EDUC 475 Elementary and Secondary Teaching Practicum and Seminar*........12
EDUC 430 Integrating Indian Education for All Across the Curriculum .................................................................2
EDUC 448 Reading Materials for the Elementary Child .................................................................................2
EDUC 455 Advanced Practicum in Education* .........................................................................................3
HSTA 255 Montana History (CAT IV) .................................................................................................4
Meets CAT IV Requirement
HPE 235 Principles of Health & Wellness .................................................................................................3
LIT 110 Introduction to Literature (CAT VI) .................................................................................................3

Continued on next page
ELEMENTARY EDUCATION K-8 (CONTINUED)

M 121 College Algebra (CAT II) .............................................................................................................................................................................................. Meets CAT II Requirement
M 130 Mathematics for Elementary Teachers I .......................................................................................................................................................... 3
NAS 310 Native Cultures of North America OR NAS 330 American Indian Oral Tradition (CAT V) ........................................................................................................................................... Meets CAT V Requirement
PHYS 114 Foundations of Physical Science (CAT III) ......................................................................................................................... Meets CAT III Requirement
PSCI 210 Introduction to American Government (CAT IV) ........................................................................................................................ Meets CAT IV Requirement
PSYX 230 Developmental Psychology (CAT IV) ............................................................................................................................................... 3
SPCH 142 Interpersonal Communications (CAT I) ............................................................................................................................................... Meets CAT I Requirement
WRIT 101 College Writing I (CAT I) .............................................................................................................................................................. Meets CAT I Requirement
Major/Minor/Electives .............................................................................................................................................................................................. 29

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

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

### Health and Physical Education (K-12)

Refer to transfer guide or articulation agreement if you are a transfer student.

<table>
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<th>MSU-Northern’s Required General Education Core</th>
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<td>6</td>
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</tr>
<tr>
<td>Category IV (CAT IV)--Social Sciences/ History</td>
<td>6</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOSC 201</td>
</tr>
<tr>
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<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NAS 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
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<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309 LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
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<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

**Total General Education Core Credits** 33

Prerequisites for admission to Secondary Education Health and Physical Education (K-12) Program refer to page 28.

### Required Courses

- **BIOL 204 Essentials of Anatomy and Physiology OR BIOL 241 Anatomy and Physiology I (CAT III)** – Meets CAT III Requirement
- **CIS 320 Computers in Education (CAT VII)** – Meets CAT VII Requirement
- **EDPY 215 Introduction to Educational Psychology** – Meets CAT VII Requirement
- **EDPY 350 Education and Psychology of Exceptional Children** – Meets CAT VII Requirement
- **EDUC 100 Foundations of Education** – Meets CAT VII Requirement
- **EDUC 101 Introduction to Curriculum Planning and Practice** – Meets CAT VII Requirement
- **EDUC 339 Secondary Field Experience** – Meets CAT VII Requirement
- **EDUC 351 Diversity and Technology in the Classroom** – Meets CAT VII Requirement
- **EDUC 353 Health Enhancement for Elementary Education** – Meets CAT VII Requirement
- **HPE 376 Tests & Measurements in Health and Physical Education** – Meets CAT VII Requirement
- **HPE 380 Classroom Environment and Management** – Meets CAT VII Requirement
- **HPE 445 Teaching Reading, Writing & Critical Thinking Skills Across Curriculum** – Meets CAT VII Requirement
- **HPE 455 Advanced Practicum in Education** – Meets CAT VII Requirement
- **HSTA 255 Montana History (CAT IV)** – Meets CAT IV Requirement
- **HPE 233 Foundations of Health and Physical Education** – Meets CAT IV Requirement
- **HPE 235 Principles of Health & Wellness** – Meets CAT IV Requirement
- **HPE 274 Personal and Community Health** – Meets CAT IV Requirement
- **HPE 300 Physical Education in Elementary Schools** – Meets CAT IV Requirement
- **HPE 303 Methods & Materials in Health Education** – Meets CAT IV Requirement
- **HPE 306 Adapted Physical Education** – Meets CAT IV Requirement
- **HPE 325 Organization & Administration of Health & Physical Education** – Meets CAT IV Requirement

Continued on next page
HEALTH AND PHYSICAL EDUCATION K-12 (CONTINUED)

HPE 330 Lifetime Activities .................................................................................................................................................3
HPE 357 Kinesiology ........................................................................................................................................................................3
HPE 358 Physiology of Exercise.........................................................................................................................................................3
M 121 College Algebra (CAT II) ..................................................................................................................................................3
Meets CAT II Requirement
PSYX 230 Developmental Psychology (CAT IV) .........................................................................................................................3
Meets CAT IV Requirement
SPECH 142 Interpersonal Communication (CAT I) .......................................................................................................................3
Meets CAT I Requirement
WRIT 101 College Writing I (CAT I) ................................................................................................................................................3
Advisor Approved Electives ..........................................................................................................................................................4

*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 Aquatic Exercise ..........................................................................................................................................................1
HPEA 159 Selected Topics in Aquatic Skills .......................................................................................................................................1

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

HPE 236 Intramural and Recreational Activities ..........................................................................................................................3
HPE 247 Techniques of Officiating ..................................................................................................................................................2
HPE 248 Foundations of Coaching ..................................................................................................................................................3
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 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

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 Trimmastics .....................................................................................................................................................................1
HEALTH AND PHYSICAL EDUCATION K-12 (CONTINUED)
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 VI) ..........................................................................................................................3
ART 115 Ceramics (CAT VI) .........................................................................................................................................3
ART 120 Drawing I (CAT VI) .......................................................................................................................................3
ART 150 Two Dimensional Design I (CAT VI) ............................................................................................................3
ART 254 Painting 1 OR ART 256 Watercolor Painting 1 ..........................................................................................3
ART 361 Art History of Western Civilization I OR ART 362 Art History of Western Civilization II (CAT VI) .................3
EDUC 259 Field Experience .......................................................................................................................................1
EDUC 310 Methods of Teaching Integrated Creative Arts ............................................................................................2

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 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 - $15/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 Fundamental and Corrective Strategies in the Elementary Reading Program ................................................................................ 3
EDUC 336 Integrated Field Experience ........................................................................................................................................ 1
EDUC 430 Integrating Indian Education for All Across the Curriculum .......................................................................................... 2
EDUC 440 Assessment in the Remedial Reading Program .............................................................................................................. 2
EDUC 445 Teaching Reading/Writing/Critical Thinking Across the Curriculum .................................................................................. 2
EDUC 448 Reading Materials for the Elementary Child ................................................................................................................ 2
ENGL 337 English Grammar ......................................................................................................................................................... 3
ENGL 380 Linguistics ..................................................................................................................................................................... 3
LIT 382 Literature for Children and Adolescents (CAT VI) ................................................................................................................. 3
NAS 330 American Indian Oral Tradition (CAT V) ........................................................................................................................ 3

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

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 ............................................................................................................................ 3
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
## EDUCATION- SECONDARY (5-12)

### Bachelor of Science in Education

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

Refer to transfer guide or articulation agreement if you are a transfer student.

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<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NAS 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
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<td><strong>33</strong></td>
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</table>

Prerequisites for Admission to Secondary Education English 5-12 Program refer to page 28.

### Required Courses

- CIS 320 Computers in Education (CAT VII) .......................................................... Meets CAT VII Requirement
- 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 OR ENGL 313 Methods of Teaching English .......................................................... 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 311 Creative Writing (CAT VI) ..................................................................... Meets CAT VI Requirement
- ENGL 380 Linguistics ............................................................................................... 3
- LIT 110 Introduction to Literature OR LIT 230 World Lit Survey (CAT VI) ........... Meets CAT VI Requirement
- LIT 300 Literary Criticism ....................................................................................... 3
- LIT 327 Shakespeare (CAT VI) ................................................................................... 3
- LIT 382 Literature for Children and Adolescents (CAT VI) ..................................... 3
- HSTR 101 Western Civilization I OR HSTR 102 Western Civilization II (CAT IV) .................................................................................................................................................................................................................................................. 3
- HPE 235 Principles of Health and Wellness ............................................................ 3
- NASL 120 Native American Language I (3 crs) OR SPNS 101 Elementary Spanish I (4 crs) (CAT V) ................................................................. 6-8

Continued on next page
ENGLISH 5-12 (TEACHING) (CONTINUED)

NASL 331 American Indian Literature OR NAS 330 American Indian Oral Tradition (CAT V) ..................................................................................................................................................3
PSYX 230 Developmental Psychology (CAT IV) ........................................................................................................................................................................................................3
SPCH 141 Fundamentals of Speech OR SPCH 142 Interpersonal Communications (CAT I) ..................................................................................................................................................3
WRIT 101 College Writing I (CAT I) ........................................................................................................................................................................................................3

Choose (3) three courses from the following:
LIT 210 American Literature I (CAT VI) ........................................................................................................................................................................................................3
LIT 211 American Literature II (CAT VI) .......................................................................................................................................................................................................3
LIT 223 British Literature I (CAT VI) .......................................................................................................................................................................................................3
LIT 224 British Literature II (CAT VI) .......................................................................................................................................................................................................3

Choose (2) two courses from the following (at least one at the 400 level):
ENGL 360 Dramatic Literature ........................................................................................................................................................................................................3
LIT 363 Modern Poetry (CAT VI) ........................................................................................................................................................................................................3
LIT 435 Development of the Novel ........................................................................................................................................................................................................3
LIT 463 Studies in Contemporary Literature ..................................................................................................................................................................................................3

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

Total minimum credits required for degree.......................................................................................................................................................................................................128
Bachelor of Science in Education
General Science 5-12 (Teaching) - No Minor Required

Refer to transfer guide or articulation agreement if you are a transfer student.

GENERAL SCIENCE 5-12 (TEACHING)

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<tr>
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<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

Total General Education Core Credits: 33

Prerequisites for Admission to Secondary Education General Science 5-12 Program refer to page 28.

Required Courses:

- BIOL 140 Cell Biology
- BIOL 141 Cell Biology Lab
- BIOL 221 Botany I
- BIOL 222 Botany I Lab
- BIOL 314 General Ecology
- BIOL 348 Zoology
- BIOL 350 Zoology Lab
- BIOL 425 Methods of Teaching Secondary Science OR EDUC 425 Methods of Teaching Secondary Science
- CHMY 141 College Chemistry I
- CHMY 142 College Chemistry I Lab
- CHMY 143 College Chemistry II
- CHMY 144 College Chemistry II Lab
- CIS 320 Computers in Education (CAT VII)
- EDPY 215 Introduction to Education Psychology
- EDPY 350 Education and Psychology Exceptional Children
- EDUC 100 Foundations of Education
- EDUC 300 Introduction to Curriculum Planning and Practice
- EDUC 321 Integrating Technology into Education
- EDUC 376 Assessment in Education
- EDUC 445 Teaching Reading, Writing & Critical Thinking Across the Curriculum
- EDUC 450 Secondary Teaching Practicum and Seminar
- EDUC 455 Advanced Practicum in Education
### GENERAL SCIENCE 5-12 (TEACHING) (CONTINUED)

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<td>GEO 101</td>
<td>Introduction to Physical Geology</td>
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<tr>
<td>GEO 102</td>
<td>Introduction to Physical Geology Lab</td>
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<tr>
<td>GEO 328</td>
<td>General Hydrology</td>
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<tr>
<td>GPHY 111</td>
<td>Introduction to Physical Geography</td>
<td>4</td>
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<tr>
<td>HPE 235</td>
<td>Principles of Health and Wellness</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 231</td>
<td>Fundamentals of Physics I</td>
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<tr>
<td>PHYS 232</td>
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<td>PSYX 230</td>
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<td>SPCH 141</td>
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Choose six (6) credits from the following:

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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOL 241</td>
<td>Anatomy &amp; Physiology I</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 242</td>
<td>Anatomy &amp; Physiology II</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 322</td>
<td>Botany II</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 324</td>
<td>Entomology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 334</td>
<td>Ornithology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 406</td>
<td>Molecular Biology Techniques</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 407</td>
<td>Freshwater Biology</td>
<td>4</td>
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<tr>
<td>BIOL 410</td>
<td>Field Biology Methods</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 460</td>
<td>Advanced Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>GEO 314</td>
<td>Introduction to Paleontology</td>
<td>3</td>
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<tr>
<td>NSCI 450</td>
<td>Undergraduate Research I</td>
<td>3</td>
</tr>
<tr>
<td>NSCI 451</td>
<td>Undergraduate Research II</td>
<td>3</td>
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</tbody>
</table>

**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 in Education**  
Industrial Technology 5-12 (Teaching)

Refer to transfer guide or articulation agreement if you are a transfer student.

<table>
<thead>
<tr>
<th>MSU-Northern’s Required General Education Core</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I (CAT I)--Communication</td>
<td>6</td>
<td>WRIT 101 AND SPCH 141 OR 142 OR WRIT 350</td>
</tr>
<tr>
<td>Category II (CAT II)--Mathematics</td>
<td>3</td>
<td>M 145 or higher content level math</td>
</tr>
<tr>
<td>Category III (CAT III)--Natural Sciences</td>
<td>6</td>
<td>AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
</tr>
<tr>
<td>Category IV (CAT IV)--Social Sciences/ History</td>
<td>6</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOSCI 201</td>
</tr>
<tr>
<td>Category V (CAT V)--Cultural Diversity</td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NASL 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
</tr>
<tr>
<td>Category VI (CAT VI)--Humanities/Fine Arts</td>
<td>6</td>
<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309, LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
</tr>
<tr>
<td>Category VII (CAT VII) – Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

**Total General Education Core Credits** 33

Prerequisites for Admission to Secondary Education Industrial Technology 5-12 Program refer to page 28.

**Required Courses**

- AUTO 128 Engines................................................................................................................................. 5
- CIS 308 Industrial Electronics ................................................................................................................ 4
- CIS 320 Computers in Education ............................................................................................................. 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
- HPE 235 Principles of Health & Wellness ................................................................................................ 3
- IT 100 Introduction to Technology (CAT VII).......................................................................................... Meet CAT VII Requirement
- IT 109 Introduction to Woodworking ........................................................................................................ 3
- IT 130 Construction Technology ............................................................................................................ 3
- IT 209 Furniture & Cabinetmaking .......................................................................................................... 3
- M 145 Math for the Liberal Arts (CAT II) OR M 121 College Algebra (CAT II) .............................................. Meet CAT II Requirement
- METL 140 Introduction to Welding and Cutting ....................................................................................... 3
- METL 155 Machining Processes ............................................................................................................... 3

Continued on next page
INDUSTRIAL TECHNOLOGY 5-12 (TEACHING) (CONTINUED)

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>MFGT 200 Manufacturing Processes &amp; Materials</td>
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<tr>
<td>PSYX 230 Developmental Psychology (CAT IV)</td>
<td>Meets CAT IV Requirement</td>
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<tr>
<td>VOED 350 Principles of Industrial/Technology Education</td>
<td>3</td>
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<tr>
<td>VOED 360 Analysis &amp; Prep Lab Management</td>
<td>3</td>
</tr>
<tr>
<td>VOED 370 Methods of Teaching Industrial/Technical Education</td>
<td>3</td>
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<tr>
<td>Technical Endorsement (see advisor for more information)</td>
<td>10</td>
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<tr>
<td>Electives</td>
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</table>

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

Mathematics (5-12) - Minor Required (Teaching)

Refer to transfer guide or articulation agreement if you are a transfer student.

<table>
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<tr>
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<td>Category II (CAT II)--Mathematics</td>
<td>3</td>
<td>M 121 or higher content level math</td>
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<tr>
<td>Category III (CAT III)--Natural Sciences</td>
<td>6</td>
<td>AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY, 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
</tr>
<tr>
<td>Students must take one science course that includes a lab. See course descriptions to verify this requirement.</td>
<td></td>
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</tr>
<tr>
<td>Category IV (CAT IV)--Social Sciences/History</td>
<td>6</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOC 201</td>
</tr>
<tr>
<td>Category V (CAT V)--Cultural Diversity</td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NAS 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
</tr>
<tr>
<td>Category VI (CAT VI)--Humanities/Fine Arts</td>
<td>6</td>
<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 351, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309 LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 307, HUM 210, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
</tr>
<tr>
<td>Category VII (CAT VII) – Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
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</table>

Total General Education Core Credits 33

Prerequisites for Admission to Secondary Education Industrial Technology 5-12 Program refer to page 28.

Required Courses
EDPY 215 Introduction to Educational Psychology ................................................................. 3
EDPY 350 The 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 376 Assessment in Education ........................................................................................... 3
EDUC 445 Teaching Reading, Writing, and Critical Thinking Skills Across the Curriculum ........... 2
EDUC 450 Secondary Teaching Practicum and Seminar .............................................................. 12
EDUC 455 Advanced Practicum in Education ............................................................................. 3
HPE 235 Principles of Health & Wellness .................................................................................. 3
M 121 College Algebra (CAT II) .................................................................................................
M 112 Trigonometry & Complex Numbers .............................................................................. 2
M 171 Calculus I ....................................................................................................................... 3
M 172 Calculus II ..................................................................................................................... 5
M 327 Methods of Teaching Secondary Math .......................................................................... 3
M 329 Modern Geometry ......................................................................................................... 3
M 301 Mathematics Technology for Teachers ........................................................................... 3
M 333 Linear Algebra ............................................................................................................... 3
M 351 Algebraic Structures I ..................................................................................................... 3
PSYX 230 Developmental Psychology (CAT IV) ................................................................... 3
SPCH 142 Interpersonal Communication (CAT I) ...................................................................
MATHEMATICS 5-12 (TEACHING) (CONTINUED)

STAT 217 Intermediate Statistical Concepts ............................................................................................................................................................ 4
WRIT 101 College Writing I (CAT I) ............................................................................................................................................................ Meets CAT I Requirement
Minor in Secondary Education (5-12) or (K-12) and Electives ............................................................................................................................ 26

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

Social Science-Broadfield 5-12 (Teaching) - No Minor Required

Refer to transfer guide or articulation agreement if you are a transfer student.

<table>
<thead>
<tr>
<th>MSU-Northern’s Required General Education Core</th>
<th>Credits</th>
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</tr>
<tr>
<td>Category III (CAT III)--Natural Sciences</td>
<td>6</td>
<td>AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
</tr>
<tr>
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<td>6</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOCI 304</td>
</tr>
<tr>
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<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NAS 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
</tr>
<tr>
<td>Category VI (CAT VI)--Humanities/Fine Arts</td>
<td>6</td>
<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309 LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
</tr>
<tr>
<td>Category VII (CAT VII) – Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

Total General Education Core Credits 33

Prerequisites for Admission to Secondary Education Social Science-Broadfield 5-12 Program refer to page 28.

Required Courses

ART 361 Art History of Western Civilization I OR ART 362 Art History of Western Civilization II (CAT VI) ........Meets CAT VI Requirement
CIS 320 Computers in Education (CAT VII) ........................................................................................................3
EDPY 215 Introduction to Educational Psychology .......................................................... Meets CAT VII Requirement
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
HSTA 101 American History I (CAT IV) ..............................................................................3
HSTA 102 American History II (CAT IV) .............................................................................3
HSTR 101 Western Civilization I (CAT IV) ........................................................................3
HSTR 102 Western Civilization II (CAT IV) .......................................................................3
HSTA 255 Montana History (CAT V) ................................................................................3
HIST 449 Historiography ..................................................................................................3
HPE 235 Principles of Health & Wellness .........................................................................3
LIT 110 Introduction to Literature OR LIT 230 World Lit Survey (CAT VI) ................12

Continued on next page
SOCIAL SCIENCE - BROADFIELD 5-12 (TEACHING) (CONTINUED)

PSCI 210 Introduction to American Government (CAT IV) .......................................................... 3  
PSCI 260 Introduction to State and Local Government .................................................................... 3  
PSCI 250 Introduction to Political Theory (CAT IV) ........................................................................ 3  
PSCI 471 American Constitutional Law (CAT IV) ............................................................................. 3  
POL 344 International Relations ......................................................................................................... 3  
PSYX 230 Developmental Psychology (CAT IV) ................................................................................. 3  
SOSC 325 Methods of Teaching History and Social Science OR EDUC 325 Methods of Teaching History and Social Science.................. 3  
WRIT 101 College Writing I (CAT I)......................................................................................................... 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  
ECNS, PSYX, SOCI

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

Minors

English 5-12 (Teaching)

Required Courses
LIT 230 World Lit Survey (CAT VI) .................................................................................................... 3  
LIT 300 Literary Criticism .................................................................................................................. 3  
LIT 382 Literature for Children and Adolescents (CAT VI) .............................................................. 3  
ENGL 313 Methods of Teaching English OR EDUC 313 Methods of Teaching English ................. 3  
ENGL 380 Linguistics .......................................................................................................................... 3

Choose three courses from the following:
LIT 210 American Literature I (CAT VI) ............................................................................................. 3  
LIT 211 American Literature II (CAT VI) ............................................................................................ 3  
LIT 223 British Literature I (CAT VI) .................................................................................................. 3  
LIT 224 British Literature II (CAT VI) ............................................................................................... 3

Total minimum credits required for minor.......................................................................................... 24
# Associate of Applied Science

## Electrical Technology

<table>
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<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>WRIT 108 Elementary Technical Writing OR WRIT 101 College Writing I (1)</td>
<td>3</td>
</tr>
<tr>
<td>M 111 OR M 145 OR M 121 (2)</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 141 Fundamentals of Speech OR SPCH 142 Interpersonal Communication (3)</td>
<td>3</td>
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</table>

### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CAPP 120 Introduction to Computers</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 101 Electrical Fundamentals I</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 102 Electrical Fundamentals II</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 103 Electric Code Study/Codeology</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 106 Electrical Formulas &amp; Calculations</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 111 Electric Meters &amp; Motors</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 133 Basic Wiring</td>
<td>5</td>
</tr>
<tr>
<td>ELEC 137 Electrical Drafting</td>
<td>2</td>
</tr>
<tr>
<td>ELEC 139 Electric Code Study-Residential</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 201 Alternating Current Theory</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 204 Electrical Planning &amp; Estimating</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 205 Electrical Design &amp; Lighting</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 211 AC Measurements</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 230 Industrial Electrical Wiring</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 233 Commercial Wiring Lab</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 236 Conduit, Raceways &amp; Code Calcs Lab</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 239 Grounding/Bonding Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 241 Electric Motor Controls</td>
<td>3</td>
</tr>
<tr>
<td>HPE 234 First Aid &amp; CPR</td>
<td>2</td>
</tr>
<tr>
<td>IT 111 Industrial Safety/Waste Management</td>
<td>2</td>
</tr>
</tbody>
</table>

Total minimum credits required for degree: **68**

(1) Meets Communications Requirement  
(2) Meets Computation Requirement  
(3) Meets Human Relations Requirement

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*

Electrical Technology

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ELEC 101 Electrical Fundamentals I</td>
<td>3</td>
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<tr>
<td>ELEC 102 Electrical Fundamentals II</td>
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<tr>
<td>ELEC 103 Electric Code Study/Codeology</td>
<td>3</td>
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<tr>
<td>ELEC 106 Electrical Formulas &amp; Calculations</td>
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<tr>
<td>ELEC 111 Electric Meters &amp; Motors</td>
<td>3</td>
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<tr>
<td>ELEC 133 Basic Wiring</td>
<td>5</td>
</tr>
<tr>
<td>ELEC 137 Electrical Drafting</td>
<td>2</td>
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<tr>
<td>ELEC 139 Electric Code Study-Residential</td>
<td>3</td>
</tr>
<tr>
<td>ELEC 236 Conduit, Raceways &amp; Code Calcs Lab</td>
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<tr>
<td>WRIT 108 Elementary Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>HPE 234 First Aid and CPR</td>
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</tr>
</tbody>
</table>

Total minimum credits required for degree................................................................................................................................. 33

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

Bachelor of Science
Engineering Technology: Civil Engineering Technology

Accredited by the Technology Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700.

MSU-Northern’s Required General Education Core | Credits | Course Prefix & #
--- | --- | ---
Category I (CAT I)--Communication | 6 | WRIT 101 AND SPCH 141 OR 142 OR WRIT 350
Category II (CAT II)--Mathematics | 3 | M 145 or higher content level math
Category III (CAT III)--Natural Sciences Students must take one science course that includes a lab. See course descriptions to verify this requirement. | 6 | AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320
Category IV (CAT IV)--Social Sciences/History | 6 | CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOCS 201
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Category VI (CAT VI)--Humanities/Fine Arts | 6 | ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LI 110, LI 210, LI 211, LI 223, LI 224, LI 230, LI 309, LI 382, ENGL 311, LI 363, LI 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210
Category VII (CAT VII) – Technology | 3 | AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100
Total General Education Core Credits | 33 |

Required Courses
CAPP 120 Introduction to Computers (CAT VII) .................................................................................................................................................. Meets CAT VII Requirement
CAPP 158 MS Access ..................................................................................................................................................................................................3
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
CIS 410 Enterprise Resource Planning .................................................................................................................................................................3
DRFT 131 Technical Graphics I ...........................................................................................................................................................................3

Continued on next page
## ENGINEERING TECHNOLOGY: CIVIL ENGINEERING TECHNOLOGY (CONTINUED)

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>DRFT 156</td>
<td>Introduction to CAD</td>
</tr>
<tr>
<td>DRFT 244</td>
<td>Topographic Mapping &amp; GIS Applications</td>
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<td>EET 110</td>
<td>Electronics Survey I</td>
</tr>
<tr>
<td>IET 480 Senior Project I</td>
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<tr>
<td>IET 481 Senior Project II</td>
<td></td>
</tr>
<tr>
<td>IT 100</td>
<td>Introduction to Technology (CAT VII)</td>
</tr>
<tr>
<td>IT 111</td>
<td>Industrial Safety/Waste Management</td>
</tr>
<tr>
<td>M 112</td>
<td>Trigonometry &amp; Complex Numbers (CAT II)</td>
</tr>
<tr>
<td>M 121 College Algebra (CAT II)</td>
<td>Meets Category II Requirement</td>
</tr>
<tr>
<td>M 162 Applied Calculus (CAT II)</td>
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<td>M 171 Calculus I (CAT II)</td>
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<tr>
<td>MFGT 427</td>
<td>Quality Assurance</td>
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<td>PHYS 231 Fundamentals of Physics I (CAT III)</td>
<td>Meets Category III Requirement</td>
</tr>
<tr>
<td>PHYS 234 Fundamentals of Physics I Lab (CAT III)</td>
<td>Meets Category III Requirement</td>
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<tr>
<td>SPCH 141</td>
<td>Fundamentals of Speech (CAT I)</td>
</tr>
<tr>
<td>WRIT 101</td>
<td>College Writing I (CAT I)</td>
</tr>
<tr>
<td>Advisor Approved Electives</td>
<td>[(Math/Science - 4 credits, Science - 3 credits, Elective - 1 credit) ABET Requirement]</td>
</tr>
</tbody>
</table>

*Advisor approved ABET requirement.

**Total minimum credits required for degree**: 124

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

Engineering Technology: Civil Engineering Technology

NOTE: The Associate of Applied Science in Civil Engineering Technology is not accredited by the Technology Accreditation Commission of ABET.

WRIT 108 OR WRIT 101 College Writing I (1) ................................................................. 3
M 121 College Algebra (2) ............................................................................................. 3
SPCH 141 Fundamentals of Speech OR SPCH 142 Interpersonal Communication (3) ............................................................................................................ 3

Required Courses
CAPP 120 Introduction to Computers ........................................................................ 3
CAPP 158 MS Access ..................................................................................................... 3
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
CHMY 121 Introduction to General Chemistry ............................................................ 3
CHMY 122 Introduction to General Chemistry Lab ................................................... 1
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
IT 100 Introduction to Technology .............................................................................. 3
IT 111 Industrial Safety/Waste Management .............................................................. 2
M 112 Trigonometry & Complex Numbers ................................................................ 2
M 162 Applied Calculus ............................................................................................... 3
PHYS 231 Fundamentals of Physics I ......................................................................... 3
PHYS 234 Fundamentals of Physics I Lab ................................................................... 1
Advisor Approved Elective ........................................................................................... 2
Advisor Approved Science Elective* ............................................................................ 3

Total minimum credits required for degree................................................................ 65
(1) Meets Communications Requirement
(2) Meets Computation Requirement
(3) Meets Human Relations Requirement

*Advisor approved 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.
Minor

Engineering Technology: Civil Engineering Technology

Choose one of the following options:

GIS Option
CAPP 158 MS Access ................................................................. 3
CET 181 Surveying ........................................................................ 3
CET 305 Engineering Economics ................................................ 3
CET 385 Highway Design & Construction .................................... 4
CIS 410 Enterprise Resource Planning ........................................ 3
DRFT 244 Topographic Mapping & GIS Applications .................. 3
IT 100 Introduction to Technology (CAT VII) .............................. 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 VII) .............................. 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.

Departmental Certificate*

Land Surveying Technology (GIS)

Associate of Applied Science degree or higher in any discipline required for this departmental certificate.

Required Courses
CAPP 158 MS Access .................................................................... 3
CET 181 Surveying ........................................................................ 3
CET 305 Engineering Economics ................................................ 3
CET 385 Highway Design & Construction .................................... 4
CIS 115 Visual Basic Programming ............................................. 3
CIS 410 Enterprise Resource Planning ........................................ 3
DRFT 156 Introduction to CAD ................................................... 3
DRFT 244 Topographic Mapping & GIS Applications .................. 3
IT 100 Introduction to Technology (CAT VII) .............................. 3
STAT 217 Intermediate Statistical Concepts (CAT II) .................... 4

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

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

**Bachelor of Arts**

**Graphic Design (Minor Required)**

<table>
<thead>
<tr>
<th>MSU-Northern's Required General Education Core</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I (CAT I)--Communication</td>
<td>6</td>
<td>WRIT 101 AND SPCH 141 OR 142 OR WRIT 350</td>
</tr>
<tr>
<td>Category II (CAT II)--Mathematics</td>
<td>3</td>
<td>M 145 or higher content level math</td>
</tr>
<tr>
<td>Category III (CAT III)--Natural Sciences</td>
<td>6</td>
<td>AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
</tr>
<tr>
<td>Students must take one science course that includes a lab. See course descriptions to verify this requirement.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category IV (CAT IV)--Social Sciences/History</td>
<td>6</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOSC 201</td>
</tr>
<tr>
<td>Category V (CAT V)--Cultural Diversity</td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NASL 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
</tr>
<tr>
<td>Category VI (CAT VI)--Humanities/Fine Arts</td>
<td>6</td>
<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309, LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 100, PHIL 200, PHIL 210</td>
</tr>
<tr>
<td>Category VII (CAT VII) – Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
<tr>
<td><strong>Total General Education Core Credits</strong></td>
<td>33</td>
<td></td>
</tr>
</tbody>
</table>

**Required Courses**

- ART 120 Drawing I (CAT VI) .................................................. 3
- ART 151 Two-Dimensional Design II (CAT VI) ............................ 3
- ART 254 Painting I OR ART 256 Watercolor Painting I ............... 3
- ART 361 Art History of Western Civilization I (CAT VII) OR ART 362 Art History of Western Civilization II (CAT VI) .................. 3
- LIT 110 Introduction to Literature (CAT VI) OR LIT 230 World Lit Survey (CAT VIII) .......................................................... Meets CAT VI Requirement
- 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 VI) .................... Meets CAT VI Requirement
- GDSN 340 Electronic Design II ............................................... 3
- GDSN 350 Graphic Design II ................................................... 3
- GDSN 370 Photography II ....................................................... 3
- GDSN 450 Graphic Design III ................................................. 4
- HSTR 102 Western Civilization II (CAT IV) OR SOSC 201 Introduction to Social Science (CAT IV) ....................... Meets CAT I Requirement
- WRIT 101 College Writing I (CAT I) ........................................ 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>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>WRIT 101 College Writing I (1)</td>
<td>3</td>
</tr>
<tr>
<td>M 121 College Algebra OR M 145 Math for the Liberal Arts (2)</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 141 Fundamentals of Speech (3)</td>
<td>3</td>
</tr>
</tbody>
</table>

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 100 Introduction to Art</td>
<td>3</td>
</tr>
<tr>
<td>ART 120 Drawing I</td>
<td>3</td>
</tr>
<tr>
<td>ART 150 Two-Dimensional Design I</td>
<td>3</td>
</tr>
<tr>
<td>ART 151 Two-Dimensional Design II</td>
<td>3</td>
</tr>
<tr>
<td>ART 254 Painting I OR ART 256 Watercolor Painting I</td>
<td>3</td>
</tr>
<tr>
<td>CAPP 120 Introduction to Computers</td>
<td>3</td>
</tr>
<tr>
<td>GDSN 220 Illustration I</td>
<td>3</td>
</tr>
<tr>
<td>GDSN 231 Graphic Design Applications</td>
<td>3</td>
</tr>
<tr>
<td>GDSN 240 Electronic Design I</td>
<td>3</td>
</tr>
<tr>
<td>GDSN 250 Graphic Design I</td>
<td>3</td>
</tr>
<tr>
<td>GDSN 270 Introduction to Photography</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 18 Credits from the Following Courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 100 Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>BUS 110 Creative Problem Solving</td>
<td>3</td>
</tr>
<tr>
<td>BUS 271 Legal Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>BUED 245 Personal Finance</td>
<td>3</td>
</tr>
<tr>
<td>DRFT 131 Technical Graphics</td>
<td>3</td>
</tr>
<tr>
<td>DRFT 156 Introduction to CAD</td>
<td>3</td>
</tr>
<tr>
<td>DRFT 256 3D CAD</td>
<td>3</td>
</tr>
<tr>
<td>CIS 112 Web Site Development</td>
<td>3</td>
</tr>
<tr>
<td>CIS 115 Visual Basic Programming</td>
<td>3</td>
</tr>
<tr>
<td>CIS 155 Java Programming</td>
<td>3</td>
</tr>
</tbody>
</table>

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPCH 141 Fundamentals of Speech (3)</td>
<td>3</td>
</tr>
<tr>
<td>M 121 College Algebra OR M 145 Math for the Liberal Arts (2)</td>
<td>3</td>
</tr>
<tr>
<td>WRIT 101 College Writing I (1)</td>
<td>3</td>
</tr>
</tbody>
</table>

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

(1) Meets Communications Requirement
(2) Meets Computation Requirement
(3) Meets Human Relations Requirement

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>MSU-Northern's Required General Education Core</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I (CAT I)--Communication</td>
<td>6</td>
<td>WRIT 101 AND SPCH 141 OR 142 OR WRIT 350</td>
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<td>3</td>
<td>M 121 or higher content level math</td>
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<tr>
<td>Category III (CAT III)--Natural Sciences</td>
<td>6</td>
<td>AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
</tr>
<tr>
<td>Category IV (CAT IV)--Social Sciences/ History</td>
<td>6</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 300, HIST 374, PSCI 201, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOSC 201</td>
</tr>
<tr>
<td>Category V (CAT V)--Cultural Diversity</td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NASL 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
</tr>
<tr>
<td>Category VI (CAT VI)--Humanities/Fine Arts</td>
<td>6</td>
<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309 LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
</tr>
<tr>
<td>Category VII (CAT VII) – Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

**Total General Education Core Credits**

33

---

**Required Courses**

- ACTG 201 Principles of Financial Accounting .................................................................................................................. 3
- BIOL 204 Essentials of Anatomy and Physiology (CAT III) ................................................................................................. 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 332 Human Resource Management .................................................................................................................................. 3
- BUS 335 Principles of Marketing ........................................................................................................................................... 3
- ENGL Upper Division selective in Writing .......................................................................................................................... 3
- HPE 233 Foundations of Health and Physical Education ......................................................................................................... 2
- 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 .................................................................................................................. 3
- 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
HEALTH PROMOTION (NON-TEACHING) (CONTINUED)

HPE 498 Cooperative Education .................................................................................................................................................................................12

OR

HPE 498 Cooperative Education .................................................................................................................................................................................6

AND

HPEA 18X Fitness and Wellness Skills – Select 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 Trimmastics .......................................................................................................................................................................................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

M 121 College Algebra (CAT II) ..............................................................................................................................................................................3

TSS 246 Technical Sales & Service ........................................................................................................................................................................3

PSYX 100 Introduction to Psychology (CAT IV) OR SOCI 101 Introduction to Sociology (CAT IV) .................................................................1

PSYX 230 Developmental Psychology .................................................................................................................................................................3

SBM 402 Small Business Management .............................................................................................................................................................3

SPCH 141 Fundamentals of Speech (CAT I) OR SPCH 142 Interpersonal Communications (CAT I) ...............................................................1

WRIT 101 College Writing I (CAT I) ..........................................................................................................................................................1

Advisor Approved Electives .................................................................................................................................................................................2

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

Minor

Health Promotion (Non-Teaching)

Required Courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPE 233 Foundations of Health and Physical Education</td>
<td>2</td>
</tr>
<tr>
<td>HPE 234 First Aid and CPR</td>
<td>2</td>
</tr>
<tr>
<td>HPE 235 Principles of Health &amp; Wellness</td>
<td>3</td>
</tr>
<tr>
<td>HPE 274 Personal and Community Health</td>
<td>3</td>
</tr>
<tr>
<td>HPE 302 Theory &amp; Practice of Health Promotion</td>
<td>3</td>
</tr>
<tr>
<td>HPE 359 Field Experience in Physical Education</td>
<td>1</td>
</tr>
<tr>
<td>HPE 374 Current Issues in Health</td>
<td>3</td>
</tr>
<tr>
<td>HPE 378 Sex Education</td>
<td>3</td>
</tr>
<tr>
<td>HPE 423 Marriage and Family Relationships</td>
<td>3</td>
</tr>
</tbody>
</table>

Total minimum credits required for minor ..........................................................................................................................................23
INDUSTRIAL TECHNOLOGY

Bachelor of Science

Industrial Technology (Non-Teaching) - Minor Required

<table>
<thead>
<tr>
<th>MSU-Northern’s Required General Education Core</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
</tr>
</thead>
<tbody>
<tr>
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<td>6</td>
<td>WRIT 101 AND SPCH 141 OR 142 OR WRIT 350</td>
</tr>
<tr>
<td>Category II (CAT II)--Mathematics</td>
<td>3</td>
<td>M 145 or higher level math</td>
</tr>
<tr>
<td>Category III (CAT III)--Natural Sciences</td>
<td>6</td>
<td>AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
</tr>
<tr>
<td>Students must take one science course that includes a lab. See course descriptions to verify this requirement.</td>
<td></td>
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</tr>
<tr>
<td>Category IV (CAT IV)--Social Sciences/History</td>
<td>6</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOVC 201</td>
</tr>
<tr>
<td>Category V (CAT V)--Cultural Diversity</td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NASL 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
</tr>
<tr>
<td>Category VI (CAT VI)--Humanities/Fine Arts</td>
<td>6</td>
<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309, LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
</tr>
<tr>
<td>Category VII (CAT VII) – Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

Required Courses
AUTO 128 Engines..................................................................................................................................................5
BUS 300 Management in Organizations ..........................................................................................................................3
CIS 305 Digital Systems....................................................................................................................................................3
CIS 308 Industrial Electronics..........................................................................................................................................4
DRFT 131 Technical Graphics I......................................................................................................................................3
DRFT 156 Introduction to CAD.....................................................................................................................................3
EET 110 Electronics Survey I..........................................................................................................................................3
IT 100 Introduction to Technology (CAT VII)..............................................................................................................3
Meets CAT VII Requirement
IT 109 Introduction to Woodworking ..........................................................................................................................3
IT 111 Industrial Safety/Waste Management ..................................................................................................................2
IT 130 Construction Technology ..................................................................................................................................3
IT 209 Furniture & Cabinetmaking ..............................................................................................................................3
METL 140 Introduction to Welding and Cutting ............................................................................................................3
METL 155 Machining Processes.......................................................................................................................................3
MFGT 200 Manufacturing Processes & Materials .............................................................................................................3
MFGT 341 CAD/CAM I....................................................................................................................................................3
MFGT 342 CAD/CAM II....................................................................................................................................................3
MFGT 427 Quality Assurance........................................................................................................................................3
WRIT 350 Technical Editing...........................................................................................................................................3
Advisor Approved Elective................................................................................................................................................3
Elective..................................................................................................................................................................................4

Minor.................................................................................................................................................................................24

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

Bachelor of Science in Education
Industrial Technology 5-12 (Teaching)

Prerequisites for Admission to Secondary Education Industrial Technology 5-12 Program refer to page 28.

<table>
<thead>
<tr>
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</tr>
<tr>
<td>Category II (CAT II) -- Mathematics</td>
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<td>Category III (CAT III) -- Natural Sciences</td>
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<td>AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
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<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 340, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOIC 201</td>
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<td>Category V (CAT V) -- Cultural Diversity</td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 320, NAS 330, NASL 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
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<tr>
<td>Category VI (CAT VI) -- Humanities/Fine Arts</td>
<td>6</td>
<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309 LIT 382, ENGL 311, LIT 363, LIT 372, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
</tr>
<tr>
<td>Category VII (CAT VII) -- Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

Total General Education Core Credits 33

Required Courses
AUTO 128 Engines ..........................................................5
CIS 320 Computers in Education ..............................................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
HPE 235 Principles of Health & Wellness ............................3
CIS 308 Industrial Electronics .............................................4
IT 100 Introduction to Technology (CAT VII) ......................Meets CAT VII Requirement
IT 109 Introduction to Woodworking ....................................3
IT 130 Construction Technology .........................................3
IT 209 Furniture & Cabinetmaking ......................................3
METL 140 Introduction to Welding and Cutting ....................3
METL 155 Machining Processes ..........................................3
MFGT 200 Manufacturing Processes & Materials ..................3

Continued on next page
INDUSTRIAL TECHNOLOGY 5-12 (TEACHING) (CONTINUED)

PSYX 230 Developmental Psychology (CAT IV) ........................................................................................................... Meets CAT IV Requirement
VOED 350 Principles of Industrial/Technology Education ................................................................................................. 3
VOED 360 Analysis & Prep Lab Management ......................................................................................................................... 3
VOED 370 Methods of Teaching Industrial/Technical Education ................................................................................................. 3
Technical Endorsement (see advisor for more information) ..................................................................................................... 10
Electives ....................................................................................................................................................................................................................... 1

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

LIBERAL STUDIES
Bachelor of Arts

Liberal Studies-Minor Required

<table>
<thead>
<tr>
<th>MSU-Northern’s Required General Education Core</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I (CAT I) -- Communication</td>
<td>6</td>
</tr>
<tr>
<td>Category II (CAT II) -- Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>Category III (CAT III) -- Natural Sciences</td>
<td>6</td>
</tr>
<tr>
<td>Students must take one science course that includes a lab. See course descriptions to verify this requirement.</td>
<td></td>
</tr>
<tr>
<td>Category IV (CAT IV) -- Social Sciences/ History</td>
<td>6</td>
</tr>
<tr>
<td>Category V (CAT V) -- Cultural Diversity</td>
<td>3</td>
</tr>
<tr>
<td>Category VI (CAT VI) -- Humanities/Fine Arts</td>
<td>6</td>
</tr>
<tr>
<td>Category VII (CAT VII) -- Technology</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total General Education Core Credits</strong></td>
<td><strong>33</strong></td>
</tr>
</tbody>
</table>

Required Courses

- ART 361 Art History of Western Civilization I (CAT VI) ........................................................................................................... Meets CAT VI Requirement
- ART 362 Art History of Western Civilization II (CAT VI) ........................................................................................................... Meets CAT VI Requirement
- OR DRMA 123 Introduction to Theatre ........................................................................................................................................... 3
- OR MUS 101 Introduction to Music History (CAT VI) ........................................................................................................... 3
- OR LIT 110 Introduction to Literature (CAT VI) OR LIT 230 World Lit Survey (CAT VI) ................................................................ 3
- OR HUM 201 Introduction to the Humanities (CAT VI) ........................................................................................................... 3
- OR PHIL 210 Ethics (CAT VI) ........................................................................................................................................... 3
- OR HSTR 102 Western Civilization II (CAT IV) OR SOSC 201 Introduction to Social Science (CAT IV) .............................. Meets CAT IV Requirement
- OR WRIT 101 College Writing I (CAT I) ......................................................................................................................... Meets CAT I Requirement
- OR Foreign Language (CAT V) ........................................................................................................................................... 6-8

LIBERAL STUDIES (CONTINUED)

(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 Leadership, Economics, Geography, Political Science, Social Sciences* ........................................................................................................... 6*

(Choose (15) fifteen credits from each of two of the following major areas (30 credits total) (300-400 level)

Must INCLUDE a Capstone course in one of the areas*.

Continued on next page
LIBERAL STUDIES (CONTINUED)

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

*Methods courses excepted.

Minor and Advisor Approved Electives ...................................................................................................................................................................30

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

## Bachelor of Science

### Mathematics-Minor Required (Non-Teaching)

<table>
<thead>
<tr>
<th>MSU-Northern’s Required General Education Core</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I (CAT I) -- Communication</td>
<td>6</td>
<td>WRIT 101 AND SPCH 141 OR 142 OR WRIT 350</td>
</tr>
<tr>
<td>Category II (CAT II) -- Mathematics</td>
<td>3</td>
<td>M 121 or higher content level math</td>
</tr>
<tr>
<td>Category III (CAT III) -- Natural Sciences</td>
<td>6</td>
<td>AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
</tr>
<tr>
<td>Category IV (CAT IV) -- Social Sciences/ History</td>
<td>6</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HISTR 101, HISTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOSC 201</td>
</tr>
<tr>
<td>Category V (CAT V) -- Cultural Diversity</td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NASL 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
</tr>
<tr>
<td>Category VI (CAT VI) -- Humanities/Fine Arts</td>
<td>6</td>
<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309, LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
</tr>
<tr>
<td>Category VII (CAT VII) -- Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

### Total General Education Core Credits 33

### Required Courses

- **CIS 115 Visual Basic Programming OR CIS 155 Java Programming**.................................................................3
- **M 112 Trigonometry & Complex Numbers**....................................................................................................2
- **M 171 Calculus I**...........................................................................................................................................5
- **M 172 Calculus II**.........................................................................................................................................5
- **M 311 Ordinary Differential Equations/System**.............................................................................................3
- **M 329 Modern Geometry**...........................................................................................................................3
- **M 333 Linear Algebra**...................................................................................................................................3
- **M 351 Algebraic Structures I**.....................................................................................................................3
- **M 440 Numerical Analysis**..........................................................................................................................3
- **SPCH 142 Interpersonal Communication (CAT I)**...........................................................................................3 Meets CAT I Requirement
- **STAT 217 Intermediate Statistical Concepts**..................................................................................................4

### Upper Division (300-400) Courses ............................................................14

### Minor and Electives ..................................................................................42

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

### Bachelor of Science

#### Mathematics-Minor Required 5-12 (Teaching)

<table>
<thead>
<tr>
<th>MSU-Northern’s Required General Education Core</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I (CAT I)--Communication</td>
<td>6</td>
<td>WRIT 101 AND SPCH 142 OR WRIT 350</td>
</tr>
<tr>
<td>Category II (CAT II)--Mathematics</td>
<td>3</td>
<td>M 121 or higher content level math</td>
</tr>
<tr>
<td>Category III (CAT III)--Natural Sciences</td>
<td>6</td>
<td>AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 231, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
</tr>
<tr>
<td>Category IV (CAT IV)--Social Sciences/ History</td>
<td>6</td>
<td>CMSV 101, ECNS 201, ECNS 202, ECNS 372, HSTA 101, HSTA 102, HSTR 101, HSTR 102, HSTA 255, HIST 330, HIST 374, PSCI 210, PSCI 250, PSCI 471, PSYX 100, PSYX 230, SOCI 101, SOCI 241, SOSC 201</td>
</tr>
<tr>
<td>Category V (CAT V)--Cultural Diversity</td>
<td>3</td>
<td>HIST 335, NASL 120, NASL 121, NAS 220, NAS 310, NAS 230, NAS 330, NASL 331, NAS 350, NAS 364, NURS 331, SOCI 315, SPNS 101, SPNS 102, SPCH 245</td>
</tr>
<tr>
<td>Category VI (CAT VI)--Humanities/Fine Arts</td>
<td>6</td>
<td>ART 100, ART 115, ART 120, ART 150, ART 151, ART 204, ART 353, ART 361, ART 362, LIT 110, LIT 210, LIT 211, LIT 223, LIT 224, LIT 230, LIT 309 LIT 382, ENGL 311, LIT 363, LIT 327, DRMA 109, GDSN 270, HUM 201, MUS 101, MUS 110, PHIL 200, PHIL 210</td>
</tr>
<tr>
<td>Category VII (CAT VII)– Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

**Total General Education Core Credits** 33

Prerequisites for Admission to Secondary Education Industrial Technology 5-12 Program refer to page 28.

### Required Courses

- ED PY 215 Introduction to Educational Psychology ........................................ 3
- ED PY 350 The 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 376 Assessment in Education ................................................................. 3
- EDUC 445 Teaching Reading, Writing, and Critical Thinking Skills Across the Curriculum .......................................................... 2
- EDUC 450 Secondary Teaching Practicum and Seminar ...................................... 12
- EDUC 455 Advanced Practicum in Education .................................................. 3
- HPE 235 Principles of Health & Wellness ......................................................... 3
- M 112 Trigonometry & Complex Numbers ....................................................... 2
- M 121 College Algebra (CAT II) ....................................................................... 3...Meets CAT II Requirement
- M 171 Calculus I .............................................................................................. 5
- M 172 Calculus II ............................................................................................. 5
- M 301 Mathematics Technology for Teachers .................................................. 3
- M 327 Methods of Teaching Secondary Math .................................................. 3
- M 329 Modern Geometry .................................................................................. 3
- M 333 Linear Algebra ....................................................................................... 3
- M 351 Algebraic Structures I ........................................................................... 3

Continued on next page
MATHEMATICS 5-12 (TEACHING) (CONTINUED)

PSYX 230 Developmental Psychology (CAT IV) .......................................................................................................................... Meets CAT IV Requirement
SPCH 142 Interpersonal Communication ............................................................................................................................... Meets CAT I Requirement
STAT 217 Intermediate Statistical Concepts .............................................................................................................................. 4
WRIT 101 College Writing I (CAT I) ............................................................................................................................................... Meets CAT I Requirement

Minor in Secondary Education (5-12) or (K-12) and Electives ................................................................................................................. 26

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

Minor

Native American Studies

Required Courses
NASL 120 Native American Language I OR NASL 121 Native American Language II .................................................................................. 3
NAS 220 Introduction to Ethnic Indian Studies (CAT V) ......................................................................................................................... 3
NAS 250 Montana Indians: Cultures, Traditions, and Current Issues ................................................................................................. 3
NAS 310 Native Cultures of North America (CAT V) ............................................................................................................................ 3
NAS 330 American Indian Oral Tradition (CAT V) OR NASL 331 American Indian Literature (CAT V) ......................................................... 3
NAS 350 Federal Indian Law (CAT V) .................................................................................................................................................. 3
NAS 364 History of American Indians (CAT V) ................................................................................................................................. 3

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

Bachelor of Science

Students who plan to complete the BSN degree must first earn an ASN degree at MSU-Northern or another approved nursing program (first and second year nursing course requirements are met). Registered nurses who earn their nursing diploma will be evaluated on an individual basis.

Nursing

<table>
<thead>
<tr>
<th>MSU-Northern’s Required General Education Core</th>
<th>Credits</th>
<th>Course Prefix &amp; #</th>
</tr>
</thead>
<tbody>
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<td>6</td>
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<td>Category III (CAT III)--Natural Sciences</td>
<td>6</td>
<td>AG 204, BIOL, CHEM, CHMY, ESCI, GEO, GPHY 111, GSCI, NSCI, PHYS, TSCI 110, TSCI 230, TSCI 321, TSCI 232, TSCI 233, TSCI 234, TSCI 304, TSCI 320</td>
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</tr>
<tr>
<td>Category V (CAT V)--Cultural Diversity</td>
<td>3</td>
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</tr>
<tr>
<td>Category VII (CAT VII)--Technology</td>
<td>3</td>
<td>AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100</td>
</tr>
</tbody>
</table>

Total General Education Core Credits: 33

Required Courses

- BUS 250 Business Statistics OR STAT 216 Introduction to Statistics .................................................. 3
- 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
- NURS 349 Clinical Preceptorship .......................................................................................................... 4
- NURS 440 Leadership & Management .................................................................................................... 4
- NURS 441 Leadership and Management Practicum .................................................................................. 2
- NURS 444 Nursing Research ............................................................................................................... 4
- NURS 446 Community Health Nursing .................................................................................................. 3
- NURS 447 Community Health Practicum ............................................................................................... 4
- PSYX 100 Introduction to Psychology (CAT IV) .................................................................................... 2
- PSYX 141 Fundamentals of Speech (CAT I) ......................................................................................... 3

Choose one course from the following (courses used to meet general education requirements cannot be used to meet the Nursing elective requirement):

- NURS 305 Nursing Ethics .................................................................................................................... 3
- NURS 331 Cultural Diversity in Healthcare ......................................................................................... 3

Continued on next page
NURSING BACHELOR OF SCIENCE (CONTINUED)

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.
2009-2010 Catalog

Associate Degree in Nursing

This program is for new students beginning Fall Semester 2008 and thereafter.

Nursing

<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>3</td>
<td>WRIT 101</td>
<td>3</td>
</tr>
<tr>
<td>Category II Mathematics</td>
<td>3</td>
<td>M 121</td>
<td>3</td>
</tr>
<tr>
<td>Category III Natural Sciences</td>
<td>8</td>
<td>BIOL 241 and BIOL 242</td>
<td>8</td>
</tr>
<tr>
<td>Category IV Social Sciences</td>
<td>6</td>
<td>PSYX 100 and SOCI 101</td>
<td>6</td>
</tr>
<tr>
<td>Total General Education Core</td>
<td>20</td>
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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
CHMY 121 Introduction to General Chemistry ................................................... 3
CHMY 122 Introduction to General Chemistry Lab ............................................ 1
M 121 College Algebra (CAT II) ......................................................................... 3
NURS 117 Nutrition .......................................................................................... 2
NURS 118 Introduction to Nursing ...................................................................... 1
NURS 119 Fundamentals of Nursing ..................................................................... 7
NURS 132 Gerontology ....................................................................................... 2
NURS 140 Pharmacology ..................................................................................... 3
NURS 151 Core Concepts of Adult Nursing ....................................................... 7
NURS 152 Core Concepts of Maternal/Child Nursing ......................................... 3
NURS 153 Core Concepts of Mental Health Nursing .......................................... 2
NURS 212 Transition to Associate Degree Nursing* ........................................ 3
NURS 255 Complex Care Needs - Maternal/Child Health ................................. 3
NURS 256 Complex Care Needs - Mental Health Nursing ................................... 2
NURS 257 Complex Care Needs - Adult Client ................................................... 4
NURS 258 Pathophysiology ............................................................................... 3
NURS 261 Advanced Clinical Skills .................................................................... 1
NURS 262 Managing Client Care ........................................................................ 4
PSYX 100 Introduction to Psychology (CAT IV) ............................................... 8
SOCI 101 Introduction to Sociology (CAT IV) ................................................... 8
WRIT 101 College Writing I (CAT I) ................................................................. 3

*Course only for LPNs articulating into the ASN program

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

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 TECHNOLOGY

### Associate of Applied Science

### Plumbing

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRIT 108</td>
<td>Elementary Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>M 111</td>
<td>Technical Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 141</td>
<td>Fundamental of Speech</td>
<td>3</td>
</tr>
</tbody>
</table>

**Required Courses**

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

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

(1) Meets Communications Requirement
(2) Meets Computation Requirement
(3) Meets Human Relations Requirement
ASSOCIATE OF APPLIED SCIENCE

Water Quality Technology: Environmental Health

Category I Communications: WRIT 101 AND SPCH 141 OR 142 OR WRIT 350 .........................................................................................................................3
Category II Mathematics: M 121 or higher content level math..........................................................................................................................3
Category IX Technology: AOT 301, CAPP 120, CAPP 151, CIS 320, IT 100 ........................................................................................................3

Required Courses
BIOL 110 Introduction to Environmental Health (CAT III) ...............................................................................................................................3
BIOL 217 Microbiology (CAT III) ..........................................................................................................................................................4
CHMY 121 Introduction to General Chemistry (CAT III) .................................................................................................................................3
CHMY 122 Introduction to General Chemistry Lab .........................................................................................................................................1
HPE 234 First Aid and CPR ..................................................................................................................................................................2
TSCI 110 Intro to Water and Wastewater ........................................................................................................................................2
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 298 Cooperative Education .........................................................................................................................................................6
Advisor Approved Electives ...............................................................................................................................................................10

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

WELDING

Certificate of Applied Science

Welding Technology

Required Courses
SPCH 141 Fundamentals of Speech OR SPCH 142 Interpersonal Communication (1) .....................................................................................3
DRFT 131 Technical Graphics I ..........................................................................................................................................................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
Elective .........................................................................................................................................................................................3

Total minimum credits required for certificate ........................................................................................................................................30

(1) Meets Communication Requirement
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 620 Educational & Psychological Appraisal ....................................................................... 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 Counseling Information Systems ....................................................................... 2
CNSL 680 Counseling Internship OR CNSL 681 Counseling Internship-Community/Agency .......... 6
CNSL 682 Advanced Counseling Practicum OR CNSL 683 Advanced Counseling Practicum-Community/Agency .................. 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 clinical professional counselors (LCPC). 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
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 weekends (Internet support) and with a start to finish time 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 delivery of the program will be made available upon inquiry.

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) 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 constitute fulfilling the coursework required for OPI endorsement. 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 program are a Master’s Degree, three (3) years individual 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.

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<thead>
<tr>
<th>Course</th>
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<td>EDUC 630 General School Administration &amp; Finance</td>
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<td>EDUC 640 School Law</td>
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<td>EDUC 672 K-12 School Administration &amp; Supervision</td>
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<td>EDUC 681 K-12 Principal Internship Seminar and Internship</td>
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**Total** ................................................................................................................................................... 24
NEW FOR FALL 2009
COMMON COURSE NUMBERS

IMPORTANT: New course numbering in certain subjects (see "Completed Disciplines" list on next page) only affects names and numbers, it does not affect course content or degree requirements. This catalog includes all the common course numbering that has been done so far with the old course number in parenthesis next to the new number.

The Montana University System is in the process moving to common course numbers in all undergraduate courses for all public institutions in Montana.

What this means
All public colleges and universities in Montana will use the same subject abbreviations (the letter codes that indicate the course subject), numbers, and titles for courses taught on more than one campus.
- If students transfer to another campus, courses that have undergone the common course numbering with the same prefix and number also taught at the new campus will automatically transfer as equivalent. All other courses will continue to transfer.
- Most current MSU-Northern subject abbreviations and numbers WILL CHANGE as implementation moves forward. Those that will change for fall 2009 are listed below under Completed Disciplines.
- Many course titles will change.
- Some courses will change level (e.g., from the 300-level to the 400-level).
- Course content is the purview of faculty and will NOT be changed as a result of this process.
- During the transition period, which is likely to last several years, curricular tabs (the lists of what courses are required for majors) will be updated yearly to reflect the changes.

Frequently Asked Questions
The following is a list of the most commonly asked questions with responses.

How will this affect my transcript?
A: None of the changes will affect how courses you have already taken will appear on your transcript. All courses will appear as they did when you registered for them.

What if I repeat a course and the number has changed?
A: Courses that are renumbered will be treated as equivalent for the purpose of repeats. The original course and grade will remain on your transcript (as has always been the case) but the MOST RECENT attempt will be used in calculating your GPA.

My catalog of record says I must take MATH 112 so will I be OK if I take M 121?
A: Yes! Curricula will be updated online to indicate the new course number, but advising sheets, program sheets printed catalogs prior to Fall 2009 will continue to show the old number. They are interchangeable.

Will my old transfer work change on my transcript?
A: No. This will not impact what is currently posted on your transcript.

How do I find out what the new courses are called in my discipline?
A: Go to the Common Courses Equivalency tool (https://atlas.montana.edu:9002/pls/hvagent/bzskcrse.PW_SelSchClass) and select the old course code you want to learn about. For instance, selecting CHEM will show you the new numbers for all of the chemistry courses.

My department used to have only one course code. Why are the courses now called three different things?
A: To create a system that can work across all campuses, we have had to move away from course codes based on departmental names to those based on subjects. So, where a multidisciplinary department may have had all of its courses under one course code, it may now have several because the faculty teach in various subject areas.

Why did perfectly good course codes (e.g., MATH) have to change?
A: In most subjects, there were so many courses being taught across the state using so many different numbers that keeping a popular course code would necessarily have meant renumbering courses to something that was already in use for a different course. Imagine the confusion if MATH 112 were changed to MATH 110 and MATH 110 were changed to MATH 116, etc. The same course number could end up meaning different things.
## Completed Disciplines

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<td>Economics</td>
<td>ECON</td>
<td>ECNS</td>
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<td>WRIT (writing) or LIT (Literature)</td>
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<td>Geography</td>
<td>GEOG</td>
<td>GPHY</td>
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<tr>
<td>History</td>
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<td>HSTA (American History) or HSTR (World History)</td>
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<td>NATIVE AMERICAN</td>
<td>NAS</td>
<td>NASL</td>
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<td>SPNS</td>
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<tr>
<td>Mathematics</td>
<td>MATH 116, and 140</td>
<td>STAT 216 and STAT 217 and all other MATH is now M</td>
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## COMMON COURSE NUMBERING

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<td>ACCT 262</td>
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COURSE DESCRIPTIONS

ACCOUNTING

ACTG 201 Principles of Financial Accounting (ACCT 261)
3 semester credits (Lec. 3; Fall)
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.

ACTG 202 Principles of Managerial Accounting (ACCT 262)
3 semester credits (Lec. 3; Spring)
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: ACTG 201.

ACTG 205 Computerized Accounting (ACCT 285)
3 semester credits (Lec. 3; Alt. yrs. even 2008-09; Spring)
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: ACTG 201. (offered even numbered years)

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.

ACTG 301 Intermediate Accounting I (ACCT 315)
3 semester credits (Lec. 3; Alt yrs even 2008-09; Fall)
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: ACTG 202. (offered even numbered years)

ACTG 302 Intermediate Accounting II (ACCT 316)
3 semester credits (Lec. 3; Alt yrs even 2008-09; Spring)
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: ACTG 301. (offered even numbered years)

ACTG 401 Principles of Fed Taxation--Individuals (ACCT 365)
3 semester credits (Lec. 3; Alt yrs odd 2007-08; Spring)
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: ACTG 202.

ACTG 410 Cost/Mgmt Acct I (ACCT 321)
3 semester credits (Lec. 3; Alt yrs odd 2007-08; Spring)
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: ACTG 202. (offered odd numbered years)

ACTG 441 Financial Statement Analysis (ACCT 407)
3 semester credits (Lec. 3; Alt yrs odd 2007-08; Fall)
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: ACTG 202. (offered odd numbered years)

AGRICULTURE

AG 100 Leadership Development
2 semester credits (Lec. 2; Fall)
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 (Lec. 3; Fall)
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 (Lec. 3; Fall)  
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 (Lec. 3; Fall)  
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 (Lec. 3; Spring)  
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 Introduction to Agricultural Computing**  
3 semester credits (Lec. 3; Fall)  
This is a class designed to acquaint students with a number of agricultural computer applications and features agricultural specific software. Emphasis is placed on software useful to the farmer, rancher and agri-business. Livestock, cropping, financial management, digital mapping of land resources and other agricultural based computerized applications will be featured.

**AG 204 Soils**  
4 semester credits (Lec. 3-Lab 2; Spring)  
This course is a study of soil as a natural and extremely valuable 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. Various laboratory exercises will be performed to analyze soil and its physical and chemical properties. This course does meet the laboratory science requirement.

**AG 218 Crop Production**  
4 semester credits (Lec. 3-Lab 2; Fall)  
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 (Lec. 3-Lab 2; Alt yrs odd 2007-08; Fall)  
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 & Nutrition**  
4 semester credits (Lec. 3-Lab 2; Spring)  
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 (Lec. 3)  
This is 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 (Lec. 3-Lab 2; Alt yrs even 2008-09; Fall)  
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 298 Cooperative Education (AG 279)**  
Variable: 1 through 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 498 Cooperative Education (AG 479)**  
Variable: 1 through 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 (Lec. 2; Alt yrs odd 2009-10; Spring)  
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 (Lec. 2-Lab 2; Alt yrs odd 2007-08; Spring)
Introduction to maintenance, repair, and adjustment of balers, swathers, rakes, and other forage harvesting equipment.

AGMT 130 Introduction to Agricultural Tractors
3 semester credits (Lec. 2-Lab 2; Alt yrs 2008-09; Fall)
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 (Lec. 2-Lab 2; Alt yrs even 2008-09; Fall)
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 (Lec. 2-Lab 2; Alt yrs odd 2007-08; Fall)
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 298 Cooperative Education (AGMT 279)
Variable: 1 through 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 (When Needed)
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 (When Needed)
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 498 Cooperative Education (AGMT 479)
Variable: 1 through 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 298 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 (Lec. 2; Alt yrs even 2008-09; Fall)
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. Prerequisite: Junior standing.

AOT 301 Global Positioning Systems
3 semester credits (Lec. 3; Spring)
This course is a study of global positioning systems (GPS) technology and how it can be used in agriculture, outdoor activities, orienteering, land resources, transportation and in a large number of other applications. Class participants will use handheld and mapping grade GPS receivers and become familiar with GPS data collection, DGPS or 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 equipment, manage GPS data with software, upload and download coordinate information and create printouts of patial data, locations and routes.

AOT 305 Ag Commodity Marketing
3 semester credits (Lec. 3; Alt yrs even 2008-09; Spring)
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.

AOT 310 Soil & Water Management
2 semester credits (Lec. 2; Alt yrs odd 2007-08; Spring)
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 (Lec 3; Alt yrs odd 2007-08; Spring)
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.

AOT 420 Agriculture Technology Management
4 semester credits (Lec. 3-Lab 2; Spring)
This course is a study in the use of agricultural technologies from a management perspective. Topics will include a study in the use
of technologies in the management of agricultural finances, land, machinery, crops and livestock. Computer and software technologies will be used for budgeting, enterprise accounting, enterprise analysis, recordkeeping, and to analyze machinery decisions and costs. FINPACK and other arm/ranch financial planning and machinery analysis software will be featured.

AOT 440 Trends and Issues in Agriculture
3 semester credits (Lec 3; Alt yrs odd 2007-08; Fall)
An examination of past and contemporary agricultural issues as they affect the producer, agribusiness, and the consumer.

ART

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 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.

AUTOMOTIVE/DIESEL

ATDI 134 Auto/Diesel Electrical/Electronic Systems I
4 semester credits (Lec 2-Lab 4 ; Fall and Spring)
This is a course in the study of electrical/electronic fundamentals applied to automotive and commercial vehicle systems. It 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. Ohms law and circuit analysis, as it applies to industry will also be examined. Students will fulfill computation requirements for Certificate of Applied Science and Associate of Applied Science by completing this course. Course Fee: $20.00

ATDI 220 Automotive Diesel and Hybrid Vehicles
3 semester credits (Lec 2-Lab 2; Fall)
This course examines the theory and diagnosis of automotive hybrid systems and automotive diesel engines. Lab activities will be based on Toyota Hybrid systems and General Motors, Ford, and Chrysler light duty pick-up diesel engines. Students will use the latest resources and diagnostic equipment available to understand and diagnose these systems. Prerequisites: ATDI 134, AUTO 128 and
AUTO 151. Course Fee: $20.00

ATDI 257 Automatcs
4 semester credits (Lec. 2-Lab 4; Fall and Spring)
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 (Lec. 2-Lab 4; Fall and Spring)
This course is a continuation of the study of electrical/electronic systems in use on current automotive and heavy equipment. The course will study industry recommended diagnostic and repair procedures, charging and cranking systems, ignition systems, power accessories, and an introduction to microprocessor-based engine, powertrains, and brake/suspension control systems. Students will fulfill communication requirements for Certificate of Applied Science and Associate of Applied Science by completing the course. Prerequisite: ATDI 134. Course Fee: $20.00

ATDI 265 Heating and Air Conditioning
4 semester credits (Lec. 2-Lab 4; Fall and Spring)
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 (Lec. 2-Lab 4; Spring)
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 (Lec. 2-Lab 4; Fall and Spring)
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. Prerequisites: ATDI 134 and ATDI 264. Course Fee: $20.00

ATDI 400 Shop Procedures
3 semester credits (Lec 3; Fall)
This is a lecture course addressing diesel and automotive shop management issues. Students will be exposed to shop management environments and issues including customer relations, parts inventory, repair order preparation, shop efficiency and productivity, shop organization, work flow, labor guides, work ethics and stewardship. Computerized shop management software will be integrated throughout the course. Prerequisites: Junior standing, ATDI 134, ATDI 264, AUTO 151, AUTO 251, DIES 262, DIES 272, DIES 273.

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 (Lab 2; 1/2 semester; Fall)
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. Students will also develop a portfolio which showcases the student's technical expertise and human relation skills for obtaining cooperative education and full-time employment. This course meets the human relation component of related instruction for Certificates of Applied Science and Associate of Applied Science degrees. Students will fulfill human relations requirements for the Automotive Certificate of Applied Science and Associate of Applied Science by completing this course.

AUTO 117 Automotive Manual Power Trains
4 semester credits (Lec. 2-Lab 4; Spring)
This course examines automotive manual power trains. It includes the construction, maintenance, diagnosis, and repair of manual transmissions and transaxes, 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 (Lec. 2-Lab 4; Fall)
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 120 Automotive Steering and Suspension
4 semester credits (Lec. 2-Lab 4; Spring)
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 128 Engines
5 semester credits (Lec. 2-Lab 6; Spring)
This course is an overview of the design, operation, diagnosis, and service procedures of modern automotive engines. Students participate in the disassembly and the reassembly of engines. Students will participate in the removal and installation of engines in school vehicles. Service and Technical engine data are presented to prepare
AUTO 151 Diagnosis and Tune Up
4 semester credits (Lec. 2; Lab 4; Fall)
This course examines the theory and diagnosis of gasoline engines and related systems. These systems include engine mechanical testing, ignition systems, fuel delivery, emission control systems and an introduction to computerized fuel injection systems. Students will use the latest diagnostic equipment available to test and diagnose these systems during the lab. Course Fee: $20.00

AUTO 210 ASE Certification I
1 semester credits (Lec. 1; Fall)
Students will prepare for ASE tests in Engine Repair (A1), Brakes (A5), Suspension and Steering (A4) and Manual Drive Train and Axles (A3). At the conclusion of this class students will take their ASE certification tests. Prerequisites: AUTO 117, AUTO 119, AUTO 120, AUTO 128, AUTO 151. Course Fee: $136.00

AUTO 211 ASE Certification II
1 semester credits (Lec. 1; Spring)
Students will prepare for ASE tests in Automatic Transmission/Transaxle (A2), Electrical/Electronic Systems (A6), Heating and Air Conditioning (A7) and Engine Performance (A8). At the conclusion of this class students will take their ASE certification tests. Prerequisites: ATDI 134, ATDI 257, ATDI 264, ATDI 265, AUTO 251. Course Fee: $136.00

AUTO 251 Computerized Engine Control Systems
4 semester credits (Lec. 2; Lab 4; Spring)
This course examines the theory and diagnosis of computerized gasoline fuel injected engines. Students will work with the latest diagnostic equipment to test and repair computerized engine control systems on Toyota, Ford, General Motors and Chrysler Vehicles. Prerequisites: AUTO 128, AUTO 151, and ATDI 134. Course Fee: $20.00

AUTO 298 Cooperative Education (AUTO 279)
Variable: 1 through 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 408 Current Trends in Mobility Technology
2 semester credits (Lab 4; Fall)
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 (Lec. 1; Lab 4; Spring)
Students in this course will use the dynamometer and other diagnostic equipment to dynamically test and analyze computer controlled emission, fuel delivery and ignition systems. Students will follow manufacturer drive cycles to see what effects that alternative fuels, additives and trouble codes have on drivability, emissions and performance. Prerequisites: AUTO 251, ATDI 383, ATDI 384. Course Fee: $20.00

AUTO 457 Advanced Power Trains
4 semester credits (Lec. 2; Lab 4; Fall)
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. Prerequisites: AUTO 117 and ATDI 257. Course Fee: $20.00

AUTO 488 Automotive Practicum
3 semester credits (Arranged; Fall and Spring)
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: WRIT 101, SPCH 141, all required AUTO courses, and Senior Standing.

AUTO 498 Cooperative Education (AUTO 479)
Variable: 1 through 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 298 or Junior standing and approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

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, wastewater 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. Concurrent enrollment in BIOL 141 Lab is required.

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: $12.00

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 and tissue study, and the organ systems: muscular, skeletal, integumentary, digestive, circulatory, immune, respiratory, excretory, nervous, muscular, skeletal, endocrine, and reproductive. 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 antiseptics 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: BIOL 217 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: BIOL 140 or equivalent. 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 CHMY 121 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 298 Cooperative Education (BIOL 279)
Variable: 1 through 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 & Sciences, and 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: BIOL 348 or consent of instructor. 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: $9.00

BIOL 348 Research Project
1 through 12 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 not meet the laboratory science requirement.

BIOL 222 Botany I Laboratory
2 semester credits
Laboratory activities that primarily focus upon the cytology, anatomy, morphology, and general physiology 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
348 or consent of instructor. This course does meet the laboratory science requirement. Course Fee: $5.00

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 406/506 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.

If this class is taken at the 500 level, it is a graduate course and 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 407/507 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.

If this class is taken at the 500 level, it is a graduate course and 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 408/508 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.

If this class is taken at the 500 level, it is a graduate course and 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 410 Field Biology Methods
4 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 415/515 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.

If this class is taken at the 500 level, it is a graduate course and 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 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. Corequisite: EDUC 339.

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. Prerequisites: BIOL 140 and BIOL 217. This course does meet the laboratory science requirement.

BIOL 468/568 Molecular Biology and Genetics
4 semester credits
Structure and function of cells emphasizing molecular aspects at cellular, organelle, 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.
If this class is taken at the 500 level, it is a graduate course and 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 498 Cooperative Education (BIOL 479)**
Variable: 1 through 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 298 or Junior standing and approval of advisor, Dean of the College of Education, Arts & Sciences and Nursing, and cooperative education coordinator. Pass/Fail only. This course does not 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 or equivalent. This course does meet the laboratory science requirement.

**BODY**

**BODY 140 Panel Adjustment and Glass**
2 semester credits (Lab 4; Fall)
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 (Fall)
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.

**BODY 142 Metal Repair Lab**
3 semester credits (Lab 6; Fall)
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 (Lab 6; Spring)
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 (Lec. 3; Fall)
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 (Lab 6; Fall)
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 243 Shop Production**
3 semester credits (Lec. 3; Spring)
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. The students learn the proper use of industry estimating guide.

**BODY 244 Shop Production Lab**
3 semester credits (Lab 6; Spring)
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 298 Cooperative Education (BODY 279)**
Variable: 1 through 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.

**BUSINESS EDUCATION**

**BUED 100 Keyboarding**
2 semester credits (Lec. 2; Fall)
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.
BUED 110 Introduction to Business Education
1 semester credit (Lec. 1; Fall)
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 DPI/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 (Lec. 2; Spring)
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 (Lec. 2; Spring)
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 (Lec. 3)
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 (Lec. 3; Spring)
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 280 The Internet, Web Page Design, and On-line Course Supplements for Educators
2 semester credits (Lec. 2; Fall)
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: CAPP 151.

BUED 298 Cooperative Education (BUED 279)
Variable: 1 through 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 302 Introduction to E-Commerce and Internet Marketing
3 semester credits (Lec 3; Spring)
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 (Lec. 3; Spring)
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 (Lec. 1; Fall)
Prerequisites: Completion of ACTG 201, ACTG 202, and ACTG 205, and Admission to Teacher Education.

BUED 316 Methods of Teaching Keyboarding and Word Processing
1 semester credit (Lec. 1; Fall)
Prerequisites: Completion of BUED 142 and Admission to Teacher Education.

BUED 317 Methods of Teaching Office Skills
1 semester credit (Lec. 1; Fall)
Prerequisites: Completion of BUED 230 and Admission to Teacher Education.

BUED 318 Methods of Teaching Personal Finance
1 semester credit (Lec. 1; Fall)
Prerequisites: Completion of BUED 245 and Admission to Teacher Education.
BUED 319 *Methods of Teaching Business Law*  
1 semester credit (Lec. 1; Fall)  
Prerequisites: Completion of BUS 271 and Admission to Teacher Education.

BUED 348 *Business Communications*  
3 semester credits (Lec. 3; Fall and Spring)  
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 (Lec. 1; Spring)  
Prerequisites: Completion of BUED 305, BUS 335, and Admission to Teacher Education

BUED 422 *Methods of Teaching Entrepreneurship*  
1 semester credit (Lec. 1; Spring)  
Prerequisites: Completion of BUS 300, BUED 302, SBM 416, and Admission to Teacher Education

BUED 423 *Methods of Teaching Computer Applications*  
1 semester credit (Lec. 1; Spring)  
Prerequisites: Completion of CAPP 151, BUED 280, BUED 348, CIS 320, and Admission to Teacher Education

BUED 424 *Methods of Teaching Business to Special Learners*  
1 semester credit (Lec. 1; Spring)  
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 (Lec. 1; Fall and Spring)  
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 498 *Cooperative Education (BUED 479)*  
Variable: 1 through 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 298 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 (Lec. 3; Fall)  
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 (Lec. 3; Fall)  
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 (Lec. 3; Fall)  
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 (Lec 3)  
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 fund-raising 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 (Lec. 3; Fall and Spring)
This course builds on the basic mathematical skills learned in M 121 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: M 145 or M 121 or consent of instructor.

BUS 271 Legal Environment of Business
3 semester credits (Lec. 3; Fall and Spring)
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 298 Cooperative Education (BUS 279)
Variable: 1 through 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 (Lec. 3; Fall and Spring)
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 311 Intermediate Accounting I
3 semester credits (Lec. 3; Fall and Spring)
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 322 Human Resource Management
3 semester credits (Lec. 3; Spring)
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 (Lec. 3; Fall and Spring)
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 (lec. 3; Summer 2008)
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 (Lec. 3; Spring)
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 (Lec 3; Fall)
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: ACTG 201 and ACTG 202.

BUS 355 Investments
3 semester credits (Lec. 3; Summer)
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 (Lec. 3; Summer)
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 (Lec. 3; Spring)
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 (Lec. 3; Fall)
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 (Lec. 3; Spring)
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: CAPP 120 or 111 and BUS 250.

BUS 410 International Business
3 semester credits (Lec. 3; Fall)
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 (Lec. 3; Summer As Needed)
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 (Lec. 3; Fall)
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 (Lec. 3; Fall and Spring)
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 455 Managing the Not-For-Profit Organization
3 semester credits (Lec. 3)
This course introduces students to not-for-profit management. It provides students with a historical and contemporary understanding of the creation and changing structure of not-for-profit organizations and the not-for-profit sector including factors that impact on individual clients, staff and the larger community. It includes an exploration of classical organizational theory as well as current management practices as they relate to not-for-profit organizations.

BUS 498 Cooperative Education (BUS 479)
Variable: 1 through 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 298 or Junior standing and approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

COMPUTER APPLICATIONS

CAPP 120 Introduction to Computers (CIS 110)
3 semester credits (Lec. 2, Lab. 2; Fall & Spring)
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

CAPP 151 MS Office (CIS 111)
3 semester credits (Lec. 3; Fall)
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

CAPP 158 MS Access (CIS 171)
3 semester credits (Lec 3; Spring)
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
CAPP 266 Advanced MS Excel Applications (CIS 285)
3 semester credits (Lec. 3; Fall)
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. Prerequisites: CAPP 120 or higher, M 121 or higher

CARPENTRY TECHNOLOGY

CARP 120 Carpentry I
4 semester credits (lec. 2-Lab 4; Fall)
This course introduces the carpentry trade, including history, career opportunities, and requirements. The course deals with the identification and application of a variety of building materials, fasteners, and adhesives. The skills needed for framing a simple structure are studied and practiced. The course also covers installation procedures for windows and exterior doors. Course Fee: $25.00

CARP 130 Carpentry II
3 semester credits (Lec. 1-Lab 4; Spring)
This course covers the stages involved in carpentry from site layout to constructing the footings and foundations. This course introduces site layout, measurement, and leveling procedures as well as some applications of concrete and reinforcing materials. The operation of light equipment such as skid steer, fork lift and back hoe equipment will be covered. Course Fee: $25.00

CARP 131 Carpentry Level 2b
3 semester credits (Lec. 1-Lab 4; Spring)
This course covers the stages involved in carpentry from site layout to constructing the footings and foundations. The course introduces site layout, measurement, and leveling procedures and introduces some applications of concrete and reinforcing materials. Prerequisites: IT 115 and CARP 120 or instructor’s approval. Co-requisites: CARP 130, CARP 150, and IT 111. Course Fee: $25.00

CARP 150 Carpentry Practicum
3 semester credits (Lab 9; Spring)
This course provides hands-on experience in which the student applies the basic skills and knowledge presented thus far in the NCCER Carpentry Program. This course is designed as a practical task-oriented exercise utilizing the skills covered in CARP 120. Prerequisite: CARP 120 or instructor’s approval. Co-requisites: CARP 130, CARP 131, and IT 111. Course Fee: $25.00

CARP 210 Introduction to Finish Carpentry
3 semester credits (Lec. 2, Lab 2; Fall)
Introduces students to materials and methods for sheathing, exterior siding, stairs and roofing. The framing that was done on the building project during CARP 120 will be used to continue studies in this course. Students will apply the knowledge and skills presented during this course to enclose the structure. Students will lay out and build a simple stair system. This course also covers framing with metal stud. Co-requisite: CARP 220. Prerequisites: IT 115, IT 111, and CARP 120 or instructor’s approval. Course Fee: $25.00

CARP 220 Interior Finishing
4 semester credits (Lec. 2 - Lab 4; Fall)
Introduces students to trigonometric leveling, which is used to lay out foundations. This course covers the installation methods and materials for various roofing systems. It covers a variety of flooring applications as well as interior wall construction for residential and commercial structures. Prerequisites: IT 115, CARP 120, or instructor’s approval. Course Fee: $25.00

CARP 230 Advanced Roof, Floor, Wall, and Stair Systems
4 semester credits (Lec. 2 - Lab 4; Spring)
This course covers the installation methods and materials for various roofing systems. It covers a variety of flooring applications as well as interior wall construction for residential and commercial structures. It also covers advanced staircase construction. Prerequisite: CARP 130 or CARP 150, or instructor’s approval. Course Fee: $25.00

CARP 240 Advanced Topics & Commercial Applications
3 semester credits (Lec. 1 - Lab 4; Spring)
This course introduces the basic structural components, fastening methods, and assembly techniques for metal buildings. It provides an overview of the materials and procedures used in application of roofs, wall panels, windows, doors and flashings relating to metal buildings. Introduces basic concepts, practices, and procedures related to the floor covering installation trade. It covers proper safety procedures in the operation of hand and power tools that are related to the trade. This course also reviews and applies math related to floor covering installation. Co-requisite: CARP 250. Prerequisites: IT 115, IT 111, and CARP 120 or instructor’s approval. Course Fee: $25.00

CARP 250 Carpentry Practicum II
3 semester credits (Lab 9; Spring)
Provides students the opportunity to practice skills they have acquired in the entire carpentry program. It includes task-oriented projects in which students can apply many of the skills and knowledge that have been presented throughout the NCCER Carpentry program. This course is designed as a practical task-oriented exercise utilizing a variety of skills covered in all the NCCER carpentry courses required for the AAS degree. Co-requisite: CARP 230, CARP 240, and IT 120. Prerequisite: CARP 220 or instructor’s approval. Course Fee: $25.00

ENGINEERING TECHNOLOGY: CIVIL

CET 173 Architectural Construction and Materials
3 semester credits (Lec. 3; Fall)
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 (Lec. 1, Lab. 4; Spring)  
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: M 112 or higher. Course Fee: $10.00

**CET 220 Construction Management & Bid Estimation**  
3 semester credits (Lec. 3; Fall)  
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 (Lec. 3; Fall)  
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 M 112 or higher. Course Fee: $10.00

**CET 232 Strength of Materials**  
3 semester credits (Lec. 3; Spring)  
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 298 Cooperative Education (CET 279)**  
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 (Lec. 3; Spring)  
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 (Lec. 3; Fall)  

**CET 315 Soil Mechanics & Foundations**  
4 semester credits (Lec. 3, Lab. 2; Spring)  
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 (Lec. 3, Lab. 2; Fall)  
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 (Lec. 2, Lab. 2; Fall)  
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 (Lec. 3, Lab. 2; Fall)  
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 (Lec. 3, Lab. 2; Spring)  
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

**CET 498 Cooperative Education (CET 479)**  
1 or 3 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 298 or Junior standing and approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

**CHEMISTRY**

**CHMY 121 Introduction to General Chemistry (CHEM 111)**  
3 semester credits (Lec. 3)  
This course introduces students to the science of chemistry. The course covers the physical states of matter, including the nomenclature used in chemistry, along with atomic structure, elements, the periodic chart, chemical bonding, chemical reactions, and acid-base theory. This course is a general overview for non-science majors. It must be taken concurrently with CHMY 122.

**CHMY 122 Introduction to General Chemistry Lab (CHEM 111)**  
1 semester credit (Lab. 2)  
This course must be taken concurrently with CHMY 121. The course does meet the laboratory science requirement. Course Fee: $20.00
CHMY 123 Intro to Organic & Biochemistry (CHEM 112)
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 CHMY 121. Second of a two-semester sequence for majors that do not require a strong background in chemistry. It must be taken concurrently with CHMY 124.

CHMY 124 Intro to Organic & Biochemistry Lab (CHEM 112)
1 semester credit
This course must be taken concurrently with CHMY 123. This course does meet the laboratory science requirement. Course Fee: $20.00

CHMY 141 College Chemistry I (CHEM 121)
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 CHMY 142 laboratory is required. Prerequisite: High School Algebra.

CHMY 142 College Chemistry Lab I (CHEM 123)
1 semester credit
The laboratory portion of CHMY 141 dealing with experiments in nature of matter, gaseous state, heat of reactions, and other general principles of matter. Concurrent enrollment in CHMY 141 lecture is required. This course taken in conjunction with the lecture portion of the course (CHMY 141) meets the laboratory science requirement. Course Fee: $22.00

CHMY 143 College Chemistry II (CHEM 122)
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 CHMY 144 laboratory is required. Prerequisites: CHMY 141 and CHMY 142.

CHMY 144 College Chemistry II Lab (CHEM 124)
1 semester credit
The laboratory portion of CHMY 143 dealing with experiments in acid-base, pH, neutralization, and qualitative analysis. Laboratory techniques in the qual scheme are examined. Concurrent enrollment in CHMY 143 lecture is required. Prerequisite: CHMY 142. This course taken in conjunction with the lecture portion of the course (CHMY 143) meets the laboratory science requirement. Course Fee: $25.00

CHMY 298 Cooperative Education (CHEM 279)
Variable: 1 through 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.

CHMY 311 Quantitative Analysis
4 semester credits
Introduction to the theory and laboratory techniques of volumetric, gravimetric, and spectrophotometric methods of analysis. Prerequisites: CHEM 122 and CHEM 124. This course does meet the laboratory science requirement. Course Fee: $20.00

CHMY 312 Quantitative and Instrumental Analysis
4 semester credits
Continuation of CHMY 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

CHMY 321 Organic Chemistry I (CHEM 341)
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 CHMY 322 Organic Laboratory I is required. Prerequisites: CHMY 143 and CHMY 144.

CHMY 322 Organic Chemistry I Lab (CHEM 342)
2 semester credits
Laboratory portion of Organic Chemistry I. Experiments in organic techniques of distillation, extraction, and recystallization, preparation and identification of hydrocarbons, alcohol, cyclic alkanes, and alkyl halides compounds. Concurrent enrollment in CHMY 321 is required. Prerequisite:CHMY 144. This course taken in conjunction with the lecture portion of the course (CHMY 321) meets the laboratory science requirement. Course Fee: $25.00

CHMY 323 Organic Chemistry II (CHEM 342)
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: CHMY 321.

CHMY 324 Organic Chemistry II Lab (CHEM 344)
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 CHMY 323 is required. Prerequisite: CHMY 322. This course taken in conjunction with the lecture portion of the course
(CHMY 323) meets the laboratory science requirement. Course Fee: $25.00

**CHEM 330 Biochemistry**
3 semester credits
Principles of modern biochemistry. Prerequisite: CHMY 321 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 351 Instrumental Analysis**
3 semester credits
Modern methods of chemical analysis with emphasis on spectrometric, electrophoretic, 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.

**CHMY 498 Cooperative Education (CHEM 479)**
Variable: 1 through 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. Prerequisite: CHEM 311. This course does not meet the laboratory science requirement.

**COMPUTER INFORMATION SYSTEMS**

**CIS 112 Web Site Development**
3 semester credits (Lec. 3; Fall)
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 (Lec. 2, Lab. 2; Spring)
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 loop, 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 (Lec. 3; Fall)
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. Prerequisite Basic Computer Skills

**CIS 235 Computer Hardware Support**
3 semester credits (Lec. 2, Lab. 2; Spring)
An introduction to current computer hardware leading to the students’ ability to successfully pass the COMP/TIAA+ Certification exam.

**CIS 270 Systems Analysis and Design**
3 semester credits (Lec. 3; Fall)
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: CAPP 120 or equivalent competencies, CAPP 158.

**CIS 298 Cooperative Education (CIS 279)**
Variable: 1 through 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 298 or Junior standing and approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only. This course does not meet the laboratory science requirement.

**CIS 300 Operating Systems Introduction**
3 semester credits (Lec. 3; Spring)
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: CAPP 120 or equivalent competencies, CIS 115, CIS 155 and CIS 350.

**CIS 305 Digital Systems**
3 semester credits (Lec. 2, Lab. 2; Fall)
This course involves an introduction to programmable logic devices and an in-depth study of a selected micro controller system. Course Fee: $15.00

**CIS 308 Industrial Electronics**
4 semester credits (Lec 3, Lab. 2; Spring)
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

**CIS 320 Computers in Education**
3 semester credits (Lec. 3; Fall & Spring)
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: CAPP 120 or equivalent competencies.
CIS 350 Advanced Java Programming
3 semester credits (Lec. 3; Spring)
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.

CIS 355 Data Structures
3 semester credits (Lec. 3; Fall)
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.

CIS 360 Business Telecommunications and Networking
3 semester credits (Lec. 3; Fall)
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. Prerequisites: CAPP 120 or higher, CIS 155, CIS 350.

CIS 361 Assembly I & Computer Architecture
3 semester credits (Lec. 3; Spring)
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: CIS 305 or equivalent.

CIS 365 Software Engineering
3 semester credits (Lec. 3; Spring)
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: CAPP 120 or higher, CIS 115, CIS 155, CIS 305, and CIS 270.

CIS 371 Enterprise Databases Using Oracle
3 semester credits (Lec. 3; Fall)
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 CAPP 158.

CIS 401 Interfacing
3 semester credits (Lec. 3; Fall)
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: CIS 305 and senior standing. Course Fee: $15.00

CIS 410 Enterprise Resource Planning
3 semester credits (Lec. 3; Spring)
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: CAPP 120 or higher competencies, M 145 or M 121.

CIS 420 Computer Teaching Methods
2 semester credits (Lec. 2, Fall & Spring)
Appropriate techniques for teaching Computer Science and Computer Information Systems at the secondary level. Includes topics for teaching computer software. Prerequisites: CAPP 120 or equivalent competencies, CIS 115, CIS 155, CIS 320, and CIS 350.

CIS 430 Advanced Communications Systems
3 semester credits (Lec. 2, Lab. 2; Spring)
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

CIS 440 Network Routing and Security
3 semester credits (Lec. 3)
This course will continue on the network course. It will include using routers. The students will see why and when to use routers and they will hook them up in the lab. It will provide a basic overview of routing. Security policy will be covered including 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-requisite: Junior/Senior status in CIS, EET; completion of CIS 300 and CIS 360 or similar courses.

CIS 455 E-Commerce Programming
3 semester credits (Lec. 3; Spring)
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 CAPP 158.

CIS 471 Information System Engineering
3 semester credits (Lec. 3; Spring)
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.

CIS 498 Cooperative Education (CIS 479)
Variable: 1 through 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 Technical Science, and cooperative education coordinator. Pass/Fail only.

COMMUNITY LEADERSHIP

CMSV 101 Introduction to Community Leadership
3 semester credits
This course provides an introduction to community leadership concepts, 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 298 Cooperative Education (CMSV 279)
Variable: 1 through 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 Montana State University-Northern, approval of advisor, Dean of the College of Education, Arts, Sciences, and Nursing, and cooperative education coordinator. Pass/Fail only.

CMSV 301 Concepts in Community Leadership
3 semester credits
This course provides an overview of social and philosophical concepts that inform leaders in community development, human services and related professional services to the community.

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 355 Assessment and Design of Community Programs
3 semester credits
This course focuses on skills and techniques related to analyzing need and proposing changes to existing or potential community-based programs. The course content introduces concepts related to analysis, integrates application of assessment techniques and use of planning tools in order to understand and assess program needs, resulting in a program development proposal. Prerequisite: Junior standing or permission of the instructor.

CMSV 360 Evaluation of Community-Based Programs
3 semester credits
This course provides an overview of key concepts and skills related to evaluation process and outcomes of public sector and non-profit program. Topics focus on common qualitative and quantitative methods for data collection, work plans and timelines, budgets, and other practical issues related to both formative and summative evaluation. Prerequisite: Junior standing or permission of the instructor; CMSV 355

CMSV 401 Seminar in Community Leadership
3 semester credits
This course is an examination of the professional, ethical, economic, cultural and social issues in community leadership. It is the capstone course for community leadership majors.

CMSV 498 Cooperative Education (CMSV 479)
Variable: 1 through 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, Dean of the College of Education, Arts, Sciences, and Nursing, and cooperative education coordinator. Pass/Fail only
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 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 session. Prerequisites include: CNSL 620, CNSL 625, CNSL 635, and permission of instructor.

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 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. Student will participate in group experience and facilitate the group process. Prerequisite(s): CNSL 625, CNSL 635 and permission of instructor.

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 school or related setting where the counselor intern acquires 300 hours of knowledge and skills under professional supervision. The intern will acquire knowledge of school and related settings as well as observation and practice in the setting. Prerequisites: CNSL 620, CNSL 625, CNSL 635, and CNSL 638. Must submit and have approval for internship before registering.

CNSL 681 Counseling Internship - Community/Agency  
6 semester credits  
An extended practical experience in community/agency where the counselor intern acquires 300 hours of knowledge and skills under professional supervision. The intern will acquire knowledge of referral agencies and community services as well as observation and practice in a clinical setting. Prerequisites: CNSL 620, CNSL 625, CNSL 635, and CNSL 638. Must submit and have approval for internship before registering.

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 683 Advanced Counseling Practicum--Community/Agency  
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 681.

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 (Lec. 3; Spring)  
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 (Lab. 6; Fall and Spring)  
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 (Lec. 2, Lab. 4; Spring)  
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 204 Introduction to Hydraulics and Pneumatics  
2 semester credits (Lec. 2; Fall)  
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 (Lab. 4; Fall)  
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 (Lec. 2, Lab. 4; Fall)
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 (Lec 2; Lab. 4; Spring (2 Labs))
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 (Lab. 6; Fall)
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 dynamometer. To be taken concurrently with DIES 272. Prerequisites: DIES 104 and DIES 114

**DIES 272 Diagnosis of Diesel Engine Repair Lab**
4 semester credits (Lab. 6; Fall)
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 (Lec. 2, Lab. 4; Spring)
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 298 Cooperative Education (DIES 279)**
Variable: 1 through 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: 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.

**DIES 314 Hydraulics and Pneumatics II**
4 semester credits (Lec. 2, Lab 4; Spring)
Application of hydraulics and pneumatics with emphasis on live work. Troubleshooting and diagnostics of hydraulic systems including testing, adjustment, and repair of components. Prerequisites: DIES 204 and DIES 214. Course Fee: $15.00

**DIES 420 Diesel Shop Management**
2 semester credits (Lab. 4; Fall)
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.

**DIES 434 Current Model Year Technology (Capstone Course)**
3 semester credits (Spring)
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.

**DIES 440 Advanced Fuel Systems**
4 semester credits (Lec. 2, Lab. 4; Fall)
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 (Lec. 2, Lab. 4)
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 498 Cooperative Education (DIES 479)**
Variable: 1 through 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 298 or Junior standing and approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

**DRAFTING**

**DRFT 131 Technical Graphics I**
3 semester credits (Lec. 1, Lab. 4; Fall)
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 (Lec. 1, Lab. 4; Spring)
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 (Lec. 1, Lab. 4; Fall and Spring)
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: $10.00

DRFT 356 CAD Presentation
3 semester credits (Lec. 1, Lab. 4; Spring-Alternate years odd 2009-2011)
This course will introduce the successful student to various aspects of CAD Management and decision making. The successful student will gain knowledge applicable to an active CAD environment in which technological concerns need to be addressed in a clear and efficient manner. Prerequisite: DRFT 156

DRFT 346 CAD Management
3 semester credits (Lec. 1, Lab. 4)
This course will introduce the successful student to various aspects of CAD Management and decision making. The successful student will gain knowledge applicable to an active CAD environment in which technological concerns need to be addressed in a clear and efficient manner. Prerequisite: DRFT 156

DRFT 201 Residential Drafting
3 semester credits (Lec. 1, Lab. 4; Fall)
This course is the study of the principles involved in the construction drawings of an average wood frame residential structure. A complete set of working drawings will be developed. Prerequisite: DRFT 132. Course Fee: $10.00

DRFT 244 Topographic Mapping and GIS Applications
3 semester credits (Lec. 1, Lab. 4; Spring)
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. Course Fee: $15.00

DRFT 256 3D CAD
3 semester credits (Lec 1, Lab. 4; Fall)
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 298 Cooperative Education (DRFT 279)
Variable: 1 through 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 (Lec. 1, Lab. 4; Spring)
The student will explore advanced computer modeling techniques used in industrial design. Students will experiment with various applications in solving assigned problems. Prerequisites: DRFT 256, DRFT 356, or consent of instructor. Course Fee: $10.00

DRFT 457 Architectural CAD
3 semester credits (Lec. 1, Lab. 4; Fall, Spring)
This course will introduce the successful student to various aspects of CAD Management and decision making. The successful student will gain knowledge applicable to an active CAD environment in which technological concerns need to be addressed in a clear and efficient manner. Prerequisite: DRFT 156

DRFT 456 CAD Presentation II
3 semester credits (Lec. 1, Lab. 4; Spring-alternate years odd 2009-2011)
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: $10.00

DRFT 428 Technical Illustration
3 semester credits (Lec. 1, Lab. 4)
The application of pictorial representations to describe external and internal design features of manufactured components, subassemblies, and completed products; and construction projects. Prerequisite: DRFT 156. Course Fee: $15.00

DRFT 457 Architectural CAD
3 semester credits (Lec. 1, Lab. 4; Spring)
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 298 or Junior standing and approval of advisor, Dean of the College of Technical Sciences, 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 practicums 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 credit  
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.

**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

**ECNS 201 Principles of Microeconomics (ECON 241)**  
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.

**ECNS 202 Principles of Macroeconomics (ECON 242)**  
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.

**ECNS 348 Public Choice and Interest (ECON 348)**  
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.

**ECNS 372 Economic History of the US (ECON 346)**  
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.

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.

If this class is taken at the 500 level, it is a graduate course and 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.

**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.

If this class is taken at the 500 level, it is a graduate course and 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.

**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 to Teacher Education. Co-Requisite: EDUC 376 Course Fee: $25.00 Graduate credit requirements are described in the course syllabus.

If this class is taken at the 500 level, it is a graduate course and 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 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.

If this class is taken at the 500 level, it is a graduate course and 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 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. Prerequisites: 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.

If this class is taken at the 500 level, it is a graduate course and 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 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.

If this class is taken at the 500 level, it is a graduate course and 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 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.

If this class is taken at the 500 level, it is a graduate course and 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 310/510 Methods of Teaching Integrated Creative Arts
2 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.

If this class is taken at the 500 level, it is a graduate course and 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 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.

If this class is taken at the 500 level, it is a graduate course and 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 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.

If this class is taken at the 500 level, it is a graduate course and 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 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: 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. 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. Prerequisites: 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.

If this class is taken at the 500 level, it is a graduate course and 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 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. Prerequisites: Level I Admission to Teacher Education, EDUC 300, EDUC 376, and EDUC 380. Graduate credit requirements are described in the course syllabus.

If this class is taken at the 500 level, it is a graduate course and 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 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.

If this class is taken at the 500 level, it is a graduate course and 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 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: Level I Admission to Teacher Education.

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.

If this class is taken at the 500 level, it is a graduate course and 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 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. Used to support the learning needs of diverse students and expand the practices of community within the classroom.

If this class is taken at the 500 level, it is a graduate course and 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 353/553 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. Prerequisites: HPE 235 and Level I Admission to Teacher Education. Graduate credit requirements are described in the course syllabus.

If this class is taken at the 500 level, it is a graduate course and 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 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.

If this class is taken at the 500 level, it is a graduate course and 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 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-wheels 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.

If this class is taken at the 500 level, it is a graduate course and 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 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
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. Pre-requisite: 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.

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. Prerequisites: 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: $215.30

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: Level I Admission to Teacher Education, EDUC 300 and EDUC 376. Co-requisite: EDUC 339 Secondary Field Experience

EDUC 430/530 Integrating Indian Education for All Across the Curriculum
2 semester credits
This course will follow theory into practice where candidates build Indian Education for All 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 Indian Education for All instruction across the K-8 curriculum. Prerequisites: Level I Admission to Teacher Education, completion of all methods courses with a grade of “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. Prerequisites: 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
Experiences will include typical responsibilities of a Secondary Teaching Practicum and Seminar. Evaluation of course requirements is more rigorous than at the lower division section of this course.

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.

If this class is taken at the 500 level, it is a graduate course and 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 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. Prerequisites: Level II Admission to Teacher Education, all methods courses, EDUC 455, and cumulative GPA of 2.50. Course Fee: $215.30

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. Prerequisites: Level II Admission, all methods courses, EDUC 455, and cumulative GPA of 2.50. Course Fee: $215.30

EDUC 515 Seminar in Online Course Design
2 semester credits
This virtual seminar provides an immersion of course design for online delivery utilizing a “learning management system” (LMS). By concurrently experiencing the LMS from the perspective of a student and a course designer, learners gain both practical, first-hand knowledge of best practices in online course design and hands-on experience adapting these principles to the design of specific courses within their own disciplines. Discussion focuses on the challenges of course adaptation from the traditional to the virtual classroom environment as they relate to the organization, sequencing, and delivery of course content utilizing the web-based elements and tools available within the LMS. Particular emphasis is placed on the actual mechanics of the LMS.

EDUC 523 Teaching and Technology 1-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: A minimum of 15 semester hours in history and the social sciences and Junior standing, Level I Admission to Teacher Education, EDUC 500 and EDUC 576. Co-requisite: EDUC 339.

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 or 6 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. Pre-requisite: EDUC 607.

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 (Summer-odd years)
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 (Fall)
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 (Summers)
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 the 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 environments. 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 670 K-12 Curriculum
3 semester credits (Summer-even years)
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 672 K-12 School Administration & Supervision
3 semester credits (Summer-odd years)
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. Prerequisite: 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. Co-requisite: EDUC 681.

EDUC 681 K-12 Principal Internship Seminar and Internship
1 semester credit
An investigation into topics of current concern and interest to students working toward 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. Co-requisite: EDUC 680.

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

Tech Prep

EET 101 Introduction to Electricity/Electronics
5 semester credits (Lec. 3, Lab. 4; Fall)
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 (Lec. 3, Lab. 4; Spring)
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 (Lec. 2, Lab. 2; Fall)
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 (Lec. 3, Lab 2; Spring)
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 (Lec. 3, Lab 2; Fall)
Study of electronic telecommunications 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 (Lec. 2, Lab 4; Spring)
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 (Lec. 3, Lab. 4; Fall)
A course designed for electronic majors covering digital system
basics. Topics covered include: number systems and codes, logic
gates, Boolean algebra, digital IC’s, multi-vibrators, combinatorial
logic, registers and counters, memories, and microprocessor
fundamentals. Course Fee: $10.00

EET 210 Embedded Controller I
3 semester credits (Lec. 3; Spring)
This course is an introduction to the microcontroller using the BASIC
STAMP and various PIC and other controller products to develop a
small digital system. The course includes programming, interfacing,
power, and packaging of a stand-alone digital device. Prerequisite:
CIS 115.

EET 298 Cooperative Education (EET 279)
Variable: 1 through 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.

ELECTRICAL TECHNOLOGY

ELEC 101 Electrical Fundamentals I
3 semester credits
(Lec. 2, Lab. 2; Fall)
This course will introduce the student to the various electrical
properties and the equipment which produces those properties. Basic
circuitry will be examined, utilizing algebraic skills to perform the
calculations. Course Fee: $25.00

ELEC 102 Electrical Fundamentals II
3 semester credits (Lec. 2, Lab. 2; Spring)
This course will introduce the student to the alternating current. The
electrical properties and their affects on the circuit will be examined.
Basic trigonometric skills will be utilized to perform calculations
for analyzing various electrical circuits. Prerequisites: ELEC 106
Course Fee: $50.00

ELEC 103 Electric Code Study/Codeology
3 semester credits (Lec. 3; Fall)
This course is a preliminary study of the National Electrical Code
(NEC). Wiring design and protection, wiring methods and materials,
and equipment for general use are covered. Interaction and personal
communications with Authorities Having Jurisdiction (i.e., inspectors,
engineers, architects, employers, etc.) as well as customers and owners
will be addressed. Course Fee: $15.00
ELEC 106 Electrical Formulas and Calculations
3 semester credits (Lec. 3; Fall)
This course covers the basic formulas needed to determine electrical values in typical electrical installations including power, current, and voltage. Basic methods of calculation for both DC and AC quantities will be discussed and demonstrated as well as the use of modern calculators and computer software to determine necessary values.

ELEC 111 Electric Meters & Motors
3 semester credits (Lec. 1, Lab. 4; Spring)
This course is a practical hands-on course using ammeters, voltmeters, watt meters, and multi-meters in testing and troubleshooting electric motors, components and wiring systems. This course includes a study of single and three phase AC motors, their construction features and operating characteristics. This lecture/lab class emphasizes electric motor terminology, identification of motor types, enclosures, mounts, motor selection, connections, maintenance, testing and troubleshooting. Students are also introduced to motor loads, protection, controls, and devices used to connect motors to their loads such as pulleys, V-belts, gear boxes and couplings. Course Fee: $35.00

ELEC 133 Basic Wiring
5 semester credits (Lec. 2, Lab. 6; Spring)
This course is an introduction to basic wiring circuits, materials and tools used and wiring methods. Students also perform laboratory work with actual circuit layout and installation in accordance with the rules and regulations of the National Electrical Code. This course deals primarily with residential wiring methods. Course Fee: $75.00

ELEC 137 Electrical Drafting
2 semester credits (Lec. 2; Fall)
This course studies techniques of communicating through the use of mechanical drawings, electrical drawings, heating ventilation and air conditioning drawings. Basic blueprint reading and sketching are included as well as symbols and scales.

ELEC 139 Electric Code Study-Residential
3 semester credits (Lec. 3; Spring)
This course is an introductory study of National Electrical Code requirements for residential wiring, including protective ground circuits, service entry and electrical safety requirements for routine residential electrical installations. Course Fee: $40.00

ELEC 201 Alternating Current Theory
3 semester credits (Lec. 2, Lab. 2; Fall)
This course is a study of three phase alternating current circuits and single and three-phase transformers and machines. The theory and operation of three phase wye and delta circuits and the relationship of voltage, current and power in these circuits. The use of phasor algebra in the solution of alternating current problems is stressed as are the characteristics and use of electrical instruments such as voltmeters, ammeters, ohmmeters, and watt meters. Students learn the theory and operation of transformers with single and three phase connections and are introduced to alternating current machines. Prerequisite: ELEC 102

ELEC 204 Electrical Planning & Estimating
3 semester credits (Lec. 2, Lab. 2; Spring)
This course is an applied course in the planning and cost estimation of electrical installations and rehabs for both commercial and residential applications. The course will use current catalog and electrical supply information to determine rough cost estimates based on blue print or electrical drawings, as well as using customer requirements to determine the plan and cost estimates for new and old work.

ELEC 205 Electrical Design and Lighting
3 semester credits (Lec. 2, Lab. 2; Fall)
This course is a class discussion course dealing with electrical material and equipment sizing, layout and application, applicable wiring codes, regulations and rules, and characteristics of common electrical distribution systems as used in industrial plants and commercial building locations. Included is a study of short circuit current, current limiting and coordination, power factor correction and electrical rates. This course includes the study of modern illumination principles, calculation procedures and equipment for lighting installations. Also included are discussions of building construction, heat loss calculations and electric heating equipment selection.

ELEC 211 AC Measurements
3 semester credits (Lec. 1, Lab 4; Fall)
This lecture/lab course consists of a series of experiments to investigate the characteristics of single-phase and three-phase electrical circuits. The connections and testing of transformers in both single-phase and three-phase configurations are stressed. Students also learn the operation of three phase motors from conventional sources and phase converts, with an emphasis on efficiency, operating characteristics and connections. Co-requisite: ELEC 201

ELEC 230 Industrial Electrical Wiring
3 semester credits (Lec. 2, Lab. 2)
This course covers construction plans for industrial sites and details regarding unit substations, feeder bus systems, panelboards, trolley busways, wire tables and sizing, signaling systems, motors and controllers, motor installations, power factor, lightning protection, ventilation and exhaust systems, programmable logic controllers, fiber optics, hazardous locations, and harmonics.

ELEC 233 Commercial Wiring Lab
3 semester credits (Lec. 1, Lab. 4; Fall)
This course is an extension of ELEC 133 with lectures emphasizing commercial wiring methods. Students will perform laboratory work consisting of actual installation of various raceways, as well as connecting of special equipment used in commercial and industrial applications, all in accordance with the National Electrical Code. Prerequisite: ELEC 133 Course Fee: $50.00

ELEC 236 Conduit, Raceways & Code Calculations Lab
3 semester credits (Lec. 1, Lab. 4; Spring)
This course includes laboratory work dealing with Code application relating to conduit bending as well as National Electrical Code calculations for wire and cable installation. Students will perform lab work consisting of actual installation of conduit, wire and cable. Course Fee: $75.00

ELEC 239 Grounding & Bonding Fundamentals
3 semester credits (Lec. 2, Lab. 2; Fall)
This course is a combination lecture/lab series of grounding theory as well as characteristics of grounded and non-grounded systems. Labs
include proper grounding practices, various grounding applications, tools and materials usage and methods of compressions and exothermic application and installations. Course Fee: $25.00

**ELEC 241 Electric Motor Controls**  
3 semester credits (Lec. 2, Lab. 2; Spring)  
This course is a lecture and laboratory class oriented to the study of electromechanical control system concepts. Experiments are designed to illustrate the principles, applications, connection and installation procedures of electrical controllers. Special emphasis is placed on the analysis and development of control circuits.

**ELEC 247 Medium and High Voltage**  
3 semester credits (Lec. 2, Lab. 2; Spring)  
This course is a lecture/lab course which covers medium and high voltage electrical theory, conductors, insulators, over current devices, testing, termination, safety precautions and safety equipment. Course Fee: $65.00

**ENGLISH (also see LITERATURE AND WRITING)**

**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 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 313/513 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.

If this class is taken at the 500 level, it is a graduate course and 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.

**ENGL 328 Media Literacy**  
3 semester credits  
This course begins the study of how mass media through education, socialization, and indoctrination, influence a student’s understanding of the world. Students will be introduced to concepts, ideas and methods for thoughtful evaluation of the media culture so prevalent in today’s world.

**ENGL 337 English Grammar**  
3 semester credits  
A general study of word construction, form, and usage and word groups within sentences.

**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. If this class is taken at the 500 level, it is a graduate course and 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.

**ENGL 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, epics, fables, informational and nonfiction works, biographies, popular fiction, and fantasy literature.

**EARTH SCIENCE (see GEOGRAPHY AND GEOLOGY)**

**ESCI 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

**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.

**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.

**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 a 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. Prerequisites: 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: CAPP 120, 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. 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

**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

**GEOLOGY**

**GEO 101 Introduction to Physical Geology (ESCI 204)**
4 semester credits
Introductory geology emphasizing the physical constitution of the Earth’s interior and surface. Prerequisites: M 130 or placement into M 121 or M 151. Corequisite: GEO 102. This course does meet the laboratory science requirement. Course Fee: $5.00

**GEO 102 Introduction to Physical Geology Laboratory (ESCI 204)**
0 semester credits
Laboratory for GEO 101. Corequisite: GEO 101

**GEO 206 Dinosaur Paleobiology (ESCI 205)**
4 semester credits (Lec. 3, Lab. 1)
This course covers the history of dinosaur paleontology, and the evolution, classification, and life history strategies of the major groups of dinosaurs. Basic concepts of geology, plate tectonics and identifying characteristics of ancient Mesozoic environments will also be covered. Lab exercises include local field trips and lab identification of Montana dinosaur fossils. Application of the scientific method is emphasized throughout the course. Dinosaur discoveries from various parts of the world will be discussed, but this course will focus on the abundant and significant dinosaur finds from Montana and the surrounding region. This course does meet the laboratory science requirement. Prerequisite: one college-level science course or consent of instructor.

GEO 211 Earth History and Evolution (ESCI 206)
4 semester credits
Introductory geology emphasizing the evolution of the Earth and life through geological time. GEO 101 and GEO 102 are recommended. Prerequisites: M 130 or placement into M 121 or M 151. Corequisite: GEO 212 This course does meet the laboratory science requirement. Course Fee: $5.00

GEO 212 Earth History and Evolution Laboratory (ESCI 206)
0 semester credits
Laboratory for GEO 211. Corequisite GEO 221

GEO 314 Introduction to Paleontology (ESCI 310)
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: GPHY 111 or GEO 101 and GEO 102 or consent of instructor. This course does meet the laboratory science requirement. Course Fee: $10.00

GEO 328 General Hydrology (ESCI 315)
3 semester credits (Alternate years, even, 2010-2011, Spring)
An overview of the water cycle with special emphasis on Montana and standing water systems. Offered alternate years-even. This course does not meet the laboratory science requirement.

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.

GEOGRAPHY

GPHY 111 Introduction to Physical Geography (ESCI 115)
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

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.

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.

If this class is taken at the 500 level, it is a graduate course and 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.

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

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.

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

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  Course Fee: $5.00

HPEA 173 Rock Climbing  
1 semester credit  Course Fee: $3.00

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 Rhythms 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 Rhythms 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 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 298 Cooperative Education (HPE 279)**  
Variable: 1 through 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.

**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. Prerequisites: Level I Admission to Teacher Education, EDUC 300 and HPE 376. Co-requisite: EDUC 339 (HPE 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. Prerequisites: Level I 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. Prerequisites: Level I 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 348 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 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 350 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. Prerequisites: BIOL 204 or BIOL 241, M 121 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, healthcare 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: M 145/121, junior standing, Level I Admission to Teacher Education for HPE majors/minors. Co-requisite: EDUC 300.

**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
Introduction to the concept of outdoor education and its relationship to physical education; includes basic outdoor skills and the safety requirements involved. Offered alternate even 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 416 Personal Training**
3 semester credits
This course will prepare students for certification through the National Council of Strength and Fitness as a Certified Personal Trainer. The course outcomes are to develop individuals with the knowledge and aptitude for the fitness industry. Upon successful completion of this course students will be able to demonstrate, evaluate, and apply all practical disciplines of a Certified Personal Trainer and will be qualified to sit for the Personal Trainer exam. Prerequisite: an Anatomy and Physiology course or consent of the instructor.

**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 498 Cooperative Education (HPE 479)**
Variable: 1 through 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.

**HISTORY: AMERICAN**

**HSTA 101 American History I (HIST 131)**
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.

**HSTA 102 American History II (HIST 132)**
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.

**HSTA 255 Montana History (HIST 216)**
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.

**HSTA 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.

**HSTA 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.

**HSTA 310 American Westward Expansion (HIST 310)**
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.

**HSTA 311 Early America (HIST 301)**
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
HSTA 322 American History: World War II through the Present (HIST 305) 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.

HSTA 350 History of American Indians (HIST 364) 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.

HSTA 499 Senior Capstone: Historical Methodology (HIST 449) 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

HISTORY: WORLD

HSTR 101 Western Civilization I (HIST 141) 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.

HSTR 102 Western Civilization II (HIST 142) 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 world.

HIST 330 History of Mexico 3 semester credits
A thematic and geographical overview of the region from 1900 to the present. Includes an introduction to the physiography, climate, peoples and history of the region. Highlights current topics of importance including authoritarianism; economic integration; drug smuggling, guerillas and terrorism, population growth and immigration among others.

HIST 335 Introduction to Latin America 3 semester credits
A thematic and geographical overview of the region from 1900 to

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.

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 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.

HSTR 499 Senior Capstone: Historical Methodology (HIST 449) 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

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 298 Cooperative Education (HUM 279) Variable: 1 through 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 498 Cooperative Education (HUM 479)
Variable: 1 through 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 298 or Junior standing and approval of advisor, Dean of the College of Education, Arts and Sciences, Nursing, and cooperative education coordinator. Pass/Fail only.

INDUSTRIAL AND ENGINEERING TECHNOLOGY

IET 480 Senior Project I
1 semester credit (Lec. 1; Fall)
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 (Lec. 2; Spring)
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.

INDUSTRIAL TECHNOLOGY

IT 100 Introduction to Technology
3 semester credits (Lec. 3; Fall)
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 (Lec. 1, Lab. 4; Fall)
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 (Lec. 2; Spring)
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 115 Construction Technology & Fundamentals
3 semester credits (Lec. 1, Lab. 4; Fall)
This course introduces basic concepts in safety, construction math, hand & power tools, blueprint reading, and basic rigging. This course covers safety in the operation of a variety of hand and power tools. It includes reading simple construction-related blueprints as well as overhead crane hand signals. Thermal and moisture protection using common insulating and vapor systems will be covered.

IT 125 Concrete Forms, Reinforcement, and Handling
5 semester credits (Lec. 1, Lab. 9; Fall)
This course introduces forms for footings and foundations as well as for a variety of concrete structures. It introduces methods for handling, placing, and finishing concrete. It also covers manufactured forms and their applications. Prerequisite: IT 115. Course Fee: $40.00

IT 130 Construction Technology
3 semester credits (Lec. 1, Lab. 4; Spring)
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 131 Metal Building Construction
1 semester credits (Lab. 2; Fall)
This course is designed to meet the needs of those entering a position in carpentry technology or the first time. The curriculum will provide students with working knowledge and experience in the field of carpentry technology. Co-requisite: CARP 210. Prerequisites: IT 111, IT 115, and CARP 120 or instructor’s approval. Course Fee: $10.00

IT 135 Basic Rigging
1 semester credits (Lab. 2; Fall)
Explains how ropes, chains, hoists, loaders, and cranes are used to move material and equipment from one location to another on a job site. It describes inspection techniques and load-handling safety practices as well as reviews American National Standards Institute (ANSI) hand signals. Prerequisite: IT 111. Course Fee: $10.00

IT 209 Furniture & Cabinetmaking
3 semester credits (Lec. 1, Lab. 4; Fall)
Students will be introduced to the principles and practices of furniture and cabinet making. Course Fee: $35.00

LEARNING EXPERIENCE ASSESSMENT PROGRAM

LEAP 289 Learning Experience Assessment Program
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 http://www.msun.edu.

LITERATURE

LIT 110 Introduction to Literature (ENGL 114) 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.

LIT 210 American Literature I (ENGL 201) 3 semester credits
A survey of American literature from the colonial period to 1870.

LIT 211 American Literature II (ENGL 202) 3 semester credits
A survey of American literature from 1870 to the present.

LIT 223 British Literature I (ENGL 221) 3 semester credits
A survey of English literature from the Old English Period to 1700.

LIT 224 British Literature II (ENGL 222) 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.

LIT 230 World Lit Survey (ENGL 214) 3 semester credits
An historical and thematic study of world literature in translation that may include Babylonian, Hebrew, Indian, Chinese, Persian, and other literature.

LIT 300 Literary Criticism (ENGL 402) 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.

LIT 305 Lit by & About Native Americans (ENGL 331) 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.

LIT 309 Popular Genres (ENGL 309) 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.

LIT 327 Shakespeare (ENGL 385) 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.

LIT 363 Modern Poetry (ENGL 330) 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.

LIT 382 Literature for Children and Adolescents (ENGL 310) 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, epics, fables, informational and nonfiction works, biographies, popular fiction, and fantasy literature.

LIT 435 Development of the Novel (ENGL 435) 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.

LIT 463 Studies in Contemporary Literature (ENGL 401) 3 semester credits
A study of the development of the forms and themes of poetry and fiction in the period since World War II.

LIT 494 Seminar: Major Author(s) (ENGL 409) 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.

MATHEMATICS (see also STATISTICS)
STUDENT ENROLLMENT IN MATH COURSES IS CONTINGENT UPON SUCCESSFUL COMPLETION OF THE NECESSARY PREREQUISITE(S).

M 095 Intermediate Algebra (MATH 093) 3 semester credits
This course is for students not ready for college level mathematics and covers the pre-algebra through intermediate algebra mathematics skills needed for college level mathematics courses. The course is delivered in a lab setting allowing students to progress at their own level with the aid of an on site instructor. The class is organized into three distinct levels of Arithmetic, Beginning Algebra, and Intermediate Algebra with the student required to complete each segment in sequence. Arithmetic topics include concepts and topics of the real number system: including numeric operations, decimals,
The topics included in this course are directly related to elementary solving skills is emphasized. Prerequisite: M 095
determinants, and matrix algebra. The development of problem-solving systems of equations in two or more variables using matrices, quadratic, polynomial, exponential, and logarithmic functions, concept including inverse functions, graphing techniques, linear, and theorems of the real and complex number systems, the function This course surveys a wide variety of topics including: properties and theorems of the real and complex number systems, 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. The development of problem-solving skills is emphasized. Prerequisite: M 095
mathematics education. The specific number topics included in this course include: numeral system, problem solving, set theory foundation of the real number system, arithmetic algorithms, statistics, probability, and algebra notations. The specific geometry topics include: plane and solid shape classification and properties, congruence, similarity, symmetry, trigonometry, measurement, and transformations. Prerequisite: M 095, or ACT scores 20 or higher, or university placement examination.. Course Fee: $5.00
M 131 Mathematics for Elementary Teachers II (MATH 121) 3 semester credits
Topics relevant to elementary mathematics education, including algebra, statistics, and number theory. Focuses primarily on geometric concepts. Prerequisite: M 130. Course Fee: $5.00
M 145 Math for the Liberal Arts (MATH 110) 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: M 111 or M 095, or ACT scores 20 - 22, or university placement examination.
M 151 Precalculus (MATH 130) 4 semester credits
The topics included in this course are: 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: ACT scores 25 - 26 or university placement examination.
M 162 Applied Calculus (MATH 133) 3 semester credits
The topics included in this course are: differentiation and integration with positive reinforcement of concepts in algebra, trigonometry, and analytic geometry. Prerequisite: ACT scores 25 - 26 or M 121 or M 151 or university placement examination.
M 171 Calculus I (MATH 220) 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: M 151 or both M 121 and M 112.
M 172 Calculus II (MATH 221) 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: M 171.
M 273 Multivariable Calculus (MATH 323) 3 semester credits
Introduction to the calculus of several variables including partial derivatives, extremes, tangent planes, multiple integrals, and applications, and vector analysis. Prerequisite: M 172.
M 298 Cooperative Education (MATH 279)  
Variable: 1 through 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.

M 301 Mathematics Technology for Teachers (MATH 320)  
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.

M 311 Ordinary Differential Equations/Systems (MATH 326)  
3 semester credits  
Ordinary differential equations and LaPlace Transforms. Prerequisite: M 172.

M 326 Number Theory (MATH 335)  
3 semester credits  
Selected topics from real number theory and congruencies. Prerequisite: M 172.

M 327 Methods of Teaching Secondary Math (MATH 317)  
3 semester credits  

M 329 Modern Geometry (MATH 334)  
3 semester credits  
Study of Euclidean Geometry, selected topics from non-Euclidean Geometry. Prerequisite: M 172.

M 333 Linear Algebra (MATH 310)  
3 semester credits  
Study of Vector spaces and linear transformations which act on vector spaces, focusing on linear transformations and their matrix representations. Prerequisite: M 172.

M 351 Algebraic Structures I (MATH 330)  
3 semester credits  
Introduction to mathematical groups, rings, fields, and polynomial rings. Prerequisite: M 172.

M 440 Numerical Analysis (MATH 410)  
3 semester credits  
Introduction to numerical analysis including error analysis, real roots of equations, numerical integration, and numerical solutions of ordinary differential equations. Prerequisites: M 311 and one higher-level computer programming language course.

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.

METALS TECHNOLOGY

METL 140 Introduction to Welding and Cutting
3 semester credits (Lec. 1, Lab 4; Fall & Spring)
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 (Lec. 1, Lab. 4; Spring)
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 (Lec. 1, Lab. 4; Fall)
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 welding and flux cored arc welding. Prerequisite: METL 140 or consent of instructor. Course Fee: $50.00

METL 155 Machining Processes
3 semester credits (Lec. 1, Lab. 4; Fall & Spring)
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 (Fall & Spring)
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. Pass/Fail only. Course Fee: $30.00 or $60.00

METL 185 Metal Fabrication
3 semester credits (Lec. 1, Lab. 4; Fall)
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 (Lec. 2, Lab. 4; Fall)
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 (Lec. 1, Lab. 4; Spring)
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 298 Cooperative Education (METL 279)
Variable: 1 through 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 Montana State University-Northern, approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

METL 353 Metal Sculpture
3 semester credits (Fall, 1/2 Semester)
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 (Lec./Lab. Arr.; Fall & Spring)
Laboratory applications to be taken following METL 285. Prerequisite: METL 285. Course Fee: $50.00

METL 357 Welding Certification Procedures III
3 semester credits (Lec./Lab. Arr.; Fall & Spring)
Laboratory applications to be taken following METL 356. Prerequisite: METL 356. Course Fee: $50.00

MANUFACTURING

MFGT 200 Manufacturing Processes and Materials
3 semester credits (Lec. 3; Fall)
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 298 Cooperative Education (MFGT 279)
Variable: 1 through 12 semester credits
A planned 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.

MFGT 341 CAD/CAM Applications
3 semester credits (Lab. 6; Fall)
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 (Lab. 6; Spring)
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 (Lec. 3; Fall)
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: M 121 or higher

MFGT 498 Cooperative Education (MFGT 479)
Variable: 1 through 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 298 or Junior standing and approval of advisor, Dean of the College of Technical Sciences, and cooperative education coordinator. Pass/Fail only.

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.

NATIVE AMERICAN STUDIES

NASL 120 Native American Language I (NAS 105)
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. Taught by Native speakers, two semesters of NASL 120 (six semester credits).

NASL 121 Native American Language II (NAS 106)
3 semester credits
NASL 121 is a continuation of Introduction to Native American Language concentrating on conversations and the relationship of language to culture. The particular language to be studied will vary depending on availability of instruction. Prerequisite: NASL 120.

NASL 220 Introduction to Ethnic Indian Studies
3 semester credits
Interdisciplinary treatment of Native American studies. Provides general background and understanding of American Indian cultures.

NASL 230 Native American Beliefs and Philosophy
3 semester credits
The sacred customs, traditions and beliefs of Native Americans have been, and are, greatly misunderstood by the mainstream society. The introduction within the boundaries of Native American practices and beliefs will apply to debates of classroom presentations. The class will concentrate on the plains tribes in Montana and Canada, on tribal spiritual leaders and practitioners and on the U.S. Supreme Court decisions.

NAS 250 Montana Indians: Cultures, Traditions and Current Issues
3 semester credits
This course will deal with several major issues: One, the U.S.-Canada international border cuts between Native territories due to international negotiations in which Natives had no role. How has the border affected, and how does it continue to affect, their lives?
the histories and cultures of Montana’s seven reservations and twelve Native groups vary and are complicated. The histories of the people and the reservations will be covered. Three, the course will include bringing in elders from the Hi-Line reservations to tell the cultures, traditions and present issues from their perspectives.

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.

NASL 331 American Indian Literature (NAS 331)
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.

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.

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.

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 nonmathematical 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 117 Nutrition
2 semester credits (2 hours lecture)
This course is an introduction to normal and clinical nutrition. The fundamentals of nutrition and nutritional needs throughout the life span will be addressed. The appropriate uses for diet therapy in restoring and maintaining health will also be covered.

NURS 118 Introduction to Nursing
1 semester credit (1 hour lecture)
This course introduces the student to the profession of nursing. Students will study the characteristics of the nursing process, critical thinking and time management. Learning styles, communication ability and test taking skills as well as legal/ethical/cultural issues, nursing history and basic concepts of human behavior are explored.

NURS 119 Fundamentals of Nursing
7 semester credits (4 hours lecture/9 lab hours)
This theory and lab course introduces the nursing principles and clinical skills that are essential for the nursing roles of provider of care, manager of care and member of the discipline in nursing.
Emphasis is on the role of provider of care and human health needs of clients. Theoretical and practical concepts of the nursing process, critical thinking, and health promotion to meet the needs of individuals in a variety of health care settings are presented. The course provides for the application of basic nursing skills. Prerequisite: Admission to Nursing Program. Course Fee: $35.00

**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.

**NURS 131 Nursing Success II**
3 semester credits (2 hours lecture/3 hours clinical)
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 132 Gerontology**
2 semester credits (1 hour lecture/3 hour clinical)
This course addresses current issues relevant to the nursing care of the aging population. Economic, social and ethical issues and expected age related conditions affecting the aging population are explored. The clinical component provides the opportunity for the student to apply these principles while meeting health promotion, maintenance and restoration needs. Prerequisite: Admission to Nursing Program.

**NURS 140 Pharmacology**
3 semester credits (3 hours lecture)
This course is an introduction to clinical drug therapy. Content areas include groups of therapeutic drugs, prototypes of drug groups, commonly prescribed drugs, drug interactions and the role of the nursing process in prescribed drug therapy regimens. Students examine drug therapy using critical thinking and clinical decision making. Prerequisite: Admission to Nursing Program.

**NURS 151 Core Concepts of Adult Nursing**
7 semester credits (4 hours lecture/9 hours clinical)
This theory and practicum course prepares the student to provide nursing care to patient’s experiencing common, well-defined health/illness needs. The focus is on use of the nursing process and critical thinking in settings where stable patients are anticipated. Recognition and emergent treatment of rapidly changing patient physical conditions will be introduced. Prerequisites: Successful completion of NURS 119, NURS 132 and NURS 140. Course Fee: $35.00

**NURS 152 Core Concepts of Maternal/Child Nursing**
3 semester credits (2 hours lecture/3 hour clinical)
This course introduces the student to the provider of care role in meeting the needs of the mother, newborn, child, and family unit. The course includes growth and developmental patterns as well as care of the well and sick child. The student will demonstrate acquired knowledge when caring for the mother, newborn and child in institutional and community based settings. Prerequisites: Successful completion of NURS 119, NURS 132, and NURS 140 Course Fee: $15.00

**NURS 153 Core Concepts of Mental Health Nursing**
2 semester credits (2 hours lecture)
This theory course explores physiological, sociological, spiritual, and environmental factors associated with Mental Health/Illness needs which effect individuals, families, and communities. Focus is on the use of the nursing process and therapeutic communication skills when caring for clients with basic psychiatric disorders. Therapeutic modalities and psychopharmacological management is presented. Prerequisites: Successful completion of NURS 119, NURS 132, and NURS 140.

**NURS 212 Transition to Associate Degree Nursing**
3 semester credits (online with one day of 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 250 Adult Health/Illness Needs I**
6 semester credits (3 hours lecture/9 hours clinical)
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. Prerequisites: 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 hours clinical)
This is a theory and practicum course. This course introduces the health/illness needs of the childbearing and child rearing 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 hours clinical)
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 hours clinical)
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 255 Complex Care Needs - Maternal/Child Client
3 semester credit (2 hours lecture/3 hour clinical)
This course prepares the student to provide care to maternal/child patients experiencing acutely changing conditions in settings where the outcome is less predictable. Topics include care of the patient during childbirth, high risk pregnancies, obstetrical emergencies, neonatal emergencies and infants, children and family units requiring complex collaborative care. Prerequisites: Successful completion of NURS 151, NURS 152, and NURS 153. Course Fee: $15.00

NURS 256 Complex Care Needs - Mental Health Client
2 semester credit (1 hour lecture/3 hour clinical)
This course explores mental health/illness needs of special populations with emphasis on individuals, families and communities. Focus is placed on psychotherapeutic management in the continuum of care, milieu management and behavioral interventions with clients experiencing acute and chronic psychiatric disorders. This course provides for clinical application of mental health nursing skills and the use of therapeutic communication in institutional and community based settings. Prerequisites: Successful completion of NURS 151, NURS 152, and NURS 153. Course Fee: $15.00

NURS 257 Complex Care Needs - Adult Client
4 semester credit (2 hours lecture/6 hours clinical)
This course provides the opportunity for the student to provide nursing care to the adult with complex health/illness needs, including those with acute health conditions. Emphasis is on clinical decision making when providing care for clients and family members with rapidly changing health conditions. Prerequisites: Successful completion of NURS 255, NURS 256, NURS 258 and BIOL 217.

NURS 258 Pathophysiology
3 semester credit (3 hours lecture)
This course introduces the student to the principles and processes of pathophysiology and its effect on human body systems. Pathophysiology of the most common body system alterations are discussed within the context of the provider of care role. Evidence based research in the nursing of clients with body system alterations are presented. Prerequisites: Successful completion of NURS 151, NURS 152, and NURS 153.

NURS 261 Advanced Clinical Skills
1 semester credit (3 hour lab)
This course prepares the student to assume the provider of care role while implementing complex nursing interventions. This skills lab allows students to practice advanced nursing skills utilizing the nursing process and critical thinking to demonstrate clinical decision making. Prerequisites: Successful completion of NURS 255, NURS 256, NURS 258 and BIOL 217.

NURS 262 Managing Client Care
4 semester credit (2 hours lecture/6 hours clinical)
This course addresses the transition of the student nurse into the role of the associate degree registered nurse and includes preparation for the NCLEX-RN. Emphasis is on application of the manager of care role when caring for groups of clients while working in a supervised healthcare environment. Prerequisites: Successful completion of NURS 255, NURS 256, NURS 258, and BIOL 217. Course Fee: $15.00

NURS 305 Nursing Ethics
3 semester credits (online)
The field of medical/nursing ethics has become more important as healthcare 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 healthcare 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 healthcare 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 Cultural Diversity in Healthcare
3 semester credits (online)
This course presents cultural concepts and the relationship to health/illness of individuals and families. The focus is on how culture influences decision-making of the healthcare professional. This online course meets the Category V general education requirement.

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  
4 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  
2 semester credits (6 hours clinical)  
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 should be taken at the same time as NURS 344.

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 355 Introduction to the Healthcare System  
1 semester credit  
This course introduces the student to the complexities of the healthcare industry. Healthcare economics, ethics and legal issues are discussed. Managed care and it’s impact of cost and quality are also presented.

NURS 440 Leadership and Management  
4 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 healthcare system are explored. Prerequisites: NURS 321 and NURS 322. Course should be taken at the same time as NURS 441.

NURS 441 Leadership and Management Practicum  
2 semester credits (6 hours clinical)  
This practicum provides opportunity to apply leadership and management concepts in a healthcare system. Prerequisite: RN license. Course should be taken at the same time as NURS 440.

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: WRIT 101, statistics and/or permission of instructor.

NURS 446 Community Health Nursing  
4 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. Prerequisites: RN license, NURS 321 and NURS 322. Course should be taken at the same time as NURS 447.

NURS 447 Community Health Practicum  
2 semester credits (6 hours clinical)  
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.

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, Epicetus, Epicurus, Aquinas, Eckhart, Machiavelli, Hobbes, Spinoza, Hume, Kant, Benthan, 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. Prerequisites: M 121 and M 112 or equivalent. M 112 may be taken concurrently with PHYS 231, but it is highly recommended that it be taken prior to enrollment in PHYS 231. Co-requisite: PHYS 234. 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. Prerequisites: PHYS 231, M 121 and M 112. Co-require: 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-require: 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-require: Enrollment in PHYS 232. Broadfield Science majors enroll in 2 credits; Technology majors enroll in 1 credit lab.

PLUMBING TECHNOLOGY

PLMB 100 Introduction to Plumbing Trades
4 semester credits (Lec. 1, Lab. 6; Fall)
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 credit (Lec. 1; Spring)
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, orthogonal 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 (Lec. 1, Lab. 4; Spring)
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 clean outs and an overview of the water distribution system. Course Fee: $30.00

PLMB 125 Introduction to Plumbing Fixtures
2 semester credits (Lec. 1, Lab. 2; Spring)
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 (Lec. 2; Spring)
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 (Lec. 1, Lab. 4; Fall)
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 (Lec. 2; Fall)
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 (Lec. 2; Fall)
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 (Lec. 1, Lab. 4; Spring)
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 (Lec. 1, Lab. 2; Spring)
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 (Lec. 1, Lab. 2; Spring)
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 credit (Lec. 1; Spring)
This course explains how computer and microprocessor controls are used to manage zoned HVAC systems in residential and commercial buildings. Course Fee: $5.00
POLITICAL SCIENCE

PSCI 210 Introduction to American Government (POL 134) 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.

PSCI 250 Introduction to Political Theory (POL 235) 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.

PSCI 260 Introduction to State and Local Government (POL 201) 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.

PSCI 340 International Relations 3 semester credits
A study of the principal forces, movements, ideologies, and instruments of international politics. Prerequisite: Consent of the instructor.

PSCI 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.

PSCI 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

PSYX 100 Introduction to Psychology (PSYC 101) 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.

PSYX 230 Developmental Psychology (PSYC 205) 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/unsuccesful parenting. Finally, we shall look at the physical, cognitive, and psychosocial aspects of our final years of life.

PSYX 340 Abnormal Psychology (PSYC 461) 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 symptomatology, 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.

PLMB 285 System Startup and Shutdown 1 semester credit (Lec. 1; Spring)
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 shutdown. Course Fee: $5.00

PSCI 471 American Constitutional Law (POL 303) 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.
PSYX 385 Psychology of Personality (PSYC 360)  
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.

PSYC 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 560 Psychology of 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 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 Advertising and Promotion  
3 semester credits (Lec. 3; Fall)  
Advertising and promotion form the means by which organizations communicate the distinctive characteristics of their offerings to potential buyers. This course examines the theory and practice of promotions and advertising. The primary focus is on how advertising and promotions contribute to the overall marketing plan. While this course is not intended to train students to be proficient at the skills of creating effective advertising, they will gain a working knowledge of those skills by designing and implementing a full range of ads using various media as part of an overall advertising campaign.

SBM 402 Small Business Management  
3 semester credits (Lec. 3; Fall & Spring)  
Practical analysis of principles of small business management and owner-operated businesses are covered including management methods, location decision making, financial support for startups, marketing 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 (Lec. 3; Spring)  
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

SOCI 101 Introduction to Sociology (SOC 101)  
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: SOCI 101.

SOCI 211 Introduction to Criminology (SOC245)  
3 semester credits  
Examination of the various sociological, psychological, and biological theories that purport to explain criminal behavior.
SOCI 241 Introduction to Social Psychology (SOC 240)
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 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 (SOC 315)
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 298 Cooperative Education (SOSC 279)
Variable: 1 through 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 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 498 Cooperative Education (SOSC 479)
Variable: 1 through 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 298, 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.

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 245 Intercultural Communication
3 semester credits
The purpose of this course is to develop the skills necessary to build and maintain positive communication and relationships across cultures. Students will focus on similarities and differences in communication. Perceptions, language usage, nonverbal style, thinking modes, and values all will be explored to see how they influence face-to-face communication between individuals of different cultures.

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.

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.

SPANISH

SPNS 101 Elementary Spanish I (SPAN 105)
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.

SPNS 102 Elementary Spanish II (SPAN 106)
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: SPNS 101. Students with prior Spanish study should consult the instructor for placement.

STATISTICS

STAT 216 Introduction to Statistics (MATH 116)
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. Prerequisites: M 095, ACT score 20 - 22, or university placement exam.

STAT 217 Intermediate Statistical Concepts (MATH 140)
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: M 121.

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
4 semester credits
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, CHMY 121, and M 121.

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 298 Cooperative Education (TSCI 279)
Variable: 1 through 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 498 Cooperative Education (TSCI 479)
Variable: 1 through 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 298 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 (Lec. 3; Fall)
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 (Lec. 3; Spring)
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 (Lec. 3; Spring)
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.

If this class is taken at the 500 level, it is a graduate course and 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.

**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.

If this class is taken at the 500 level, it is a graduate course and 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.

**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. Graduate credit requirements are described in the course syllabus.

If this class is taken at the 500 level, it is a graduate course and 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.

**WRITING**

**WRIT 095 Developmental Writing (ENGL 098)**
3 semester credits
This course is intended for students who are not fully prepared to meet college writing expectations. Activity requirements may differ from one student to another because of differences in developmental needs. However, all students will be expected to write and revise essays, of varied length, from various prompts. To complete Developmental Writing satisfactorily, students must demonstrate the ability to write a persuasive essay. Placement will be by University System Writing Assessment, ACT or SAT examination. Students who make progress but do not complete all requirements in their first semester will receive a grade of In-Progress (IP) and may be repeated as necessary.

**WRIT 101 College Writing I (ENGL 112)**
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: Completion of WRIT 095 or in accordance with Board of Regents Policy 301.16. See page 6 of this catalog.

**WRIT 108 Elementary Technical Writing (ENGL 108)**
3 semester credits
This course is intended to meet the needs of Associate of Applied Science (A.A.S.) students and Certificate of Applied Science (C.A.S.) students who do not plan to transfer to other degree programs or institutions. Elementary Technical Writing is designed to introduce students to common forms of work related writing, such as memoranda, letters, reports, and proposals.

**Students Please Note:** This course may be used to satisfy degree and graduation requirements in Associate of Applied Science (A.A.S.) degrees and Certificate of Applied Science (C.A.S.) degrees; however, it cannot be used to satisfy any degree or graduation requirement for an Associate of Science, an Associate of Arts, a Bachelor of Arts, or a Bachelor of Science degree.

**WRIT 305 Advanced Essay Writing (ENGL 305)**
3 semester credits
Practice in expository writing for advanced students. Prerequisite: WRIT 101.

**WRIT 338 Public Relations Writing (ENGL 338)**
3 semester credits
Practice in writing public relations materials such as brochures, background pieces, speeches, newsletters and press releases.

**WRIT 350 Technical Editing (ENGL 366)**
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: WRIT 108.
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 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, (406) 265-4147, Montana State University-Northern, or Director, Office of Civil Rights, Federal Office Building, 1244 Speer Boulevard, Denver, Colorado 80204.

CAMPUS VISITS
VISIT US and see it for yourself! Visiting the campus and exploring the many possibilities here will help you get excited about your future at Northern. Campus tours are a great way to spend some time with a current student and see what our campus has to offer.

At your scheduled visit, you can expect to meet with an Admissions Specialist, Student Services, Financial Aid, and tour our campus. At your request you can meet with a faculty member in your intended major, attend an event on campus, experience a class, meet with athletic coaches, or even stay on campus.

DAILY VISITS are scheduled Monday through Friday with two start times at 9 a.m. or 1 p.m. The Admissions Office is open 8 a.m. to 5 p.m., Monday through Friday (summer hours are 7:30 a.m. to 4 p.m.).

TO ARRANGE YOUR VISIT, please call 406-265-3704 or 800-662-6132 ext. 3704. To allow us to make the most of your visit and to set up specific appointments, please contact us at least five to seven days in advance. Large groups are encouraged to schedule at least two weeks in advance. You can check out our web site at http://www.msun.edu or e-mail us at admissions@msun.edu.

Because family members play an important role in college planning, they are welcome to learn more about the university by participating in the campus visit with you. If you have a disability and desire assistance, please notify the Admissions Office.

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:

1. 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”
2. Show documentation of having contracted measles and rubella. Documentation by a physician is required including dates of illness.
   “OR”
3. 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 the Registrar. 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.
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>COURSE</th>
<th>YRS</th>
<th>MT REGENTS COLLEGE PREP PROGRAM</th>
<th>EXAM</th>
<th>2006 SCORE</th>
<th>2007 SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics</td>
<td>3</td>
<td>Algebra I, II, and Geometry (or the sequential content equivalent of these courses). Mathematics course in senior year encouraged.</td>
<td>ACT Math</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SAT Math</td>
<td>420</td>
<td>440</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>CLEP</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>English</td>
<td>4</td>
<td>Written and oral communication skills and literature.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>2</td>
<td>2 lab sciences: one year must be earth science, biology, chemistry, or physics.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Social Studies</td>
<td>3</td>
<td>Global studies (world history, world geography), American history, and government. Economics, American Indian history or other third-year courses.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>2</td>
<td>Foreign language, computer science, visual and performing arts, or vocational education.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

OR

<table>
<thead>
<tr>
<th>COURSE</th>
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<th>EXAM</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics</td>
<td>Advanced Placement Courses designed to prepare students for these exams.</td>
<td>Calculus AB, Calculus BC</td>
<td>3+</td>
</tr>
<tr>
<td>English</td>
<td>Advanced Placement Courses designed to prepare students for these exams.</td>
<td>English Language, English Literature</td>
<td>3+</td>
</tr>
<tr>
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<td>Electives</td>
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<td>Foreign language, computer science, visual and performing arts, or vocational education.</td>
<td></td>
</tr>
</tbody>
</table>

OR
EXCEPTIONS TO THE COLLEGE PREPARATORY/ADMISSION STANDARDS REQUIREMENTS:

1. Non-traditional students (students that have graduated from high school at least three years prior to enrollment),
2. Summer only students,
3. Part-time students taking six 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.
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.
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 or are less than 21 years of age 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.
For classes used to satisfy a general education requirement, students must earn a C- or better; for classes used as free or elective credits, students must earn a D- or better. (Free or elective credits are additional credits that a student must earn in order to have the required number of total credits for a two-year or four-year degree. They are classes that are not used to satisfy the requirements of a major, minor, option, certificate or general education program.)

Grade point averages for transfer work are not calculated in the grade point average at Montana State University-Northern with the exception of those students entering the Nursing Program. 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 section under the College of Education and 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 he/she 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, extension 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
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 Education 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.

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. Priority 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, extension 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 must be provided. The statement must verify financial support available to the applicant in US Dollars based on current year estimated cost of attendance for each year attendance. Contact the Admissions Office for current year estimated cost of attendance budget for International students at 1-800-662-6132, extension 3704.

4. English Language Proficiency. Provide an official TOEFL score report of a 71 (163 CBT) for undergraduate, 52 (171 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 90230 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 be sent 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 http://www.wes.org.

7. Immunization Records. Non US Citizens must show a physician validated immunization record of two 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 evidence 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 regionally accredited 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. An 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 he/she 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 undergraduate 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 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 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 transcripts from all other regionally accredited 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, California, 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. Duration of the WUE Scholarship is four years or until completion of 120 credits, whichever comes first.

3. Recipients of a WUE Scholarship must maintain a cumulative G.P.A of 2.5 or above and maintain 15 credits per semester.

4. Time as a WUE Scholarship recipient cannot be used toward fulfilling Montana residency requirements.

5. 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://wue.wiche.edu.
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, Carpentry Technology, Civil Engineering Technology, Chemistry, Diesel, Design Drafting, Electrical Technology, Electronics Engineering Technology, Earth Science, Health and Physical Education, Metals Technology, Nursing, and Plumbing Technology. 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 116 of this catalog.

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.

TUITION/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.
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 2009-2010 (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>$5080.00</td>
<td>$14070.00</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>Loan Fee</td>
<td>$70.00</td>
<td>$70.00</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>$17350.00</strong>*</td>
<td><strong>$26340.00</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/return 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
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 in the Financial Aid Office in Cowan Hall 213.

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. 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 2009-2010 award year is scheduled to be $5350. 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 Cowan 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 fixed at 5.6% sub and 6.8% unsub.

The borrower must also pay a loan fee of 1.5% of the amount borrowed, which is deducted from each disbursement. The loan fee is paid to the lending institution.

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 fixed at 8.5%. 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 3% 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 sign the check and it is applied to your account. 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 15 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 $25.00 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 [http://mappingyourfuture.org/](http://mappingyourfuture.org/). 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 attempted credits for an Associate degree, 186 attempted credits for a Bachelor’s degree, or 45 attempted credits for an undecided degree seeking student. Graduate student eligibility expires at 68 attempted 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 213).

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 restate your eligibility. In order to restate 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 your aid will be terminated and 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 213 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 knowing 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 term of residency at MSU-Northern. The Center will help students select appropriate classes and complete the registration process during that first term.

After their first term 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.

#### 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

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Students are responsible for meeting graduation requirements.
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:

<table>
<thead>
<tr>
<th>Classification</th>
<th>Credits Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>0-29 semester credits earned</td>
</tr>
<tr>
<td>Sophomore</td>
<td>30-59 semester credits earned</td>
</tr>
<tr>
<td>Junior</td>
<td>60-89 semester credits earned</td>
</tr>
<tr>
<td>Senior</td>
<td>90 semester credits and above</td>
</tr>
<tr>
<td>Post-Graduate</td>
<td>Baccalaureate students earning additional hours of undergraduate or graduate credit, but not following a master’s degree program.</td>
</tr>
<tr>
<td>Graduate</td>
<td>Baccalaureate students enrolled in a master’s degree program.</td>
</tr>
</tbody>
</table>

By credits:

UNDERGRADUATE STUDENTS

<table>
<thead>
<tr>
<th>Classification</th>
<th>Credits Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-Time</td>
<td>Enrolled for 12 or more semester credits.</td>
</tr>
<tr>
<td>Half-Time</td>
<td>Enrolled for 6 or more semester credits, but fewer than 12.</td>
</tr>
<tr>
<td>Part-Time</td>
<td>Enrolled for fewer than 6 semester credits.</td>
</tr>
</tbody>
</table>

GRADUATE STUDENTS

<table>
<thead>
<tr>
<th>Classification</th>
<th>Credits Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-Time</td>
<td>Enrolled for 9 or more semester credits.</td>
</tr>
<tr>
<td>Half-Time</td>
<td>Enrolled for more than 5 semester credits, but fewer than 9.</td>
</tr>
<tr>
<td>Part-Time</td>
<td>Enrolled for fewer than 5 semester credits.</td>
</tr>
</tbody>
</table>

STUDENT STATUS

<table>
<thead>
<tr>
<th>Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree-Seeking</td>
<td>A student who plans to pursue a degree at Montana State University-Northern.</td>
</tr>
<tr>
<td>Non-Degree-Seeking</td>
<td>A student who does not plan to pursue a degree at Montana State University-Northern.</td>
</tr>
<tr>
<td>Adult Special</td>
<td>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.</td>
</tr>
<tr>
<td>Continuing</td>
<td>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.</td>
</tr>
<tr>
<td>Former</td>
<td>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.</td>
</tr>
<tr>
<td>Transfer</td>
<td>Any student who was last registered for 12 or more credits at another institution of higher learning.</td>
</tr>
</tbody>
</table>

CLEP (College Level Examination Program)

The College-Level Examination Program (CLEP) is a national credit by examination program. This program provides students with the opportunity to demonstrate college-level achievement by taking an exam. Each institution determines which CLEP test and passing score it will accept for a specific course. All CLEP testing at MSU-Northern is online and costs a total of $75.00. Each exam is approximately 90 minutes long, and except for English Composition with Essay, is made up primarily of multiple-choice questions; however, some exams do have fill-ins. Credit earned through CLEP is assigned a grade of “Pass” and does not effect the grade point average. All CLEP credits awarded appear on the transcript and may apply towards graduation. CLEP credits may not be used for financial aid purposes or athletic eligibility.

For a complete list of exams that have equivalent courses at Northern or to schedule an exam please contact the Assistant Dean of Students at (406) 265-4117 or in 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 298 or 498. 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**

<table>
<thead>
<tr>
<th>Course Range</th>
<th>Course Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>001-099</td>
<td>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.</td>
</tr>
<tr>
<td>100-299</td>
<td>Lower division courses.</td>
</tr>
<tr>
<td>300-499</td>
<td>Upper division courses.</td>
</tr>
<tr>
<td>500-599</td>
<td>Upper division undergraduate courses taken for graduate credit. Additional work is usually required.</td>
</tr>
<tr>
<td>600-699</td>
<td>Graduate division courses only.</td>
</tr>
<tr>
<td>1390</td>
<td>Undergraduate level Continuing Education Courses</td>
</tr>
<tr>
<td>1590</td>
<td>Graduate level Continuing Education Courses</td>
</tr>
</tbody>
</table>

**COURSE REPETITION**

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 Semester Credits Without Approval</th>
<th>Maximum Semester Credits With Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.00 and above</td>
<td>1-22</td>
<td>more than 22</td>
</tr>
<tr>
<td>2.50-2.99</td>
<td>1-20</td>
<td>more than 20</td>
</tr>
<tr>
<td>2.00-2.49</td>
<td>1-18</td>
<td>more than 18</td>
</tr>
<tr>
<td>below 2.00</td>
<td>1-12</td>
<td>more than 12</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 he/she 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 200 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.
EVALUATION OF COURSEWORK

Faculty at Montana State University-Northern may use the following scale when assigning final grades to students in courses. Criteria for assigning these grades are left to the discretion of course faculty, and shall be clearly communicated to the students in the course using the course Syllabus or any other means of official course communications. These criteria should be provided to the students during the first week of class during each semester. Use of plus and minus grading is left to the discretion of course faculty.

<table>
<thead>
<tr>
<th>Grades</th>
<th>Description of Grades</th>
<th>Grade Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent</td>
<td>4</td>
</tr>
<tr>
<td>A-</td>
<td></td>
<td>3.7</td>
</tr>
<tr>
<td>B+</td>
<td></td>
<td>3.3</td>
</tr>
<tr>
<td>B</td>
<td>Above Average</td>
<td>3</td>
</tr>
<tr>
<td>B-</td>
<td></td>
<td>2.7</td>
</tr>
<tr>
<td>C+</td>
<td></td>
<td>2.3</td>
</tr>
<tr>
<td>C</td>
<td>Average</td>
<td>2</td>
</tr>
<tr>
<td>C-</td>
<td></td>
<td>1.7</td>
</tr>
<tr>
<td>D+</td>
<td></td>
<td>1.3</td>
</tr>
<tr>
<td>D</td>
<td>Below Average</td>
<td>1</td>
</tr>
<tr>
<td>D-</td>
<td>Passing</td>
<td>.7</td>
</tr>
<tr>
<td>F</td>
<td>Failure</td>
<td>0</td>
</tr>
<tr>
<td>P</td>
<td>Pass</td>
<td>0</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
<td>0</td>
</tr>
<tr>
<td>I/*</td>
<td>Incomplete grade subsequently finished</td>
<td>0</td>
</tr>
<tr>
<td>Audit</td>
<td>Audit</td>
<td>0</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawal</td>
<td>0</td>
</tr>
<tr>
<td>X</td>
<td>Continuation</td>
<td>0</td>
</tr>
<tr>
<td>NR</td>
<td>Not Reported by Instructor</td>
<td>0</td>
</tr>
<tr>
<td>PF</td>
<td>Failure Due to Academic Dishonesty</td>
<td>0</td>
</tr>
<tr>
<td>IP</td>
<td>In Progress</td>
<td>0</td>
</tr>
<tr>
<td>NP</td>
<td>Not Passing</td>
<td>0</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 was 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 “I/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.

I/* - Incomplete grade subsequently finished. The * represents the final grade. Points are those appropriate to the final grade.

Audit - Indicates that the student registered as an auditor for the course. No credit is given.

W - Indicates that the student withdrew from the course or University after 20% of the course had been completed but before 60% of the class time was completed.

X - Indicates that the final grade for the course will be assigned when the sequence is completed and may extend beyond one semester. Only graduate students receive this notation.

IP - Indicates that the student’s work is still in progress.

NP - Indicates that the student was not passing M 095 at the time the grades were turned in.

NR - Indicates that the instructor did not report the grade. This is a temporary notation and a grade report will be issued as soon as possible.

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 HONORS

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 “I/F”. If the student is not in residence, two semesters are given to complete the work, or the incomplete becomes an “I/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 292, 392, 492, 592, or 692 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 6 independent study credits may apply toward a Master’s degree, 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. Students may also ask to have LEAP credits evaluated as distribution coursework under the general education program.

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. Faculty members are not notified when courses are taken on a pass-fail basis. Letter grades turned in by the instructor are converted to Pass or Fail when the grades are recorded on the student’s permanent record. A passing grade is defined as a “C-” or better. A failing grade is an “F.” Pass grades are not counted in the grade point average but the credit may meet graduation requirements subject to the limitations set out above. Grades of “F” are counted in the grade point average.

The University cautions students that some graduate and professional schools and some employers do not recognize non-traditional grades (i.e., those other than A, B, C, D, F) and students who use the pass/fail option may be at a disadvantage in such situations.

PETITIONS
Exceptions and deviations from normal academic policy may be requested through petition forms and procedures available from the Registrar’s Office. Petitions and requested waivers are reviewed in a timely manner and students are notified of their approval or disapproval.

PRIVACY RIGHTS
In accordance with the Family Educational Rights and Privacy Act of 1974, the Registrar informs students that the University may disclose information from the education record of a student who is or has been in attendance at Montana State University-Northern. The following information is considered by the University to be public in nature:

1. Name
2. Address
3. Telephone number
4. Year in school
5. Major
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 elapsed 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. 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 196.

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 291, 391, 491, 591, and 691 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 Graduate Studies for more information.

TECH PREP

Some courses at MSU-Northern can be completed by taking an equivalent course in high school. Those courses are marked with the Tech Prep logo; that information begins on page 116 of this catalog. Counselors and instructors at participating high schools have information available for interested students. More information regarding the Tech Prep agreement can be found at http://techprep.msugf.edu.

TRANSCRIPT OF ACADEMIC RECORD

A transcript is the complete academic record of a student’s work and status. The official transcript bears the signature of the Registrar and the seal of Montana State University-Northern. Other copies are unofficial. The University retains a permanent transcript. Official transcripts are issued only upon the written request of the student. Transcripts will not be released until all University admissions or financial obligations have been met.

The education records, as defined by federal right-to-privacy laws, of deceased persons in the custody of Montana State University-Northern will be released only to individuals who document themselves as personal representatives of the deceased’s estate or remaining next-of-kin. The death of the alumnus must also be documented.

TRANSFER OF CREDITS

Transfer students should read these policies carefully, so they are comfortable with the process of transcript evaluation and understand its steps.
A. The Registrar’s Office will begin the evaluation of transfer credits when the transfer student has been admitted to the University as a degree-seeking student.
B. Transfer students must submit official transcripts from every post-secondary school they have attended before they may be admitted.

Acceptability of Credits

1. The University accepts all college and/or university level courses from institutions accredited by a 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.
C. The Registrar determines the acceptability of course work from other post-secondary institutions, using these rules. The Registrar also determines the acceptability of transfer credit to meet general education requirements. Faculty in the respective majors and minors determine whether transfer credit will meet specific program-area degree requirements.

Evaluation of Degree Requirements

1. The Registrar determines the acceptability of transfer credits toward general education requirements at the University. Academic Colleges may also be consulted.
2. The academic College that awards the student’s degree will determine applicability of transfer courses to specific program-area degree requirements.
3. 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.
4. 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.
5. 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.
6. Courses with grades of less than C- will not be applicable to general education, major or minor requirements.

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, A-, B+, B, B-, C+, C, C-, D+, D, D- or S.

Transfer Grade-point

1. 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.
2. 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.
3. 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.
Students may complete preparatory course work at Montana State University Northern for the Dental Hygiene program at the College of Technology in Great Falls.

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 Montana State University-Great Falls College of Technology in Great Falls, Montana.

Students complete 93-98 credits to earn the Associate of Applied Science degree in Dental Hygiene. Fourteen (14) students each year are admitted to the Dental Hygiene program under a competitive process. Preference is given to Montana residents. Employment prospects for dental hygienists are quite good, however, and graduates may earn a salary in the $52,000 - $68,000 range for full-time employment.

Students interested in the program can complete the pre-requisite courses required for the degree at campuses other than the MSU-Great Falls College of Technology campus. At Montana State University-Northern, for instance, the following classes can be completed at this institution and transferred to the Great Falls Dental Hygiene program. Some of the classes are pre-requisites and others are courses with the program:

---BIOL 217, Microbiology, 4 credits
---BIOL 241, Anatomy and Physiology I, 4 credits
---BIOL 242, Anatomy and Physiology II, 4 credits
---CHMY 141, College Chemistry I, 3 credits
---CHMY 142, College Chemistry I Lab, 1 credit
---M 121, College Algebra, 3 credits OR M 145 Math for the Liberal Arts, 4 credits
---PSYX 100, Introduction to Psychology, 3 credits OR PSYX 230, Developmental Psychology, 3 credits
---SOCI 101, Introduction to Sociology, 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 9 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. Students are also encouraged to consult the MSU-Great Falls web site for current information about the actual program.
MONTANA STATE UNIVERSITY - NORTHERN FACULTY

ANDRECHAK, Laurel (2008)
Assistant Professor, Nursing
A.D.N., North Idaho College, 1979; B.S.N., Gonzaga University, 1985, APRN; M.S.N., Gonzaga University, 1996

BALDWIN, Denise (2008)
Assistant Professor, Education
B.A., University of Florida, 1995; M.S., Barry University, 2000; Ed.D., Nova Southeastern University, 2006

BLOSSER, Terry (2001)
Assistant Professor, Communication/Composition
B.S., Ohio University, 1971; M.A., Purdue University, 1974

BOYSUN, Wane (1997)
Associate Professor, Automotive Technology and Agricultural Mechanics
B.S., M.Ed., Montana State University-Northern, 1996, 1999

BRICKER, Darlene (2003)
Associate Professor, Education

CALLAHAN, Joseph P. (2007)
Provost/Vice Chancellor for Academic Affairs; Professor of Education

CARLSON, Kevin S. (1986)
Professor, Business
B.T., Northern Montana College, 1983; M.B.A., University of Montana, 1986

CLOUSE, Gregory S. (1987)
Professor, Diesel Technology

CLOUSE, Vickie (2002)
Assistant Professor, Biology and Earth Science
B.S., M.Ed., Montana State University-Northern, 1989; 2001

DANLEY, William H. (1973)
Associate Professor, Agricultural Technology
B.S., M.S., New Mexico State University, 1971, 1973

DOLEZAL, Stacey (2004)
Assistant Professor, Education
B.S., Montana State University-Bozeman, 1995; M.Ed., Azusa Pacific University, 1999

DON, Steven (2003)
Assistant Professor, Automotive and Diesel Technology
A.S., Montana State University-Northern, 1994; B.C., University of Canterbury, 1984; M.Ed., Montana State University-Billings, 2008

Professor, Economics
B.A., Brigham Young University, 1966; Ph.D., University of Utah, 1983

FOLEY, John (2001)
Assistant Professor, Counselor Education
B.S., M.A., Central Missouri State, 1972, 1973; M.A., Ph.D., University of North Dakota, 1984, 1986

GILMARTIN, Brian G. (1988)
Professor, Psychology and Sociology
B.A., University of Colorado, 1962; M.S., University of Utah, 1964; Ph.D., University of Iowa, 1969

Professor, Manufacturing and Metals Technology
B.A., M.S., St. Cloud State University, 1969, 1978; Ed.D., Montana State University-Bozeman, 2000

HENEHAN, Maureen (2005)
Assistant Professor, Nursing
B.S.N., St. Xavier University, 1969, 1978; M.S.N., Rush University, 1987

HESSKE, Steve D. (1994)
Professor, English
B.S., Ohio University, 1971; M.A., Ph.D, Bowling Green State University, 1981, 1992

HESTER, Gregory Alan (1995)
Professor, Water Quality Technology: Environmental Health
B.S., M.A., Western Kentucky University, 1974, 1980; Education Specialist, Ed.D., Montana State University-Bozeman, 1983, 1997

HOWLAND, James C. (1990)
Professor, Computer Information Systems
B.S., Oregon State University, 1986; M.I.S., City University, 1992

HUSE, Shawn (2002)
Assistant Professor, Education; Head Men's Basketball Coach
B.S., Montana Tech of the University of Montana, 1995; B.A., University of Montana, 1997; M.A., University of Nebraska-Kearney, 2002
JOHNEK, Robert (2004)  
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.F.R.N., C.S.

MAGELSEN, Trygve (2006)  
Assistant Professor, Electrical Technology  
B.S., Montana State University-Northern, 2002; M.S., University of North Dakota, 2004

MILLER, Michael (2005)  
Assistant Professor, Civil Engineering Technology  
B.S., M.S., University of Illinois, 1977, 1979; B.S., Bemidji State University, 1999

MILLIGAN, Krista (2002)  
Instructor, Design Drafting Technology  
A.S., B.S., Northern Montana College, 1988, 1990

MOUAT, Chris (2005)  
Head Women’s Basketball Coach  
B.Ed., University of Montana-Missoula, 1993

OBERQUELL, Christian (2001)  
Instructor, Education  
B.S., University of Mary, 1994; NATA Certified, 1995

OPHUS, Byron (2002)  
Assistant Professor, Business  
B.T., Northern Montana College, 1983

PAPPAS, Mary M. (1986)  
Director of Nursing, Professor, Nursing  
A.D.N., Northern Montana College, 1969; B.S.N., Ed.D., Montana State University-Bozeman, 1982, 2006; M.S., University of Portland, 1989; R.N.

PATTISON, Vonnie (2006)  
Assistant Professor, Nursing  

PEASE, Norton (2002)  
Associate Professor, Graphic Design  
B.F.A., Iowa State University, 1995; M.F.A., Washington University, 1999

PETERSEN, Theresa (2004)  
Assistant Professor, Nursing  

PLEGENZ, Victoria (2007)  
Instructor, Nursing  
B.S.N., Marian College, 1997

Assistant Professor, Mathematics  
B.S., Northern Montana College, 1990; M.S. Montana State University-Bozeman, 1993

PLUSTO, Jaakko (2006)  
Assistant Professor, History and Native American Studies  
M.A., Ph.D., Arizona State University, 1995, 2000

RAWN, Will (1990)  
Professor, English  
B.A., Oberlin College, 1965; M.F.A., Ph.D., University of Iowa, 1973, 1984

REIFSCHNEIDER, Carol (1995)  
Chair, College of Education, Arts & Sciences, and Nursing; Associate Professor, Water Quality Technology: Environmental Health  
B.A., M.S., Ph.D., University of Kansas, 1977, 1982, 1993

RICHMAN, Tracy (2007)  
Assistant Professor; Nursing  
B.S.N, Montana State University, 2002; M.S.N., University of Wyoming, 2007, R.N.

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

SCHEND, Terry (2007)  
Instructor, Electrical Technology

SCHENESKYO-‘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.
SCHLOTFELDT, Lorren (2007)  
*Instructor of Plumbing Technology*  
B.S., Northern Montana College, 1978

SEIFFERT, Mark A. (1994)  
*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)  
*Professor, Education*  
B.S., University of Wyoming, 1988; M.Ed., University of Southern Mississippi, 1990; Ph.D., University of Wyoming, 1995

SIEMENS, Jeremy (2005)  
*Assistant Professor, Automotive Technology*  
B.S., Montana State University-Bozeman, 1994

SKORNOGOSKI, Brenda F. (1986)  
*Associate Professor, Business*  

SMEBY, Curtis (1998)  
*Professor, Curriculum and Instruction*  
B.A., Acadia University, 1980; M.S., University of Oregon, 1981; Ed. Specialist University of Southern Mississippi, 1990; Ph.D., University of Wyoming, 1996

SMILEY, Frederick (2008)  
*Associate Professor of Education*  
B.A., California State University-Chico, 1966; M.A., Chapman College, 1982; Ed.D., Oklahoma State University, 1992

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*  

STILGER, Lynn (1990)  
*Professor, Diesel Technology*  

STRIZICH, Lawrence J. (1988)  
*Chair, College of Technical Sciences, Professor, Electronics Engineering Technology*  
B.S.E.E., University of Colorado, 1974; M.E., University of Idaho, 1996; PE-Licensed Engineer

SWARTZ, JR., William J. (1991)  
*Associate Professor, Mathematics*  
B.S., Montana State University, 1974; M.S., Oregon State University, 1977; Ed.D., Montana State University, 1992

TAYLOR, Penny (2005)  
*Assistant Professor, Nursing*  
B.S.N., Mary College, 1982; M.S.N., University of Phoenix, 2006, R.N.

THACKERAY, Darryl H. (1974)  
*Associate Professor, Automotive Technology*  

TRETHEWEY, Janet M. (1988)  
*Professor, Education*  

THIVIERGE, Tyson (2008)  
*Head Wrestling Coach, Instructor*  
B.S., Montana State University Northern, 2003

TOWNE, Forrest (2009)  
*Assistant Professor, Chemistry/Physics*  
B.S., George Fox University, 2002; Ph.D., University of Montana, 2009

UNDERWOOD, Jamie (2005)  
*Assistant Professor, History*  

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, Arlys (2005)  
*Assistant Professor, Nursing*  
B.S.N., Valparaiso University, 1974  
M.S., University of Colorado, 2005, A.P.R.N., P.N.P., B.C.

WILLIAMS, Katherine Knapp (2002)  
*Associate Professor, Community Service and Communications*  
B.S., M.A., Appalachian State University, 1976, 1980; Ed.D., Ball State University, 1991
ZUCK, Barbara (2008)
Assistant Professor, Business
B.A., Luther College; M.P.A., Portland State University;
Ed.D., Montana State University-Bozeman. 200
## EMERITI FACULTY

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Institution Information</th>
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<tbody>
<tr>
<td>ANDERSON, Dale E.</td>
<td>Associate Professor Emeritus, Drafting/</td>
<td>B.S., Northern Montana College, 1966; M.Ed., Montana State University, 1971</td>
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<tr>
<td></td>
<td>Construction Technology</td>
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<tr>
<td>BEKKER, Gerald C.</td>
<td>Professor Emeritus/Director, Education</td>
<td>B.S., Northern Montana College, 1966; M.Ed., Oregon State University, 1970; Ph.D., Texas A&amp;M, 1975</td>
</tr>
<tr>
<td></td>
<td>and Graduate Programs</td>
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<tr>
<td>BLACK, Amy A.</td>
<td>Associate Professor Emerita, Nursing</td>
<td>B.A., M.A., University of Montana, 1962, 1963; Ph.D., University of Missouri, 1969</td>
</tr>
<tr>
<td>BLEW, Mary R.</td>
<td>Professor Emerita, English</td>
<td>B.A., M.A., University of Montana, 1962, 1963; Ph.D., University of Missouri, 1969</td>
</tr>
<tr>
<td>BORCHERT, Horace F.</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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<tr>
<td>BRENDEN, Orval</td>
<td>Associate Professor Emeritus, Drafting</td>
<td>B.A., University of Montana, 1950; M.Ed., Colorado State University, 1966</td>
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<td></td>
<td>and Construction Technology</td>
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<tr>
<td>CHRISTECK, Robert P.</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>
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<tr>
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<td>Psychology</td>
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<td>ERIKSON, James H.M.</td>
<td>President Emeritus; Professor Emeritus,</td>
<td>B.S., University of Minnesota, 1949; M.Ed., University of Colorado, 1949; Ed.D., University of Wyoming, 1954</td>
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<td>Education</td>
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<tr>
<td>GOEBEL, John W.</td>
<td>Professor Emeritus, Industrial Arts</td>
<td>B.S., Montana State University, 1951; M.S., South Dakota State University, 1961; Ed.D., University of New Mexico, 1969</td>
</tr>
<tr>
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<td>Education</td>
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<tr>
<td>GREENWOOD, David H.</td>
<td>Professor Emeritus, Health and Physical</td>
<td>B.S., Southern State Teachers College, 1959; M.S., South Dakota State University, 1961; Ed.D., University of New Mexico, 1969</td>
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<td>Education</td>
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<tr>
<td>HOLMES, Charles H.</td>
<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>
</tr>
<tr>
<td>KAFTAN, Robert E.</td>
<td>Professor Emeritus, Education</td>
<td>B.A., University of North Dakota, 1950; M.S., University of Wisconsin, 1960; Ed.D., University of Montana, 1967</td>
</tr>
<tr>
<td>KIESLING, Helen L.</td>
<td>Associate Professor Emerita, Nursing</td>
<td>B.S., M.Nurs., Montana State University, 1944, 1963; R.N.</td>
</tr>
<tr>
<td>KJERSTAD, Clara</td>
<td>Associate Professor Emerita, Music</td>
<td>B.Mus. Educ., M.S., Northwestern University, 1932, 1932</td>
</tr>
<tr>
<td>KLARICH, Duane A.</td>
<td>Associate Professor Emeritus, Chemistry</td>
<td>B.S., Eastern Montana College, 1965; M.S., Ph.D., Montana State University, 1967, 1977</td>
</tr>
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<td></td>
<td>and Biology</td>
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<tr>
<td>KORB, August W.</td>
<td>Assistant Vice President for Academic</td>
<td>B.S., Northern Montana College, 1959; M.Ed., Colorado State University, 1965; Ph.D., Ohio State University, 1972</td>
</tr>
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<td></td>
<td>Affairs and Professor Emeritus, Education</td>
<td></td>
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<tr>
<td>MILLER, Robert L.</td>
<td>Professor, Automotive Technology</td>
<td>B.A., Simpson College Iowa, 1951; M.Ed., Northern Montana College, 1980</td>
</tr>
<tr>
<td>OPHUS, L. Lynn</td>
<td>Instructor Emerita, Health and Physical</td>
<td>B.A., Montana State University, 1954</td>
</tr>
<tr>
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<td>Education</td>
<td></td>
</tr>
<tr>
<td>OTT, Margaret E.</td>
<td>Associate Professor Emerita, Cosmetology</td>
<td>Volkman Academy of Beauty Culture, 1943; B.E., M.E., Colorado State University, 1964, 1968</td>
</tr>
<tr>
<td>PARKER, Reno L.</td>
<td>Professor Emeritus, Biology</td>
<td>B.A., University of Minnesota, 1963; M.S., Montana State University, 1966; Ph.D., Kent State University, 1970</td>
</tr>
<tr>
<td>PETERSON, Hans J.</td>
<td>Professor Emeritus, History and Social</td>
<td>B.A., University of Louisville, 1959; M.A., Ph.D., University of Denver, 1961, 1966</td>
</tr>
<tr>
<td></td>
<td>Science</td>
<td></td>
</tr>
<tr>
<td>PHILLIPS, Laura L.</td>
<td>Assistant Professor Emerita, Nursing</td>
<td>B.S., M.S. Nurs., Montana State University, 1968, 1982; R.N.</td>
</tr>
</tbody>
</table>
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

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

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

Associate Professor Emeritus, Computer Technology
B.A., College of Great Falls, 1983; M.I.S., City University, 1992

TALMAGE, Jean (1968-1984)
Instructor Emerita, Nursing
B.S., Montana State University, 1968; R.N.

Professor Emeritus, English
B.S., Northern Montana College, 1958; M.A., University of Utah, 1964; D.A., Idaho State University, 1985

Professor Emeritus, Drafting
B.A., M.S., Kearney State College, 1957, 1965

VARNUM, John P. (1963-1986)
Associate Professor Emeritus, Music
B.M., M.M., University of Montana, 1958, 1959

WESTENSKOW, David L. (1966-2001)
Professor Emeritus, Languages
B.A., M.A., Brigham Young University, 1963, 1967

WOJTOWICK, Michael J. (1967-1995)
Associate Professor Emeritus, Automotive Technology
B.S., Northern Montana College, 1967; M.Ed. Oregon State University, 1970

YEAGER, Francis E. (1952-1977)
Associate Professor Emeritus, Chemistry
B.A., Intermountain Union College, 1936; M.A., University of Northern Colorado, 1949
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<td>2012</td>
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<td>Todd Buchanan, Billings</td>
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<td>2015</td>
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The Board of Regents appoints a Commissioner of Higher Education as the chief administrative officer of the Montana University System. The current commissioner is:

Sheila Stearns, Commissioner of Higher Education  
46 N. Last Chance Gulch  
P.O. Box 203101  
Helena, MT 59620-3101

### MONTANA STATE UNIVERSITY-NORTHERN LOCAL EXECUTIVE BOARD

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<td>Pam Hillery</td>
<td>Havre</td>
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<td>Darrel Briese</td>
<td>Havre</td>
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<td>Frank Trocki, Chancellor</td>
<td>265-3720</td>
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<td>Joseph P. Callahan, Provost and Vice Chancellor for Academic Affairs</td>
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<tr>
<td>Greg Kegel, Dean of College of Technical Sciences</td>
<td>265-4157</td>
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<tr>
<td>Janice Brady, Dean of Extended University</td>
<td>265-3730</td>
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<td>Steve Jamruszka, Dean of Students/Registrar</td>
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<td>Sue Ost, Director of Business Services</td>
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<td>Judy Bricker, Director of Alumni</td>
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<tr>
<td>Mike Campbell, Director of Information Technology Services</td>
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<td>Cindy Small, Director of Financial Aid</td>
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<td>Vicki Gist, Director of the Library</td>
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<tr>
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<tr>
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<td>Tracey Jette, Director of Career Services</td>
<td>265-3708</td>
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<td>Bill Gupton, Director of Foundation</td>
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<td>Mark Samson, Director of Athletics</td>
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<tr>
<td>Director of Student Health Services</td>
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<td>Carol Reifschneider, Chair, College of Education, Arts and Sciences, and Nursing</td>
<td>265-4126</td>
</tr>
<tr>
<td>Larry Strizich, Chair, College of Technical Sciences</td>
<td>265-3724</td>
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<tr>
<td>Campus Operator</td>
<td>265-3700</td>
</tr>
<tr>
<td>Chancellor</td>
<td>265-3720</td>
</tr>
<tr>
<td>Provost/ Vice Chancellor for Academic Affairs</td>
<td>265-3726</td>
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- Affirmative Action Officer: 265-3564
- Alumni Relations: 265-3770
- Audio/Visual Lab: 265-3702

**B**
- Bookstore: 265-3728
- Business Office: 265-3733

**C**
- CAD Lab: 265-3370
- Career Center: 265-3708
- Chancellor: 265-3720
- Cultural Equity: 265-3589
- College of Education, Arts & Sciences, and Nursing: 265-3751
- College of Technical Sciences: 265-3736

**D**
- Dean of Students: 265-4190
- Disability Services: 265-4117
- Distance Learning: 265-3730

**E**
- Education: 265-3751
- Educational Opportunity Center: 265-4141
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**F**
- Farm Mechanic Building: 265-3195
- Financial Aid: 265-3787
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- Foundation: 265-3711

**G**
- Graduate Studies: 265-3738
- Great Falls Campus: 771-4437

**H**
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**I**
- Information Technology Services (ITS): 265-3765
- Intramural Sports: 265-3732

**K**
- KNMC Radio Station: 265-3709

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**O**
- Outdoor Recreation: 265-3732

**P**
- Payroll: 265-3710
- Physical Plant: 265-3755
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**R**
- Registrar: 265-3703
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**S**
- Student Affairs: 265-4190
- Student Health Services: 265-3599
- Student Senate: 265-3714
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- Student Union Building: 265-3561
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- Technical Sciences: 265-3736
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Montana State University-Northern also reserves the right to deny a student the privilege of re-registering and the right not to release a student’s records or any information based on them, when the student has failed to satisfy any obligations to Montana State University-Northern. Students may verify the status of their financial obligations by checking with the Business Office in Cowan Hall.

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