

ART AND DESIGN

DEPARTMENT OFFICE

159 Art and Design

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Art and Design at NMU

The objective of the Art and Design Department is to prepare students for participation in the professional fields of art, design and education, broadening the scope of their experience by providing intellectual support for art beyond the limits of studio skills. The department, through Northern Michigan University's DeVos Art Museum, also provides students with exposure to exhibitions exemplifying the cultural breadth of the visual arts from national, regional and local sources, including the university's permanent art collection. Graduates of the program are employed throughout the country in careers ranging from art directors and art teachers to entrepreneurs of large and small enterprises.

Liberal studies and art courses are combined in programs that lead to the bachelor of fine arts, bachelor of arts, bachelor of science, or a two-year associate of applied arts degree. The department also offers the required courses for art teacher certification, a non-teaching art and design minor and an art history minor.

The department provides support courses in the technical communications major (see "Interdisciplinary and Individually Created Programs" section of this bulletin). Information for students interested in a career in architecture can be found in the "Preprofessional Programs" section.

All of the department's faculty members are regionally and nationally recognized for their work.

In each area of concentration, the Art and Design curriculum provides students with a broad knowledge of concepts, social issues, procedures and tools to prepare them for the design and production of art objects at a professional level. Areas of concentration include:

- ceramics
- electronic imaging
- digital cinema
- drawing/painting
- furniture design
- graphic communication
- human centered design
- illustration
- jewelry/metalsmithing/blacksmithing

- photography
- printmaking
- sculpture
- woodworking

Student Organizations

- Art Students League
- National/Michigan Art Education Association

Department Facilities

The Art and Design department has professionally equipped, safe, new, state-of-the-art studios to support 13 concentrations. Equipment includes:

- large induction furnace
- ceramic kilns
- casting and blacksmithing facilities
- computer labs
- woodworking, papermaking, digital video facilities
- photography darkrooms (color and black and white)
- professionally equipped lighting studios
- combination machine lathe and mill
- CNC router

The library collection in Art and Design includes:

- over 10,000 volumes
- 50 journals and periodicals
- large slide collection

The department has the DeVos Art Museum and a museum director for its many national, regional, local, faculty and student exhibitions, as well as the Students' Art Gallery.

Types of Course Offerings

The following courses provide artists with greater depth in the supporting knowledge of the visual arts. The study of humans, their behavior and the context of art are incorporated into the content of all major courses.

Concentration: Courses comprising one studio area or studio concentration—100-, 200-, and seminar-level courses.

Cognates: Courses developing the concepts drawn from sociology, psychology, and the physical sciences that are used by artists.

Art History: Courses devoted to the study of Western and non-Western art and architecture within a historical framework. Since Art and Design is primarily a studio department, art history courses take as their central concern (though not exclusive) concepts that are relevant to the studio artist.

Individual Art Review: A series of courses required of art and design majors to develop at each level as professional artists. All work is evaluated by the faculty.

Associate Research: Courses arranged with the major professor of the studio concentration for students working toward an associate degree. Courses offer an opportunity for students to advance their skills and experience with studio equipment.

Department/Program Policies

Students must purchase supplies individually and/or contribute to a purchasing cooperative for the studio courses in which they are enrolled.

Community college transfers should take liberal studies courses and art courses in the areas of design, drawing and history of western art.

Students majoring in art and design education must maintain a grade point average of 2.70 or greater with no grade below a "C" in the professional education sequence, the major and/or minors and required cognates combined.

Prerequisites for Individual Art Review

Students registering for AD 203 Individual Art Review, AD 303 Individual Art Review and AD 403 Individual Art Review must complete the following prerequisites prior to enrollment:

1. Instructor permission.
2. Receive a grade of "S" in all previous Individual Art Review courses.
3. Complete the required lower cognate courses and their selected studio concentration with a "B-" (2.70) average.

Criteria for Remaining in the Art and Design Program

1. Students in AD 203 Individual Art Review must receive a grade of "S" to proceed into upper-level courses in art and design.
2. Students in AD 303 Individual Art Review must also receive a passing grade of "S."
3. Both courses may be repeated, but students receiving one or more grades of "U" or Withdrawal will not be allowed to continue in the program.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Art and Design Education Major

Teaching certification for K-12 art is obtained by completing a major/minor in art and design and the professional education sequence.

Total Credits Required for Degree	146
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	59
AD 160 Physical Structures and Concepts	4
AD 175 Visual Structures and Concepts	4
AD 270 Social Structures and Concepts	4
AD 470 Value and Visual Form	4
Art History Course	4
<i>Choose from the following:</i>	
AD 200 Native American Art and Architecture of the Great Lakes (4 cr.) [VI]	
AD 250 History of Western Art and Architecture (4 cr.) [VI]	
AD 260 Why America Looks This Way (4 cr.) [VI]	
AD 265 Art and Architecture of Japan (4 cr.) [VI]	
AD 300 Japan and the West: Crosscurrents in Art and Architecture (4 cr.) [VI]	
Individual Art Review	
AD 103 Individual Art Review	1
AD 203 Individual Art Review	2
AD 303 Individual Art Review	2
AD 403 Individual Art Review	2
Art and Design Concentration	16
<i>Specific courses are listed in the "Course Description" section of this bulletin.</i>	
Art and Design Electives	16
100 level art studios, including, if established by adviser, AD 120, AD 122 and AD 134.	
Other Required Courses	8
AD 355 Twentieth Century Art and Architecture [VI]	4
AD 365 History of Modern Craft and Design	4

Professional Education	41
ED 201 Introduction to Education	2
ED 231 Teaching and Learning in the Secondary Classroom	4
AD 248 Introduction to Art Education	4
ED 301 Dimensions of American Education	2
AD 302 Media and Methodology for Art Education	4
ED 319 Teaching of Reading for Secondary Teachers	3
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	2
AD 350 Curriculum Theory and Objectives in Art Education	4
ED 361 Special Education and the General Classroom Teacher	2
ED 483 Educational Media and Technology	2
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1

Note: The art education courses listed above must be taken sequentially.

Art and Design Major with Double Minor

The major in art and design, together with minors in associated fields, prepares students especially well for particular career goals. This planning is done with the aid of faculty advisers.

Total Credits Required for Degree	125
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	43
AD 160 Physical Structures and Concepts	4
AD 175 Visual Structures and Concepts	4
AD 270 Social Structures and Concepts	4
AD 360 Methodology and Visual Form <i>or</i> AD 375 Perception and Visual Form <i>or</i> AD 470 Value and Visual Form	4
Art History Elective	4
<i>Choose from the following:</i>	
AD 200 Native American Art and Architecture of the Great Lakes (4 cr.) [VI]	
AD 250 History of Western Art and Architecture (4 cr.) [VI]	
AD 260 Why America Looks This Way (4 cr.) [VI]	
AD 265 Art and Architecture of Japan (4 cr.) [VI]	
AD 300 Japan and the West: Crosscurrents in Art and Architecture (4 cr.) [VI]	
AD 355 Twentieth Century Art and Architecture (4 cr.) [VI]	
AD 365 History of Modern Craft and Design (4 cr.) [VI]	
Individual Art Review	
AD 103 Individual Art Review	1
AD 203 Individual Art Review	2
AD 303 Individual Art Review	2
AD 403 Individual Art Review	2
Art and Design concentration	16
<i>Specific courses are listed in the "Course Description" section of this bulletin.</i>	
Minor	20
Outside the Art and Design Department	20
Additional Minor	20
Outside the Art and Design Department	20

Art and Design Major with Single Minor

The major-minor combination provides breadth and depth of experience for professional performance while allowing students to minor in an area of art and design according to their interests or specific vocational aims.

Total Credits Required for Degree	125
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major-Minor	63
AD 160 Physical Structures and Concepts	4
AD 175 Visual Structures and Concepts	4
AD 270 Social Structures and Concepts	4
AD 360 Methodology and Visual Form AD 375 Perception and Visual Form <i>or</i> AD 470 Value and Visual Form	4
Art History Electives	8
<i>Choose from the following:</i>	
AD 200 Native American Art and Architecture of the Great Lakes (4 cr.) [VI]	
AD 250 History of Western Art and Architecture (4 cr.) [VI]	
AD 260 Why America Looks This Way (4 cr.) [VI]	
AD 265 Art and Architecture of Japan (4 cr.) [VI]	
AD 300 Japan and the West: Crosscurrents in Art and Architecture (4 cr.) [VI]	
AD 355 Twentieth Century Art and Architecture (4 cr.) [VI]	
AD 365 History of Modern Craft and Design (4 cr.) [VI]	
Individual Art Review	
AD 103 Individual Art Review	1
AD 203 Individual Art Review	2
AD 303 Individual Art Review	2
AD 403 Individual Art Review	2
Art and Design concentration	16
<i>Specific courses are listed in the "Course Description" section of this bulletin.</i>	
Art and Design electives	16
Minor	20
Outside the Art and Design Department	20

Bachelor of Fine Arts Degree

This degree is for students who wish to be fully prepared professionals in the visual arts with the appropriate credentials for participation in professional associations in various fields of art and design. The program combines the advantages of professional art school experience with the university's concern for intellectual support of professional action. It prepares students to participate more broadly in the arts beyond the limits of studio skills.

Total Credits Required for Degree	129
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Liberal Studies	30-40
Health Promotion	2
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Courses Required for Art and Design B.F.A.	87
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General Requirements	59
Individual Art Review	
AD 103 Individual Art Review	1
AD 203 Individual Art Review	2
AD 303 Individual Art Review	2
AD 403 Individual Art Review	2
Art and Design Cognates	
AD 160 Physical Structures and Concepts	4
AD 175 Visual Structures and Concepts	4
AD 270 Social Structures and Concepts	4
Art and Design Cognate Electives	8
<i>Choose from the following:</i>	
AD 360 Methodology and Visual Form (4 cr.)	
AD 375 Perception and Visual Form (4 cr.)	
AD 470 Value and Visual Form (4 cr.)	
Art and Design Concentration	20
<i>Specific courses are listed in the "Course Description" section of this bulletin.</i>	
100 Level Course in concentration	4
200 Level Course in concentration	4
300 Level Seminar in concentration	4
400 Level Seminar in concentration	4
B.F.A. Seminar in concentration	4
Art History Electives	12
<i>Choose from the following:</i>	
AD 200 Native American Art and Architecture of the Great Lakes (4 cr.) [VI]	
AD 250 History of Western Art and Architecture (4 cr.) [VI]	
AD 260 Why America Looks This Way (4 cr.) [VI]	
AD 265 Art and Architecture of Japan (4 cr.) [VI]	
AD 300 Japan and the West: Crosscurrents in Art and Architecture(4 cr.) [VI]	
AD 355 Twentieth Century Art and Architecture (4 cr.) [VI]	
AD 365 History of Modern Craft and Design (4 cr.) [VI]	
Specific Requirements	28

Because of the nature of the differences in the BFA vocational applications, each concentration requires a different set of support courses. The specific requirements for each concentration follow.

BFA Specific Requirements for Areas of Concentration in Art and Design

Ceramics

General Requirements	59
AD 365 History of Modern Craft and Design	4
<i>Required as part of the art history electives.</i>	
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Specific Requirements	28
AD 116 Sculpture	4
AD 120 Drawing/Illustration	4
AD 216 Sculpture: Bronze and Aluminum Casting	4
AD 220 Drawing/Illustration	4
Metalworking or Woodworking Elective	4
Art and Design Electives	8

Digital Cinema

General Requirements	59
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Specific Requirements	28
AD 117 Photography: Black and White	4
AD 118 Introduction to Graphic Communication	4
AD 134 Electronic Imaging: Introduction	4
AD 234 Electronic Imaging: Web Design	4
AD 334 Electronic Imaging: 3D	4
Art and Design Electives	8
Students may substitute broadcasting, theater or music courses with adviser approval.	

Drawing and Painting

General Requirements	59
AD 250 History of Western Art and Architecture	4
AD 355 Twentieth Century Art and Architecture	4
<i>Both are required as part of the art history electives.</i>	
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Specific Requirements	28
AD 115 Printmaking: Serigraphy and Intaglio	4
AD 117 Photography: Black and White	4
AD 122 Ceramics: Handbuilding Techniques <i>or</i>	4
AD 116 Sculpture <i>or</i>	
AD 118 Introduction to Graphic Communication	
Art and Design Electives	16

Electronic Imaging

General Requirements	59
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Specific Requirements	28
AD 120 Drawing/Illustration	4
AD 117 Photography: Black and White	4
AD 118 Introduction to Graphic Communication <i>or</i>	4
AD 218 Graphic Communication: Studio Practices	
Art and Design Electives	16
Students may substitute computer science and mathematics courses with adviser approval.	

Furniture Design

General Requirements	59
AD 360 Methodology and Visual Form	4
<i>Required as part of the cognate electives.</i>	
AD 365 History of Modern Craft and Design	4
<i>Required as part of the art history electives.</i>	

Specific Requirements	28
AD 116 Sculpture	4
AD 120 Drawing/Illustration	4
AD 134 Electronic Imaging: Introduction <i>or</i>	4
AD 118 Introduction to Graphic Communication <i>or</i>	
AD 334 Electronic Imaging: 3D	

Art and Design Electives	16
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Graphic Communication

General Requirements	59
AD 365 History of Modern Craft and Design	4
<i>Required as part of the art history electives.</i>	

Specific Requirements	28
AD 117 Photography: Black and White	4
AD 120 Drawing/Illustration	4
AD 134 Electronic Imaging: Introduction	4
AD 234 Electronic Imaging: Web Design	4

Art and Design Electives	12
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Human Centered Design

General Requirements	59
EN 211D Technical Report Writing [I]	4
TE 351 Humanity and Technology [II]	4
AD 260 Why America Looks This Way	4
<i>Required as part of the art history electives.</i>	
AD 360 Methodology and Visual Form	4
<i>Required as part of the cognate electives.</i>	
AD 365 History of Modern Craft and Design	4
<i>Required as part of the art history electives.</i>	

Specific Requirements	28
AD 120 Drawing/Illustration	4
AD 122 Ceramics: Handbuilding Techniques <i>or</i>	4
AD 123 Jewelry/Metalsmithing <i>or</i>	
AD 124 Woodworking: Joinery and Greenwood	
AD 134 Electronic Imaging: Introduction	4
AD 216 Sculpture: Bronze and Aluminum Casting <i>or</i>	4
AD 222 Ceramics: Wheelforms <i>or</i>	
AD 223 Blacksmithing/Metalsmithing <i>or</i>	
AD 224 Woodworking: Turning and Bending	
MF 134 Manufacturing Process	4
DD 100 Technical Drafting with Introduction to CAD	4
DD 202 Product Development and Design	4

Illustration

General Requirements	59
AD 250 History of Western Art and Architecture	4
AD 355 Twentieth Century Art and Architecture	4
AD 365 History of Modern Craft and Design	4

All are required as part of the art history electives.

Specific Requirements	28
AD 114 Painting	4
AD 117 Photography: Black and White	4
AD 134 Electronic Imaging: Introduction	4
AD 234 Electronic Imaging: Web Design	4
AD 334 Electronic Imaging: 3D	4
AD 434 Electronic Imaging: Seminar	4
AD 116 Sculpture <i>or</i>	4
AD 122 Ceramics: Handbuilding Techniques <i>or</i>	
AD 123 Jewelry/Metalsmithing <i>or</i>	
AD 124 Woodworking: Joinery and Greenwood	

Jewelry, Metalsmithing and Blacksmithing

General Requirements	59
AD 365 History of Modern Craft and Design	4
<i>Required as part of the art history electives.</i>	

Specific Requirements	28
AD 116 Sculpture	4
AD 120 Drawing/Illustration	4
AD 216 Sculpture: Bronze and Aluminum Casting	4
WD 140 Introduction to Welding	4

Art and Design Electives	12
Students may substitute engineering technology courses with adviser approval.	

Photography

General Requirements	59
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Specific Requirements	28
AD 118 Introduction to Graphic Communication	4
AD 121 Digital Cinema: Introduction	4
AD 134 Electronic Imaging: Introduction	4
AD 221 Digital Cinema: Animation <i>or</i>	4
AD 234 Electronic Imaging: Web Design	

Art and Design Electives	12
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Printmaking

General Requirements	59
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Specific Requirements	28
AD 117 Photography: Black and White	4
AD 120 Drawing/Illustration	4
AD 220 Drawing/Painting	4
AD 320 Drawing/Painting/Papermaking Seminar	4

Art and Design Electives	12
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Sculpture

General Requirements	59
AD 355 Twentieth Century Art and Architecture	4
<i>Required as part of the art history electives.</i>	

Specific Requirements	28
AD 120 Drawing/Illustration	4
AD 122 Ceramics: Handbuilding Techniques	4

AD 123 Jewelry/Metalsmithing	4
AD 223 Jewelry/Metalsmithing/Blacksmithing: Functional/Ornamental	4
WD 140 Introduction to Welding	4

Art and Design Electives 8

Students may substitute industrial technology courses with adviser approval.

Woodworking

General Requirements	59
AD 360 Methodology and Visual Form	4
<i>Required as part of the cognate electives.</i>	
AD 365 History of Modern Craft and Design	4
<i>Required as part of the art history electives.</i>	

Specific Requirements	28
AD 111 Human Centered Design: Shelters <i>or</i> AD 211 Human Centered Design: Social Goods	4
AD 116 Sculpture	4
AD 120 Drawing/Illustration	4
Art and Design Electives	16

**Art and Design Associate Degree Program
Associate of Applied Arts**

This two-year art curriculum leads to an associate degree in one of three area majors: **media illustration**—electronic imaging, drawing/painting, illustration, printmaking; **crafts**—ceramics, sculpture, metalworking, woodworking, furniture design; or **industrial media**—electronic imaging (publishing, modeling), graphic communication, photography, digital cinema, human centered design.

Total Credits Required for Degree	62-66*
Liberal Studies	12
EN 111 College Composition I	4
EN 211 College Composition II	4
Humanities Elective	4
Health Promotion	1
HP 200 Physical Well Being	1
Cognates	12
AD 160 Physical Structures and Concepts	4
AD 175 Visual Structures and Concepts	4
AD 270 Social Structures and Concepts	4
Major Concentration	25-29*
<i>Choose from area majors Media Illustration*, Crafts or Industrial Media.</i>	
AD 100 and 200 level courses in preferred studio area	8
AD 103 Individual Art Review	1
AD 299 Associate Research	4
AD 100-level courses in any of the non-preferred studio areas within the chosen major	12
AD 219 Illustration Forms	4
<i>Media Illustration concentration only</i>	

Other Required Courses	12
AD 200 Native American Art and Architecture of the Great Lakes <i>or</i> AD 250 History of Western Art and Architecture <i>or</i> AD 260 Why America Looks This Way <i>or</i> AD 265 Art and Architecture of Japan	4

Art and Design Electives 8

Choose a 100 or 200 level courses from each of the two areas not chosen for the major.

**The media illustration concentration requires one additional course.*

MINOR PROGRAMS

Art and Design Minor

Total Credits Required for Minor	20
AD 175 Visual Structures and Concepts	4
Art and Design Electives	16
Students can either (1) choose from a broad range of art history and studio courses or (2) develop skills at a more advanced level by selecting all courses from a single area of concentration.	

Note: This minor is not approved for teacher certification.

Art History Minor

The art history minor offers a unique combination of art history classes that address the varied interests of students. All courses within the minor are taught in a way that is relevant to the art major as well as the general student population.

Total Credits Required for Minor	20
AD 175 Visual Structures and Concepts	4
AD 300 Japan and the West* <i>or</i> AD 355 Twentieth Century Art and Architecture (4 cr.) <i>or</i> AD 365 History of Modern Craft and Design (4 cr.)	4
Art and Design Electives	12
<i>Choose from the following:</i>	
AD 200 Native American Art and Architecture of the Great Lakes (4 cr.)	
AD 250 History of Western Art and Architecture (4 cr.)	
AD 260 Why America Looks This Way (4 cr.)	
AD 265 Art and Architecture of Japan* (4 cr.)	
AD 300 Japan and the West: Crosscurrents in Art and Architecture (4 cr.)	
AD 355 Twentieth Century Art and Architecture (4 cr.)	
AD 365 History of Modern Craft and Design (4 cr.)	

**Students may not apply both AD 265 and AD 300 toward the minor.*

BIOLOGY

DEPARTMENT OFFICE

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Biology at NMU

The Biology Department offers programs leading to the bachelor of arts, bachelor of science and master of science in biology. The department offers four separate majors: biology, botany, zoology and biology/secondary education. Students with a biology major have the opportunity for further specialization by choosing from one of four concentrations: general biology, ecology, microbiology and physiology. The department also contributes course work to interdisciplinary programs in water science, biochemistry, environmental science, diagnostic genetics and science technologist. The department offers three minor programs of study: biology, human biology and biology education. The offerings complement programs in nursing, health, liberal arts and sciences, physical education, clinical laboratory sciences, and environmental conservation, among others. The courses emphasize fundamental concepts of biology at the subcellular, organismic and population levels. The laboratory courses provide students with first-hand experience in understanding biological concepts, thus furthering their understanding of life.

Biologists should have a knowledge of organisms at all levels ranging from molecular activities within cells to ecosystem dynamics. For this reason, the biology tracks and the botany and zoology majors are built around a common core of courses. The remaining courses for the major are selected to satisfy the student's interests and career plans. A strong background in the physical sciences is helpful to a biological career.

Student Organizations

- Pre-Dental Club
- Pre-Medical Club
- Pre-Veterinary Club
- Student Michigan Education Association
- Tri Beta Society
- Wildlife Society

Department Facilities

- greenhouse
- herbarium
- Lake Superior research boat
- Longyear Forest
- molecular biology facilities
- small-animal facility
- zoological collections

Department/Program Policies

A 2.00 grade point average is required for all biology courses taken for any non-teaching major in the department. Exceptions must be requested via petition to the department's academic programs committee. Students majoring in secondary education biology or minoring in biology education must maintain a grade point average of 2.70 or greater with no grade below a "C" in the professional education sequence, the major and/or minor and required cognates combined.

Students enrolled in biology laboratory courses must pay replacement costs for damaged supplies (e.g., glassware and microscope slides) or equipment (e.g., microscopes) having value in excess of one dollar. Records of assessments for damage are maintained in the department, and students are notified of any costs due no later than the last laboratory meeting.

Recommendation for Students Bound for Graduate School

Students who plan to apply to a professional school or pursue graduate work in biology are strongly advised to take Organic Chemistry I and II (CH 321, 322) and a year of physics.

Many graduate programs in the biological sciences, including the one at Northern Michigan University, require the Graduate Record Examination (GRE) for admission. Students intending to pursue graduate study in the biological sciences should take this examination early in their senior year.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

General Biology Major

This major provides an opportunity for a diversified background in biology, applicable to a wide range of introductory positions of employment in business and industry, hospitals, universities, the military and government at the local, state and federal levels. It also provides excellent preparation for graduate work in biology or related sciences.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	43-45
BI 111 Introductory Biology: Principles [III]	4
BI 112 Introductory Biology: Diversity [III]	4
BI 210 Principles of Ecology	4
BI 218 Introduction to Cell and Molecular Biology	4
BI 312 Genetics	4
BI 315 Evolution	4
<i>Choose from the following:</i>	4
BI 313 Cell Biology (4 cr.)	
BI 327 Animal Physiology (4 cr.)	
BI 431 Plant Physiology (4 cr.)	
<i>Choose from the following:</i>	4
BI 230 Plant Kingdom (4 cr.)	
BI 430 Plant Anatomy (4 cr.)	
BI 434 Plant Ecology (4 cr.)	
<i>Choose from the following:</i>	3-4
BI 221 Comparative Anatomy (4 cr.)	
BI 321 Embryology (4 cr.)	
BI 322 Vertebrate Zoology (4 cr.)	
BI 324 Invertebrate Zoology (4 cr.)	
BI 423 Parasitology (3 cr.)	
BI 424 Entomology (4 cr.)	
BI 427 Ecological Animal Physiology (4 cr.)	
BI 460 Ichthyology (4 cr.)	
BI 461 Herpetology (3 cr.)	
BI 462 Ornithology (3 cr.)	
BI 463 Mammalogy (3 cr.)	
BI 465 Aquatic Insect Ecology (4 cr.)	
<i>Choose from the following:</i>	5
BI 203 Medical Microbiology (5 cr.)	
BI 303 General Microbiology (5 cr.)	

Biology Electives	3-4
Any BI course at the 200 level or above except for BI 206 and BI 305 [III]	

Other Required Courses	28
CH 111 General Chemistry I* [III]	5
CH 112 General Chemistry II* [III]	5
Chemistry electives numbered 215 or above	8
PH 201, PH 202 College Physics I and II [III] <i>or</i>	10
PH 220, PH 221 Introductory Physics I and II [III]	

**Transfer students may satisfy this requirement with a minimum of 4 credit hours.*

Biology Major–Ecology Emphasis

This major provides a background for further study or for introductory positions of employment in fish and wildlife management, forestry, environmental science and other natural resource fields. Students interested in a career in wildlife biology should obtain information from the Biology Department on course selection for certification as an associate wildlife biologist by the Wildlife Society.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	50-52
Core	
BI 111 Introductory Biology: Principles [III]	4
BI 112 Introductory Biology: Diversity [III]	4
BI 210 Principles of Ecology	4
BI 218 Introduction to Cell and Molecular Biology	4
BI 310 Ecology Theory and Methods	4
BI 312 Genetics	4
BI 315 Evolution	4
Physiology Elective	
<i>Choose from the following</i>	4
BI 327 Animal Physiology (4 cr.)	
BI 431 Plant Physiology (4 cr.)	
Conservation and Management Elective	
<i>Choose from the following:</i>	4
BI 240 Conservation Biology (4 cr.)	
BI 441 Fisheries Management (4 cr.)	
BI 442 Wildlife Management (4 cr.)	
Behavioral, Population and Community Ecology Elective	
<i>Choose from the following:</i>	4
BI 402 Microbial Ecology (4 cr.)	
BI 428 Behavioral Ecology (4 cr.)	
BI 434 Plant Ecology (4 cr.)	
BI 465 Aquatic Insect Ecology (4 cr.)	
Ecosystems Elective	
<i>Choose from the following:</i>	4

- BI 410 Ecology of the Great Lakes (4 cr.)
- BI 411 Limnology (4 cr.)
- BI 435 Boreal Ecosystems (4 cr.)

Taxonomic and Organismal Biology Electives

Choose 6-8 credits from groups above or from the following:

- BI 230 Plant Kingdom (4 cr.)
- BI 322 Vertebrate Zoology (4 cr.)
- BI 324 Invertebrate Zoology (4 cr.)
- BI 423 Parasitology (3 cr.)
- BI 424 General Entomology (4 cr.)
- BI 427 Ecological Animal Physiology (4 cr.)
- BI 433 Boreal Flora (2-3 cr.)
- BI 460 Ichthyology (4 cr.)
- BI 461 Herpetology (3 cr.)
- BI 462 Ornithology (3 cr.)
- BI 463 Mammalogy (3 cr.)
- BI 390 Field Experience (1-2 cr.)
- BI 498 Directed Studies (1-4 cr.)
- BI 499 Internship (1-6 cr.)

Other Required Courses

- CH 111 General Chemistry I* [III] 5
- CH 112 General Chemistry II* [III] 5
- CH 220 Introductory Organic Chemistry (5 cr.) *or* 4-5
 - CH 321 Organic Chemistry I (4 cr.)
- MA 171 Introduction to Probability and Statistics [V] 4
- PH 201 College Physics I [III] *or* 5
 - PH 220 Introductory Physics I [III]

Electives

Choose from the following:

- GC 202 Soils (4 cr.)
- GC 225 Introduction to Maps (2 cr.)
- GC 255 Physical Geology (4 cr.) [III]
- GC 335 Geographic Information Systems (4 cr.)
- GC 401 Biogeography (4 cr.)

**Transfer students may satisfy this requirement with a minimum of 4 semester hours.*

Biology Major–Microbiology Emphasis

This major is appropriate for pre-professional students in pre-medicine, pre-dentistry, and pre-veterinary medicine. It provides a foundation for introductory positions of employment in such fields as pharmaceuticals, manufacturing of biological products, and monitoring of health and environmental standards. It can also serve as a foundation for graduate studies in special areas of microbiology.

Total Credits Required for Degree 124

Liberal Studies 30-40
Health Promotion 2

Required Courses in Major 44

- BI 111 Introductory Biology: Principles [III] 4
- BI 112 Introductory Biology: Diversity [III] 4
- BI 210 Principles of Ecology 4
- BI 218 Introduction to Cell and Molecular Biology 4
- BI 303 General Microbiology 5
- BI 312 Genetics 4
- BI 315 Evolution 4

Biology Electives 15

Choose from the following:

- BI 203 Medical Microbiology (5 cr.)
- BI 313 Cell Biology (4 cr.)
- BI 327 Animal Physiology (4 cr.)
- BI 402 Microbial Ecology (4 cr.)
- BI 404 Virology (3 cr.)
- BI 405 Immunology (3 cr.)
- BI 413 Biochemistry of Development (4 cr.)
- BI 418 Molecular Biology (4 cr.)
- BI 423 Parasitology (3 cr.)
- BI 431 Plant Physiology (4 cr.)

Other Required Courses 32

- CH 111 General Chemistry I* [III] 5
- CH 112 General Chemistry II* [III] 5
- CH 321 Organic Chemistry I 4
- CH 322 Organic Chemistry II 4
- CH 450 Introductory Biochemistry 4
- PH 201, 202 College Physics I and II [III] *or* 10
 - PH 220, 221 Introductory Physics I and II [III]

**Transfer students may satisfy this requirement with a minimum of 4 credit hours.*

Biology Major–Physiology Emphasis

This major is appropriate for pre-professional students in pre-medicine, pre-dentistry, pre-veterinary medicine, pre-optometry and physical therapy. It provides a foundation for introductory positions of employment in such fields as biomedical research, food and drug manufacturing, nutrition and sports physiology. It can also serve as a basis for graduate studies in developmental biology, physiological ecology, embryology and molecular biology.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	43-45
BI 111 Introductory Biology: Principles [III]	4
BI 112 Introductory Biology: Diversity [III]	4
BI 210 Principles of Ecology	4
BI 218 Introduction to Cell and Molecular Biology	4
BI 221 Comparative Anatomy (4 cr.) <i>or</i> BI 201 Human Anatomy (3 cr.)	3-4
BI 327 Animal Physiology (4 cr.) <i>or</i> BI 202 Human Physiology (5 cr.)	4-5
BI 312 Genetics	4
BI 313 Cell Biology <i>or</i> BI 431 Plant Physiology (4 cr.)	4
BI 315 Evolution	4
Biology Electives	8
<i>Choose from the following:</i>	
BI 201 Human Anatomy (3 cr.)	
BI 202 Human Physiology (5 cr.)	
BI 203 Medical Microbiology (5 cr.)	
BI 221 Comparative Anatomy (4 cr.)	
BI 225 Physiology of Aging (3 cr.)	
BI 303 General Microbiology (5 cr.)	
BI 313 Cell Biology (4 cr.)	
BI 321 Embryology (4 cr.)	
BI 327 Animal Physiology (4 cr.)	
BI 405 Immunology (3 cr.)	
BI 413 Biochemistry of Development (4 cr.)	
BI 416 Experimental Cytogenetics (2-3 cr.)	
BI 418 Molecular Biology (4 cr.)	
BI 419 Biology of Cancer (4 cr.)	
BI 425 Endocrinology (3 cr.)	
BI 426 Human Histology (4 cr.)	
BI 427 Ecological Animal Physiology (4 cr.)	
BI 431 Plant Physiology (4 cr.)	
Other Required Courses	32
CH 111 General Chemistry I* [III]	5
CH 112 General Chemistry II* [III]	5
CH 321-322 Organic Chemistry I and II <i>or</i> CH 220 Introductory Organic Chemistry plus 3 additional chemistry credits	8
CH 450 Introductory Biochemistry	4
PH 201, PH 202 College Physics I and II [III] <i>or</i> PH 220, PH 221 Introductory Physics I and II [III]	10

*Transfer students may satisfy this requirement with a minimum of 4 semester hours.

Botany

This program provides an opportunity for a diversified background in botany applicable to a wide range of introductory positions in business and industry, universities and government at the local, state and federal levels. It also provides preparation for graduate work in botany or related sciences.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	44
BI 111 Introductory Biology: Principles [III]	4
BI 112 Introductory Biology: Diversity [III]	4
BI 210 Principles of Ecology	4
BI 218 Introduction to Cell and Molecular Biology	4
BI 312 Genetics	4
BI 315 Evolution	4
BI 431 Plant Physiology	4
Biology Electives	11-12
<i>Choose from the following:</i>	
BI 230 Plant Kingdom (4 cr.)	
BI 430 Plant Anatomy (4 cr.)	
BI 433 Boreal Flora (3 cr.)	
BI 434 Plant Ecology (4 cr.)	
Biology Electives	4-5
Any BI course above 220 except for BI 305	
Other Required Courses	28
CH 111 General Chemistry I* [III]	5
CH 112 General Chemistry II* [III]	5
Chemistry Electives 200 level or above	8
PH 201, 202 College Physics I and II [III] <i>or</i> PH 220, 221 Introductory Physics I and II [III]	10

*Transfer students may satisfy this requirement with a minimum of 4 credit hours.

Secondary Education Biology Major

Successful completion of this major's biology courses and the professional education sequence leads to certification as a secondary school teacher in biology. Students in this program must select an academic minor in another department. A minor in chemistry education is recommended. Advising for this major is provided by Carolyn J. Lowe in the School of Education.

Total Credits Required for Degree	145
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	40
BI 111 Introductory Biology: Principles [III]	4
BI 112 Introductory Biology: Diversity [III]	4
BI 210 Principles of Ecology	4
BI 312 Genetics	4
BI 315 Evolution	4
BI 203 Medical Microbiology <i>or</i>	5
BI 303 General Microbiology (5 cr.)	
BI 327 Animal Physiology <i>or</i>	4
BI 313 Cell Biology (4 cr.) <i>or</i>	
BI 431 Plant Physiology (4 cr.)	
Biology Electives	11
Chemistry Electives	18
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
Chemistry Electives (200 level and above)	8
Physics Electives	10
PH 201 College Physics I [III]	5
PH 202 College Physics II [III]	5
Other Required Courses	4
<i>Choose from the following:</i>	
AS 103 Observational and Solar System Astronomy (4 cr.) [III]	
GC 100 Physical Geography (4 cr.) [III]	
GC 225 Introduction to Maps (2 cr.)	
GC 246 Earth Science (4 cr.) [III]	
GC 255 Physical Geology (4 cr.) [III]	
GC 260 Minerals and Rocks (4 cr.)	
GC 390 Oceanography (2 cr.)	
Teaching Minor, minimum	20-24
Professional Education	37
ED 201 Introduction to Education	2
ED 231 Teaching and Learning in the Secondary Classroom	4
ED 301 Dimensions of American Education	2
ED 319 Teaching of Reading for Secondary Teachers	3
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	2
ED 361 Special Education and the General Classroom Teacher	2
ED 483 Educational Media and Technology	2
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1
MSED 340 Fundamental Concepts in Science	4
MSED 350 Methods and Materials in the Teaching of Science Education	4

Zoology Major

This major provides a foundation for introductory positions of employment in museums, zoos, universities and state and federal agencies involved in fish, wildlife and other natural resource use. It is an appropriate program for pre-medicine, pre-dentistry, and pre-veterinary science students. It also provides a solid background for students who wish to pursue graduate studies in special areas of zoology.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	44
BI 111 Introductory Biology: Principles [III]	4
BI 112 Introductory Biology: Diversity [III]	4
BI 210 Principles of Ecology	4
BI 218 Introduction to Cell and Molecular Biology	4
BI 312 Genetics	4
BI 315 Evolution	4
BI 327 Animal Physiology <i>or</i>	4
BI 313 Cell Biology (4 cr.)	
<i>Choose from the following:</i>	3-4
BI 324 Invertebrate Zoology (4 cr.)	
BI 423 Parasitology (3 cr.)	
BI 424 Entomology (4 cr.)	
BI 465 Aquatic Insect Ecology (4 cr.)	
<i>Choose from the following:</i>	3-4
BI 322 Vertebrate Zoology (4 cr.)	
BI 460 Ichthyology (4 cr.)	
BI 461 Herpetology (3 cr.)	
BI 462 Ornithology (3 cr.)	
BI 463 Mammalogy (3 cr.)	
<i>Choose from the following:</i>	4
BI 221 Comparative Anatomy (4 cr.)	
BI 321 Embryology (4 cr.)	
BI 426 Human Histology (4 cr.)	
BI 427 Ecological Animal Physiology (4 cr.)	
Biology Electives	4-5
Any BI courses above 220.	
Other Required Courses	28
CH 111 General Chemistry I* [III]	5
CH 112 General Chemistry II* [III]	5
Chemistry Electives 200 level or above	8
PH 201, PH 202 College Physics I and II [III] <i>or</i> PH 220, PH 221 Introductory Physics I, II [III]	10
<i>*Transfer students may satisfy this requirement with a minimum of 4 semester hours.</i>	

MINOR PROGRAMS

Biology Minor

Total Credits Required for Minor	20
BI 111 Introductory Biology: Principles	4
BI 112 Introductory Biology: Diversity	4
Biology Electives	12

Biology Education Minor

Total Credits Required for Minor	20-29
BI 111 Introductory Biology: Principles	4
BI 112 Introductory Biology: Diversity	4
BI 210 Principles of Ecology	4
BI 312 Genetics	4
Biology Electives	4-5

Choose from the following:

BI 202 Human Physiology (5 cr.)	
BI 303 General Microbiology (5 cr.)	
BI 313 Cell Biology (4 cr.)	
BI 315 Evolution (4 cr.)	
BI 327 Animal Physiology (4 cr.)	
BI 431 Plant Physiology (4 cr.)	
MSED 340 Fundamental Concepts in Science*	4
MSED 350 Methods and Materials in the Teaching of Science Education*	4

**Not required if major is chemistry education, earth science education, physics education or integrated science education.*

Human Biology Minor

A minor in human biology provides students with an introduction to the human body. Students who minor in human biology will have a strong introduction to the clinical sciences.

Total Credits Required for Minor	20-21
BI 201 Human Anatomy	3
BI 202 Human Physiology	5
Biology Electives	12-13

Choose credits from the following:

BI 203 Medical Microbiology (5 cr.)	
BI 206 Human Genetics (3 cr.)	
BI 312 Genetics (4 cr.)	
BI 321 Embryology (4 cr.)	
BI 405 Immunology (3 cr.)	
BI 425 Endocrinology (3 cr.)	
BI 426 Human Histology (4 cr.)	

WALKER L. CISLER COLLEGE OF BUSINESS

COLLEGE OFFICE

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Coordinator of Student Affairs and Internships:

Charles R. Rayhorn • crayhorn@nmu.edu

College of Business at NMU

The goal of the Walker L. Cislser College of Business is to prepare students for successful careers through excellence in teaching, learning and research. The college offers degree programs that foster intellectual curiosity, leadership, ethical behavior and global awareness, as well as provide quality content knowledge and develop problem solving, decision making and communication skills. Students are encouraged to work together on class projects, pursue internship opportunities and participate in college and university study abroad experiences.

The college's programs of study include eleven baccalaureate majors, eight minors, four associate degrees, and one certificate program. Each provides the student with a concentration of knowledge and skills in one of the many aspects of the business world.

The College of Business is accredited by the Association to Advance Collegiate Schools of Business. It is one of about 400 business programs worldwide and one of about 35 undergraduate-only programs to have this accreditation.

Student Organizations

- Accounting and Finance Club
- Association of Information Technology Professionals
- Beta Alpha Psi
- Beta Gamma Sigma
- Business Professionals of America
- Collegiate Chapter of the American Marketing Association
- Institute for Managerial Accountants/Accounting Club
- Pi Omega Pi Honorary Society
- Student Michigan Education Association

College Facility

- Business Research and Analysis Center

College/Program Policies

Admission to the College of Business

Admission to the university does not guarantee admission to the College of Business. All baccalaureate majors with the exception of business education must apply for admission.

To be eligible for admission, applicants must:

1. Successfully complete the following pre-admission courses: College Composition I and II (EN 111, 211); Finite Mathematics (MA 103); Introduction to Probability and Statistics (MA 171); Principles of Accounting I and II (ACT 230, 240); Microeconomic/Macroeconomic Principles (EC 201, 202); four credits of IS courses (except CIS majors); eight credits of liberal studies courses; and other elective credits to total 48 semester credit hours.
2. Complete the 48 semester credits listed above with a minimum grade point average of 2.25. Current enrollment can count toward meeting the minimum requirements; however, formal admission will not be granted until after successful completion of the minimum credits.

Note: Petition for exception to the above requirements must be made in writing and submitted to the Registrar's Office. The petition must include reasons why an exception should be made and documentation of the reasons, if applicable.

Application Deadlines

Applications must be submitted by the following dates: For fall semester, February 15; winter semester, October 1; summer session, February 15. Applications received after these dates will not be acted upon until the following semester. Application forms are obtained at the College of Business office.

Other Policies

1. College of Business majors cannot enroll in NMU business courses at the 300 level or above until they have been admitted to the college and have attained junior status (56 hours).
2. In order to receive a degree from the College of Business, students must complete at least 32 credit hours (24 within the College of Business) after admission to the college.
3. Students seeking a second bachelor's degree must be admitted to the College of Business.
4. Students who drop enrollment from NMU and subsequently re-enroll as a business major at a later date (re-entry students) must reapply for admission to the College of Business.
5. Baccalaureate degree students must take a minimum of 62 credit hours in courses outside the College of Business.
6. All CIS courses except CIS 110 are invalid after seven years.

Grade Point Average Requirements

Associate degree students must earn a 2.00 grade point average in all business courses.

CIS majors or minors and CIS associate degree students must earn a minimum grade of "C-" in each CS/CIS/IS course applying to their CIS major, minor or associate degree.

Students majoring in secondary education business must maintain a grade point average of 2.70 or greater with no grade below a "C" in the professional education sequence, the major and/or minor and required cognates combined.

All other baccalaureate degree students must obtain a 2.00 GPA in their business core and major courses as well as a 2.00 cumulative Northern Michigan University GPA.

All business minors must earn a 2.00 GPA.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Business Core Requirements for all Bachelor Degree Programs (Except Business Secondary Education)

Total Credits Required for Core	21
ACT 230 Principles of Accounting I	3
ACT 240 Principles of Accounting II	3
FIN 351 Management of Financial Resources	3
MGT 221 Business Law I: Legal Environment of Business	3
MGT 225 Operations Management	3
MKT 230 Introduction to Marketing	3
MGT 240 Organizational Behavior and Management	3

Accounting Major

This major provides basic competency in the functional areas of accounting and provides students with the minimum requirements to sit for professional examinations such as the CPA and CMA examinations. This major prepares students for such career opportunities as certified public accountant (CPA), cost analyst, controller, financial analyst, senior accountant, and vice president for finance and accounting.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Business Core	21
Accounting	30
ACT 301 Financial Accounting I	4
ACT 302 Financial Accounting II	4
ACT 311 Cost Accounting	4
ACT 321 Federal Income Taxation	4
ACT 403 Accounting III	4
ACT 441 Auditing	4
ACT Electives*	6
Other Business Requirements	4
IS Electives** [V]	4
Business Electives**	6
Other Required Courses	28
SP 100 Public Address <i>or</i>	4
SP 110 Interpersonal Communication (4 cr.)	
EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
MA 103 Finite Mathematics [III] <i>or</i>	4
MA 104 College Algebra with Applications in the Sciences and Technologies (4 cr.) [III] <i>or</i>	
MA 105 College Algebra for Calculus Preparation (4 cr.) [III] <i>or</i>	
MA 115 Pre-Calculus (4 cr.) [III] <i>or</i>	
MA 161 Calculus I (4 cr.) [III]	
MA 171 Introduction to Probability and Statistics [V]	4
PY 100L, S or H Psychology as a Laboratory Science [III] <i>or</i>	4
PY 100G Psychology as a Social Science [IV]	
SO 101 Introductory Sociology [IV] <i>or</i>	4
SO 113 Social Problems [IV]	
General Electives (outside the College of Business)	9

*Courses will be chosen with the consent of the adviser and must include two 300 or 400 level ACT courses, excluding ACT 491.

**See adviser for courses required.

Accounting/Computer Information Systems Major

This major provides a basic competency in the functional areas of accounting and computer information systems and provides students with the minimum requirements to obtain employment and to sit for professional examinations. Expertise in both accounting and computer information systems can lead to positions such as controller, cost analyst, director of information systems, computer programmer and systems analyst, to name a few.

Total Credits Required for Degree	150
Liberal Studies	30-40
Health Promotion	2
Business Core	21

Accounting	20
ACT 301 Financial Accounting I	4
ACT 302 Financial Accounting II	4
ACT 311 Cost Accounting	4
ACT 403 Accounting III	4
ACT 441 Auditing	4
CIS	17
IS 120 Computer Concepts [V]	2
CIS 220 Network Concepts	2
CIS 155 Software Development with Databases	4
CIS 250 Systems Development I	4
CIS 255 Systems Development II	4
CIS 464 Database Management Systems	3
Other Business Requirements	8-11
ACT/CIS Electives-300 level or above or approval of adviser or MGT 344 Managerial Communications. ACT 321 Federal Income Taxation, ACT 422 Advanced Federal Taxation and ACT 431 Accounting Information Systems are recommended for the CPA exam.	
Business Electives	6
ACT 482 Accounting for Non-Profit Enterprises and ACT 484 Current Developments in Accounting are recommended for the CPA Exam.	
Other Requirements	0-3
Students must demonstrate competency in Windows, E-mail, Internet and spreadsheets through placement tests or by completing IS 100, IS 102 and IS 202.	
Other Required Courses	20
SP 100 Public Address <i>or</i>	4
SP 110 Interpersonal Communication (4 cr.) <i>or</i>	
SP 120 Small Group Process (4 cr.) <i>or</i>	
SP 220 Interviewing (4 cr.)	
EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
MA 103 Finite Mathematics [III]	4
MA 171 Introduction to Probability and Statistics [V]	4
General Electives (outside the College of Business)	21

**Accounting/Corporate Finance Major
(pending approval)**

This major provides students with basic competency in the functional areas of accounting and corporate finance. It provides students with the minimum requirements to obtain employment and to sit for professional examinations such as the CPA exam.

Total Credits Required for Degree	150
Liberal Studies	30-40
Health Promotion	2
Business Core	21

Finance Electives	20
<i>Choose from the following with adviser approval:</i>	
FIN 352 Financial Management (4 cr.)	
FIN 354 Money and Capital Markets (4 cr.)	
FIN 413 New Venture Finance: Capital Formation (3 cr.)	
FIN 420 Financial Statement Planning (3 cr.)	
FIN 458 International Financial Management (3 cr.)	
FIN 460 Employee Benefits & Retirement Planning (3 cr.)	
FIN 461 Management of Financial Institutions (3 cr.)	
FIN 462 Investment Analysis (4 cr.)	
FIN 463 Portfolio Management (3 cr.)	
FIN 491 Internship in Finance (1-4 cr.)	
FIN 495 Special Topics in Finance (1-4 cr.)	
FIN 498 Directed Study in Finance (1-4 cr.)	
Accounting	33
ACT 301 Accounting I	4
ACT 302 Accounting II	4
ACT 403 Accounting III	4
ACT 311 Cost Accounting	4
ACT 321 Taxation	4
ACT 441 Auditing	4
ACT 422 Advanced Tax	3
ACT 431 Accounting Information Systems	3
ACT 482 Accounting for Non-Profit Entities	3
Other Requirements	4
IS Credits or CIS 110	4
Other Required Courses	24
SP 100 Public Address <i>or</i>	4
SP 110 Interpersonal Communication <i>or</i>	
SP 220 Interviewing	
EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
MA 103 Finite Mathematics [III]	4
MA 171 Introduction to Probability and Statistics [V]	4
SO 101 Introductory Sociology [IV]	4
General Electives (outside the College of Business)	9

Accounting/Financial Planning Major

This major provides students with basic competency in the functional areas of accounting and financial planning and provides students with the minimum requirements to obtain employment and to sit for professional examinations such as the CPA and CFP exams.

Total Credits Required for Degree	150
Liberal Studies	30-40
Health Promotion	2
Business Core	21
Financial Planning	20
FIN 355 Insurance	3
FIN 450 Estate Planning	3
FIN 462 Investments	4
FIN 460 Employee Benefits and Retirement Planning	3

FIN 424 Capstone Course in Financial Planning	3
ACT 321 Taxation	4
Accounting	32
ACT 301 Accounting I	4
ACT 302 Accounting II	4
ACT 403 Accounting III	4
ACT 311 Cost Accounting	4
ACT 441 Auditing	4
ACT 422 Advanced Tax	3
ACT 431 Accounting Information Systems	3
ACT 482 Accounting for Non Profit Entities	3
ACT 484 Current Developments in Accounting	3
Other Requirements	7
Students must demonstrate competency in Windows, e-Mail, Internet and spreadsheets through placement tests or by completing IS 100, IS 102, IS 105 and IS 202; or CIS 110.	4
MGT 344 Managerial Communications	3
Other Required Courses	24
SP 100 Public Address <i>or</i>	4
SP 110 Interpersonal Communication (4 cr.) <i>or</i>	
SP 220 Interviewing (4 cr.)	
EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
MA 103 Finite Mathematics* [III]	4
MA 171 Introduction to Probability and Statistics* [V]	4
PY 100L, S or H Psychology as a Natural Science [III] <i>or</i>	4
PY 100G Psychology as a Social Science [IV]	
General Electives (outside the College of Business)	16

Business Secondary Education Major

This business secondary education major is under revision. New students will not be accepted into the program during the 2006-2007 academic year.

Computer Information Systems Major

This program's objectives are to apply computer theory to business applications and to provide a strong dual knowledge foundation in technical and problem-solving skills. Students select an area of emphasis from help desk/call center, information technology/marketing, networking, systems analysis or software development. People-oriented career paths lead to positions as computer consultants, analysts, trainers and high-tech marketers. Alternate careers as software programmers, database managers and network administrators tie the technical skills to the support and use of computer systems.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Business Core	21
Other Business Requirements	3
MGT 344 Managerial Communications	3

Technology Core	16
IS 120 Computer Concepts [V]	2
CIS 155 Software Development with Databases	4
CIS 220 Network Concepts	2
CIS 250 Systems Development I	4
CIS 255 Systems Development II	4
Area of Concentration	
<i>Choose one of the following concentrations:</i>	
Systems Analysis	18
CIS 355 Web Applications Programming	3
CIS 440 Mgmt Info Systems	3
CIS 464 Database Management Systems	3
MGT 355 Methods of Training <i>or</i>	3-4
ET 281 Computer Systems Servicing <i>or</i>	
CIS/IS/CS elective approved by advisor	
CIS 415 System Project <i>or</i>	3
CIS 291/ 491 Internship	
CIS/IS/CS elective or other approved by advisor	2-3
Software Application Development	18
CS 120 Programming I	4
CS 122 Programming II	4
CIS 355 Web Applications Programming	3
CIS 464 Database Management Systems	3
Electives (Any CIS, CS, IS, or ET281 or other approved by advisor)	4
Networking	18
CIS 230 Novell Network Operating Systems I	2
CIS 234 Microsoft Network Operating Systems I	2
CIS 330 Novell Network Operating Systems II <i>or</i>	3
CIS 334 Microsoft Network Operating Systems II	
CIS 355 Web Applications Programming	3
CIS 464 Database Management Systems	3
Electives from CIS course 200 or above	5
Other Required Courses	24
EN 211D Technical and Report Writing [I]	4
SP 100 Public Address <i>or</i>	4
SP 110 Interpersonal Communication <i>or</i>	
SP 120 Small Group Process <i>or</i>	
SP 220 Interviewing	
EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
MA 103 Finite Mathematics [III]	4
MA 171 Introduction to Probability and Statistics [V]	4
General Electives (outside the College of Business)	8

Entrepreneurship Major

This major is designed for students who desire to develop their own businesses. It provides a comprehensive knowledge of accounting, finance, management, marketing and computer information systems as these areas relate to entrepreneurial business. This includes an understanding of how to develop a new business plan, conduct marketing research to determine the feasibility of a new business, obtain capital resources for a new business enterprise, manage the cash flow of a new

business, and understand the legal issues related to entrepreneurial endeavors. The market potential of the entrepreneurship graduate is almost infinite.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Business Core	21
Entrepreneurship	15
MGT 215 Introduction to Entrepreneurship	3
ACT 325 Financial Management for Entrepreneurs	3
MKT 310 Marketing for Entrepreneurs	3
MGT 414 Small Business Management	3
FIN 413 New Venture Finance: Capital Formation and Legal Issues	3
Other Business Requirements	7
IS Electives* [V]	4
MGT 436 Strategic Management	3
Business Electives	10
<i>Choose from the following:</i>	
MGT 343 Human Resource Management (3 cr.)	
MGT 344 Managerial Communications (3 cr.)	
MGT 475 International Business (3 cr.)	
OIS 121 Introduction to Business (4 cr.)	
Other Required Courses	32
EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
MA 103 Finite Mathematics [III]	4
MA 171 Introduction to Probability and Statistics [V]	4
PY 100L, S or H Psychology as a Laboratory Science [III] <i>or</i>	4
PY 100G Psychology as a Social Science [IV]	
SO 101 Introductory Sociology [IV] <i>or</i>	4
SO 113 Social Problems [IV]	
SP 100 Public Address	4
SP 110 Interpersonal Communication	4
General Electives (outside the College of Business)	8

Finance Major

The major provides students with basic competency in the functional areas of finance and provides students with the education foundation that is needed to prepare them for professional exams such as the Series 7, CFP and CFA. This major, as well as the personal financial planning major, combines the applications of analytical skills to the problems facing financial managers, financial institutions and individual investors while developing an understanding of today's financial markets. This program leads to careers in business financial management, banking, securities and commodity brokerage, consulting, insurance, financial planning and small business entrepreneurship.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2

Business Core	21
Finance	18-20
FIN 352 Financial Management	4
FIN 354 Money and Capital Markets	4
FIN 462 Investments	4
ACT or FIN Electives**	6-8
Other Business Requirements	7
IS Electives*** [V]	4
MGT 436 Strategic Management	3
Business Electives	6-8
Other Required Courses	27-28
EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
MA 103 Finite Mathematics [III]	4
MA 171 Introduction to Probability and Statistics [V]	4
MGT 344 Managerial Communications* (3 cr.) <i>or</i>	3-4
EN 303 Technical Writing* (4 cr.)	
PY 100L, S or H Psychology as a Laboratory Science [III] <i>or</i>	4
PY 100G Psychology as a Social Science [IV]	
SO 101 Introductory Sociology [IV] <i>or</i>	4
SO 113 Social Problems [IV]	

General Electives (outside the College of Business)	16-17
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**Or other course chosen with the consent of the adviser.*

***Courses will be chosen with the consent of the adviser.*

****See adviser for courses required.*

Management Major

This program's objectives are to provide a theoretical base as well as the working applications of management; the ability to critically evaluate managerial actions; and the ability to apply managerial decision-making skills to future situations. Leaders with an appreciation for the forces active in complex organization, worker effectiveness and operating efficiencies are the foundation of any successful enterprise. Positions include job titles such as management consultant, quality control manager, director of planning and employee relations manager.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Business Core	21
Management	12
MGT 326 Deterministic Models in Business <i>or</i>	3
MGT 327 Random Models in Business (3 cr.)	
MGT 343 Human Resource Management	3
MGT 417 Organizational Theory	3
MGT 436 Strategic Management	3

Management Electives**	13-15
<i>Choose from the following:</i>	
MA 271 Calculus with Applications (4 cr.)	
MGT 210 Time Management (1 cr.)	
MGT 285 International Business Seminar (3-4 cr.)	
MGT 322 Business Law II (3 cr.)	
MGT 326 Deterministic Models in Business (3 cr.)	
MGT 327 Random Models in Business (3 cr.)	
MGT 360 Controversial Issues in Marketing and Management (3 cr.)	
MKT 410 Sales Management (3 cr.)	
MGT 412 Compensation Administration (3 cr.)	
MGT 414 Small Business Management (3 cr.)	
MGT 415 Small Business Consulting (3 cr.)	
MGT 419 Seminar in Human Resource Management (3 cr.)	
MGT 421 Labor Law (3 cr.)	
MGT 422 Business and Government Policy (3 cr.)	
MGT 423 Seminar in Organization and Behavior (3 cr.)	
MGT 424 Collective Bargaining (3 cr.)	
MGT 425 Business Research (3 cr.)	
MGT 426 Advanced Business Research (3 cr.)	
MGT 475 International Business (3 cr.)	
MGT 491 Internship in Management (1-4 cr.)	
MGT 495 Special Topics in Management (1-3 cr.)	
MGT 498 Directed Study (1-3 cr.)	
CIS 440 Management Information Systems (3 cr.)	
Other Business Requirements	7
IS Electives* [V]	4
MGT 344 Managerial Communication	3
Business Electives**	6-8
Other Required Courses	28
EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
MA 103 Finite Mathematics [III]	4
MA 171 Introduction to Probability and Statistics [V]	4
PY 100L, S or H Psychology as a Laboratory Science [III] <i>or</i> PY 100G Psychology as a Social Science (4 cr.) [IV]	4
SO 101 Introductory Sociology [IV] <i>or</i> SO 113 Social Problems (4 cr.) [IV]	4
SP 100 Public Address (4 cr.) <i>or</i> SP 110 Interpersonal Communication (4 cr.)	4
General Electives (outside the College of Business)	9

*See adviser for courses required.

**Or other courses approved by the adviser and the Associate Dean of the College of Business.

Marketing Major

This major provides a theoretical base as well as working applications of marketing. Growing domestic and global populations, increasing demands for a wide range of products and services in modern society, and technology and media advancements stress the need for marketing professionals who understand the operations and problems associated with getting goods and services from the producer to the user. Career paths include product consultant, sales representative, marketing manager, retail store buyer, research analyst and advertising professional.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Business Core	21
Marketing	15
MKT 335 Consumer Behavior <i>or</i> MKT 430 Services Marketing (3 cr.)	3
MGT 425 Business Research	3
MKT 435 Marketing Strategy	3
MKT 438 Marketing Management <i>or</i> MKT 466 International Marketing (3 cr.)	3
MKT 411 Personal Selling <i>or</i> MKT 410 Sales Management (3 cr.)	3
Marketing Electives*	9
<i>Choose from the following:</i>	
MGT 210 Time Management (1 cr.)	
MGT 285 International Business Seminar (3-4 cr.)	
MGT 326 Deterministic Models in Business (3 cr.)	
MGT 327 Random Models in Business (3 cr.)	
MGT 415 Small Business Consulting (3 cr.)	
MGT 422 Business and Government Policy (3 cr.)	
MGT 426 Advanced Business Research (3 cr.)	
MGT 475 International Business (3 cr.)	
MKT 310 Marketing for Entrepreneurship (3 cr.)	
MKT 331 Retail Administration (3 cr.)	
MKT 335 Consumer Behavior (3 cr.)	
MKT 337 Marketing Channel (3 cr.)	
MKT 360 Controversial Issues in Marketing and Management (3 cr.)	
MKT 410 Sales Management (3 cr.)	
MKT 411 Personal Selling (3 cr.)	
MKT 430 Services Marketing (3 cr.)	
MKT 432 Advertising and Sales Promotion (3 cr.)	
MKT 438 Marketing Management (3 cr.)	
MKT 466 International Marketing (3 cr.)	
MKT 470 E-Commerce and Marketing (3 cr.)	
MKT 491 Internship in Marketing (1-4 cr.)	
MKT 495 Special Topics in Management/Marketing (3 cr.)	
Other Business Requirements	10
IS Electives** [V]	4
MGT 344 Managerial Communication	3
CIS 440 Management Information Systems	3
Business Electives*	6-7
Other Required Courses	28
EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
MA 103 Finite Mathematics [III]	4
MA 171 Introduction to Probability and Statistics [V]	4
PY 100L, S or H Psychology as a Laboratory Science [III] <i>or</i> PY 100G Psychology as a Social Science (4 cr.) [IV]	4
SO 101 Introductory Sociology [IV] <i>or</i> SO 113 Social Problems (4 cr.) [IV]	4
SP 100 Public Address	4
General Electives (outside the College of Business)	8-9

*Or other courses approved by the adviser and the Associate Dean of the College of Business.

**See adviser for courses required.

Personal Financial Planning Major

The personal financial planning major provides a basic competency in the functional areas of finance and provides students with the education foundation that is needed to prepare students for professional exams such as the Series 7, CFP and CFA. Like the finance major, the personal financial planning major combines the applications of analytical skills to the problems facing financial managers, financial institutions and individual investors while developing an understanding of today's financial markets. The program leads to careers in business financial management, banking, securities and commodity brokerage, consulting, insurance, financial planning and small business entrepreneurship. Students who have completed the personal financial management major have the option of private consulting. Becoming a Certified Financial Planner (CFP)* is another option by electing to take a national exam.

*CFP® and CERTIFIED FINANCIAL PLANNER® are federally registered marks of the Certified Financial Planner Board of Standards, Inc. (CFP Board).

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Business Core	21
Finance	26
FIN 355 Insurance	3
FIN 450 Estate Planning	3
FIN 462 Investments	4
ACT 321 Taxation	4
FIN 460 Employee Benefits and Retirement Planning	3
FIN 424 Capstone Course in Financial Planning	3
ACT or FIN or other Business Electives	6
Other Business Requirements	10
IS Electives** [V]	4
MGT 436 Strategic Management	3
MKT 411 Personal Selling <i>or</i> MKT 430 Services Marketing (3 cr.)	3
Other Required Courses	27-28
EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
MA 103 Finite Mathematics [III]	4
MA 171 Introduction to Probability and Statistics [V]	4
MGT 344 Managerial Communications* (3 cr.) <i>or</i> EN 303 Technical Writing* (4 cr.)	3-4
PY 100L, S or H Psychology as a Laboratory Science [III] <i>or</i> PY 100G Psychology as a Social Science [IV]	4
SO 101 Introductory Sociology [IV] <i>or</i> SO 113 Social Problems [IV]	4
General Electives (outside the College of Business)	13-14

**Or other courses approved by the adviser and the Associate Dean of the College of Business.*

***See adviser for courses required.*

Ski Area Business Management Major

This is a joint program between NMU and Gogebic Community College in Ironwood, Michigan. At GCC, students learn the technical skills necessary to manage ski areas or functional areas in ski area operations. At NMU, students gain comprehensive knowledge of accounting, finance, management, marketing and computer information systems. Graduates of the ski area business management program are placed at resorts nationwide.

Due to course sequencing and prerequisite course work for admission to the NMU College of Business, this program can take over four academic years to complete. To finish the program in a timely manner, students should select one of two options: (1) Attend GCC for two years, complete an associate degree in ski area management, and transfer to NMU to complete the bachelor's degree; or (2) Attend NMU for one year, transfer to GCC for two years, complete an associate degree in ski area management, and transfer to NMU to complete the bachelor's degree.

Total Credits Required for Degree	126
Liberal Studies	30-40
Health Promotion	2
Business Core	21
Ski Area Management Electives	6
<i>Choose from the following:</i>	
MGT 326 Deterministic Models in Business (3 cr.) <i>or</i> MGT 327 Random Models in Business (3 cr.)	
MGT 343 Human Resource Management (3 cr.)	
MGT 417 Organizational Theory (3 cr.)	
MGT 436 Strategic Management (3 cr.)	
Technical Ski Core	38
<i>Taken at Gogebic Community College</i>	
SAM 106 Snowmaking	2
SAM 100 Intro to Ski Area Management	3
SAM 101 Ski Area Layout	3
SAM 103 Ski Lift Construction And Design	3
SAM 104 Ski Equipment Mechanics	2
SAM 105 Ski Area Maps	1
SAM 107 Slope Grooming	2
SAM 200 Ski Area Operational Cost Analysis	3
SAM 202 Risk Management and Related Issues	2
SAM 205 Applied Industrial Skills	2
Cooperative Experience/Internship	15
Other Business Requirements	7
IS Electives** [V]	4
MGT 344 Managerial Communication	3
Other Required Courses	28
EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
MA 103 Finite Mathematics [III]	4
MA 171 Introduction to Probability and Statistics [V]	4

PY 100L, S or H Psychology as a Laboratory Science [III] <i>or</i>	4
PY 100G Psychology as a Social Science (4 cr.) [IV]	
SO 101 Introductory Sociology (4 cr.) [IV] <i>or</i>	4
SO 113 Social Problems (4 cr.) [IV]	
SP 100 Public Address <i>or</i>	4
SP 110 Interpersonal Communication	

***See adviser for recommended courses.*

ASSOCIATE DEGREE PROGRAMS

Computer Information Systems

Associate of Business

This program provides a basic foundation of knowledge in the computing area and the ability to apply computer theory to business applications. Graduates find employment in organizations ranging from small firms to large corporations as computing technicians, providers of help desk services and software trainers.

Total Credits Required for Degree	62
Liberal Studies	20
EN 111 College Composition I	4
EN 211 College Composition II	4
MA 103 Finite Mathematics	4
MA 171 Introduction to Probability and Statistics	4
Liberal Studies Electives*	4
Health Promotion	1
HP 200 Personal Well Being	1
Technology Core	16
IS 120 Computer Concepts	2
CIS 155 Software Development with Databases	4
CIS 220 Introduction to Networking	2
CIS 250 Systems Development I	4
CIS 255 Systems Development II	4
CIS Electives**	6
Other Required Courses	10
SP 100 Public Address <i>or</i>	4
SP 110 Interpersonal Communication (4 cr.) <i>or</i>	
SP 120 Small Group Process (4 cr.) <i>or</i>	
SP 220 Interviewing (4 cr.)	
ACT 230 Principles of Accounting I	3
ACT 240 Principles of Accounting II	3
General Electives	9
If transferring to a CIS bachelor of science degree program after associate graduation, EC 201 Microeconomic Principles and EC 202 Macroeconomic Principles should be taken as electives.	

**Liberal studies electives must be taken outside the College of Business.*

***Electives must be approved by adviser.*

General Business

Associate of Business

This program has two goals: to provide educational experiences enabling graduates to enter a variety of entry-level positions and to provide students with skills and experiences that will assist them in functioning as a consumer in today's modern society. Career opportunities with this degree are numerous and may include a variety of situations in retail stores, insurance companies/agencies, banks and many types of small businesses. Job titles include sales associate, assistant manager, insurance clerk and teller.

Total Credits Required for Degree	65
Liberal Studies	12
EN 111 College Composition I	4
Liberal Studies Electives*	8
Health Promotion	1
HP 200 Physical Well Being	1
Associate Degree Core	24
ACT 201 Practical Accounting Procedures	4
IS 105 Presentation/Multimedia Software	1
IS 107 Beginning Desktop Publishing	1
OIS 161 Word Processing I	4
OIS 183 Business Administrative Procedures	4
OIS 185 Spreadsheets and Database Software	4
OIS 190 Professional Development	3
OIS 244 Applied Office Communication	3
General Business Core	16
OIS 121 Introduction to Business	4
MGT 215 Entrepreneurship	3
MGT 221 Business Law I	3
MGT 240 Organizational Behavior and Management	3
MKT 230 Introduction to Marketing	3
General Electives	12

**Liberal studies electives must be taken outside the College of Business.*

Office Information Assistant

Associate of Business

This program provides advanced skills required for employment in an office environment. Career opportunities in the office support field are available in public and private institutions and companies for positions such as office clerks, secretaries, information processors and administrative assistants.

Total Required for Degree	64
Liberal Studies	8
EN 111 College Composition I	4
Liberal Studies Electives*	4
Health Promotion	1
HP 200 Personal Well Being	1

Associate Degree Core	24
ACT 201 Practical Accounting Procedures	4
IS 105 Presentation/Multimedia Software	1
IS 107 Beginning Desktop Publishing	1
OIS 161 Word Processing I	4
OIS 183 Business Administrative Procedures	4
OIS 185 Introductory Software Applications	4
OIS 190 Professional Development	3
OIS 244 Applied Office Communication	3

Office Information Assistant Core	15
IS 207 Intermediate Desktop Publishing	1
OIS 261 Word Processing II	3
OIS 263 Business Document Editing	4
OIS 285 Advanced Software Applications and Integration	3
OIS 293 Integrated Office	4

Electives** 10

Choose from the following:

- IS 208 Web Page Development (1 cr.)
- OIS 121 Introduction to Business (4 cr.)
- OIS 171 Medical Terminology (4 cr.)
- MGT 215 Entrepreneurship (3 cr.)
- MGT 221 Business Law I (3 cr.)
- MKT 230 Introduction to Marketing (3 cr.)
- MGT 240 Organizational Behavior and Management (3 cr.)

General Electives

**Liberal studies electives must be outside the College of Business.*

***Or other courses approved by the Associate Dean of the College of Business.*

Health Information Processing
Associate of Business

This program provides advanced skills required for employment in an office environment and with specialized skills necessary for employment in the medical field. The health care industry is supported by many behind the scenes individuals who are employed in a variety of administrative/support areas. General clerical/support positions include insurance clerk, billing clerk and medical records clerk. Administrative/technical positions include medical transcriptionist, medical coder, health unit coordinator, office manager and administrative assistant.

Total Credits Required for Degree	69
Liberal Studies	8
EN 111 College Composition I	4
Liberal Studies Electives*	4
Health Promotion	1
HP 200 Personal Well Being	1
Associate Degree Core	24
ACT 201 Practical Accounting Procedures	4
IS 105 Presentation/Multimedia Software	1
IS 107 Beginning Desktop Publishing	1
OIS 161 Word Processing I	4
OIS 183 Business Administrative Procedures	4
OIS 185 Introductory Software Applications	4

OIS 190 Professional Development	3
OIS 244 Applied Office Communication	3
Information Processing Core	15
IS 207 Intermediate Desktop Publishing	1
OIS 261 Word Processing II	3
OIS 263 Business Document Editing	4
OIS 285 Advanced Software Applications and Integration	3
OIS 293 Integrated Office Lab	4
Health Information Core	21
OIS 171 Medical Terminology	4
OIS 172 Diagnostic/Therapeutic Terminology	4
OIS 266 Medical Transcription	3
OIS 270 Medical Record Procedures	4
OIS 271 Medical Office Procedures	3
OIS 273 Medical Coding	3

**Liberal studies electives must be taken outside the College of Business.*

CERTIFICATE PROGRAM

Office Services Certificate

This certificate program provides a focused educational experience for office support personnel, including introductory skills for employment in an office environment. Career opportunities in the office support field are available in public and private companies for positions such as office clerk, transcriptionists, keyboarding specialists and secretaries.

Total Credits Required for Certificate	32
Liberal Studies	4
EN 111 College Composition I	4
Health Promotion	1
HP 200 Physical Well Being	1
Technical Concentration	27
IS 105 Presentation/Multimedia Software	1
IS 107 Beginning Desktop Publishing	1
OIS 161 Word Processing I	4
OIS 183 Business Administrative Procedures	4
OIS 185 Introductory Software Applications	4
OIS 190 Professional Development	3
OIS 244 Applied Office Communication	3
OIS 261 Word Processing II	3
OIS 263 Business Document Editing	4

MINOR PROGRAMS

Accounting Minor

Total Credits Required for Minor 20

ACT 230 Principles of Accounting I 3
 ACT 240 Principles of Accounting II 3

Electives* 14

Choose from the following:

ACT 301 Financial Accounting I (4 cr.)
 ACT 302 Financial Accounting II (4 cr.)
 ACT 311 Cost Accounting (4 cr.)
 ACT 321 Federal Income Taxation (4 cr.)
 FIN 354 Money and Capital Markets (4 cr.)
 ACT 403 Accounting III (4 cr.)
 ACT 412 Advanced Cost Accounting (3 cr.)
 FIN 420 Financial Statement Analysis (3 cr.)
 ACT 422 Advanced Federal Taxation (3 cr.)
 FIN 424 Personal Financial Planning (3 cr.)
 ACT 431 Accounting Information Systems (3 cr.)
 ACT 441 Auditing (4 cr.)
 ACT 482 Accounting for Non-Profit Enterprises (3 cr.)

**Or other courses approved by the Associate Dean of the College of Business.*

Business Administration Minor

Total Credits Required for Minor 20

ACT 230 Principles of Accounting I 3
 ACT 240 Principles of Accounting II 3
 MGT 240 Organizational Behavior and Management 3
 MKT 230 Introduction to Marketing 3
 FIN 351 Management of Financial Resources 3

Electives* 5

Choose any ACT, CIS, IS, FIN, MGT, MKT or OIS courses except
 ACT 201, ACT 202, MGT 240, MKT 230 and FIN 351.

**Or other courses approved by the Associate Dean of the College of Business.*

Computer Information Systems Minor

Total Credits Required for Minor 20

CIS/CS/IS Electives 20

A program of CIS, CS or IS courses must be approved by both the major and minor advisers. A copy of the approved minor is then sent to the Degree Audits Office. Modifications in the program may be made only with the approval of both the minor and major advisers.

Finance Minor

Total Credits Required for Minor 20

ACT 230 Principles of Accounting I 3
 FIN 351 Management of Financial Resources 3
 FIN 354 Money and Capital Markets 4

Electives* 10

Choose from the following:

ACT 240 Principles of Accounting II (3 cr.)
 ACT 321 Federal Income Taxation (4 cr.)
 FIN 352 Financial Management (3 cr.)
 ACT 420 Financial Statement Analysis (3 cr.)
 FIN 424 Personal Financial Management (3 cr.)
 FIN 458 International Financial Management (3 cr.)
 FIN 461 Management of Financial Institutions (3 cr.)
 FIN 462 Investment Analysis (4 cr.)
 FIN 463 Portfolio Management (3 cr.)
 FIN 355 Principles of Insurance (3 cr.)
 FIN 450 Estate Planning (3 cr.)
 FIN 460 Employee Benefits (3 cr.)
 ACT 482 Accounting Non-Profit Enterprises (3 cr.)

**Or other courses approved by the Associate Dean of the College of Business.*

Labor Relations Minor

Total Credits Required for Minor 20

MGT 240 Organizational Behavior and Management 3
 MGT 421 Labor Law 3
 MGT 343 Human Resource Management 3
 MGT 424 Collective Bargaining 3

Electives* 8

Choose from the following:

MGT 419 Seminar in Human Resource Management (4 cr.)
 MGT 412 Compensation Administration (3 cr.)
 MGT 221 Business Law I: Legal Environment of Business (3 cr.)
 EC 415 Labor Economics (4 cr.)
 PS 332 Administrative Law (4 cr.)
 MGT 417 Organizational Theory (3 cr.)
 HS 337 or EC 337 American Economic History (4 cr.)
 ACT 202 Accounting Concepts for Management (4 cr.)

**Or other courses approved by the Associate Dean of the College of Business.*

Management Minor

Total Credits Required for Minor 20

MGT 240 Organizational Behavior and Management 3
 MGT 343 Human Resource Management 3
 MGT 417 Organizational Theory 3

Electives* 11

Choose from the following:

ACT 230 Principles of Accounting I (3 cr.)
 ACT 240 Principles of Accounting II (3 cr.)
 MGT 225 Operations Management (3 cr.)
 MGT 326 Deterministic Models in Business (3 cr.)
 MGT 327 Random Models In Business (3 cr.)
 MGT 360 Controversial Issues in Marketing and Management (3 cr.)
 MGT 412 Compensation Administration (3 cr.)
 MGT 414 Small Enterprise Management (3 cr.)
 MGT 419 Seminar in Human Resource Management (3 cr.)
 MGT 422 Business and Government Policy (3 cr.)
 MGT 475 International Business (3 cr.)
 MGT 495 Special Topics in Management (1-3 cr.)

**Or other courses approved by the Associate Dean of the College of Business.*

Marketing Minor

Total Credits Required for Minor	20
MKT 230 Introduction to Marketing	3
MKT 230R Introduction to Marketing Recitation	1
MKT 335 Consumer Behavior Analysis	3
MGT 240 Organizational Behavior and Management	3
MGT 240R Introduction to Management Recitation	1
Electives*	9
<i>Choose from the following:</i>	
MGT 414 Small Enterprise Management (3 cr.)	
MGT 475 International Business (3 cr.)	
MKT 310 Marketing for Entrepreneurship (3 cr.)	
MKT 331 Retail Administration (3 cr.)	
MKT 337 Marketing Channels (3 cr.)	
MKT 360 Controversial Issues in Marketing and Management (3 cr.)	
MKT 410 Sales Management (3 cr.)	
MKT 411 Personal Selling (3 cr.)	
MKT 430 Services Marketing (3 cr.)	
MKT 432 Advertising and Sales Promotion (3 cr.)	
MKT 466 International Marketing (3 cr.)	
MKT 495 Special Topics in Marketing (1-3 cr.)	

**Or other courses approved by the Associate Dean of the College of Business.*

Office Services Minor

Total Credits Required for Minor	24
OIS 161 Word Processing I	4
OIS 183 Business Administrative Procedures	4
OIS 185 Introductory Software Applications	4
OIS 263 Business Document Editing	4
Electives*	8
<i>Choose from the following:</i>	
IS 105 Presentation/Multimedia Software (1 cr.)	
IS 107 Beginning Desktop Publishing (1 cr.)	
IS 120 Computer Concepts (2 cr.)	
IS 207 Advanced Desktop Publishing (1 cr.)	
IS 208 Web Page Development (1 cr.)	
OIS 121 Introduction to Business (4 cr.)	
MGT 344 Managerial Communications (3 cr.)	

**Or other courses approved by the Associate Dean of the College of Business.*

CHEMISTRY

DEPARTMENT OFFICE

3301 New Science Facility

Phone: 906-227-2911

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Web Page: www.nmu.edu/departments/chemistry

Interim Department Head: Suzanne E. Williams •
swilliam@nmu.edu



Chemistry at NMU

The Chemistry Department offers programs leading to either the bachelor of arts degree or the bachelor of science degree in biochemistry, chemistry, forensic biochemistry, secondary education chemistry and water science, as well as graduate-level programs. The department also supports courses for students in other areas needing chemistry cognates and electives. The program for majors at the undergraduate level is designed for students planning professional careers in chemistry and related fields, and in the teaching of chemistry. There are several program options available at the advanced undergraduate level depending upon the career interests of the student.

Northern's Chemistry Department is accredited by the American Chemical Society. ACS approval and periodic reviews of the department's capability to offer complete programs to prepare students for professional work in the chemistry field attests to the continuing academic soundness of the undergraduate program and to its ability to serve the student population's diverse needs and interests.

The Chemistry Department also provides advisement for students interested in pre-pharmacy. See the "Pre-professional Programs" section of this bulletin.

Student Organizations

- American Chemical Society Student Affiliates
- Chemistry Club/Moles "R" Us
- Student Michigan Education Association

Department/Program Policies

Students enrolled in a chemistry laboratory must pay the cost of replacement for glassware or equipment broken in excess of one dollar. Records of student breakage are maintained in the chemistry stockroom, and students are notified of any amount due after the last laboratory meeting. The breakage fee is not applicable to CH 490 or CH 491.

Only those chemistry courses passed with a grade of "C-" or better apply to the biochemistry, chemistry and Chemistry ACS Certified majors.

Students majoring in secondary education chemistry or minoring in chemistry education must maintain a grade point average of 2.70 or greater with no grade below a "C" in the professional education sequence, the major and/or minor and required cognates combined.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Biochemistry Major

This major prepares students for entry into graduate programs in biochemistry and related disciplines. The program serves those interested in biochemical research or forensic science as a career or in pursuing pre-professional programs in medicine or dentistry. The biochemistry curriculum includes the credit-hour equivalent of a major plus a minor; therefore, no minor is required.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	78-79
Chemistry	
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
CH 241 Chemical Equilibrium	3
CH 242 Quantitative Analysis	2
CH 321 Organic Chemistry I	4
CH 322 Organic Chemistry II	4
CH 342 Physical Chemistry II	4
CH 450 Introductory Biochemistry	4

CH 452 Intermediary Metabolism	4
CH 454 Biochemical Techniques	4
Biology	
BI 111 Introductory Biology: Principles [III]	4
BI 112 Introductory Biology: Diversity [III]	4
BI 303 General Microbiology <i>or</i>	4-5
BI 313 Cell Biology (4 cr.) <i>or</i>	
BI 431 Plant Physiology (4 cr.)	
BI 312 Genetics	4
BI 418 Molecular Biology	4
Mathematics	
MA 161 Calculus I [III]	5
MA 163 Calculus II	4
Physics	
PH 220 Introductory Physics I [III] <i>or</i>	5
PH 201 College Physics I [III]	
PH 221 Introductory Physics II [III] <i>or</i>	5
PH 202 College Physics II [III]	
Biochemistry Electives	
<i>Choose from the following:</i>	
AIS 435 Electronic Information Resources (2 cr.)	9
BI 203 Medical Microbiology (5 cr.)	
BI 210 Principles of Ecology (4 cr.)	
BI 303 General Microbiology (5 cr.)	
BI 313 Cell Biology (4 cr.)	
BI 405 Immunology (3 cr.)	
BI 411 Limnology (4 cr.)	
BI 413 Biochemistry of Development (4 cr.)	
BI 425 Endocrinology (3 cr.)	
BI 431 Plant Physiology (4 cr.)	
BI 495 Special Topics in Biology (1-4 cr.)	
BI 498 Directed Studies in Biology (1-4 cr.)	
CH 341 Physical Chemistry I* (4 cr.)	
CH 415 Inorganic Chemistry (4 cr.)	
CH 430 Environmental Chemistry (5 cr.)	
CH 435 Gas and Liquid Chromatography (2 cr.)	
CH 436 Modern Spectrometry (3 cr.)	
CH 437 Atomic Absorption Spectrometry (1 cr.)	
CH 456 Protein Structure and Function (3 cr.)	
CH 460 Nuclear Chemistry (4 cr.)	
CH 490 Senior Research and Seminar I (2-4 cr.)	
CH 491 Senior Research and Seminar II (2-4 cr.)	
CH 495 Special Topics in Chemistry (1-4 cr.)	
CS 120 Introduction to Computing (4 cr.) [V]	
BI 412 Biometrics (4 cr.) <i>or</i>	
MA 171 Introduction to Probability and Statistics (4 cr.) [V]	
MA 211 Introduction to Matrix Theory and Linear Algebra (3 cr.)	
MA 361 Differential Equations (3 cr.)	
MA 475 Intermediate Statistics (4 cr.)	
PH 322 Modern Physics (4 cr.)	

*Students wishing to pursue graduate studies in biochemistry or industrial careers should take CH 341.

Chemistry Major (ACS Certified)

This major prepares students who plan to pursue graduate-level work in chemistry or to work in the chemical industry. Students who successfully complete this program will meet at least the minimum standards of the Committee on Professional Training of the American Chemical Society. Students in this major may satisfy the minor subject requirement by completing the sequence of courses listed as an academic minor in another department or completing the group science minor.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	49
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
CH 215 Chemistry of the Elements	4
CH 241 Chemical Equilibrium	3
CH 242 Quantitative Analysis	2
CH 321 Organic Chemistry I	4
CH 322 Organic Chemistry II	4
CH 341 Physical Chemistry I	4
CH 342 Physical Chemistry II	4
CH 415 Inorganic Chemistry	4
CH 435 Gas and Liquid Chromatography	2
CH 436 Modern Spectrometry	3
CH 437 Atomic Absorption Spectrometry	1
CH 450 Introductory Biochemistry	4
Other Required Courses	19
MA 161 Calculus I [III]	5
MA 163 Calculus II	4
PH 220 Introductory Physics I [III] <i>or</i>	5
PH 201 College Physics I [III]	
PH 221 Introductory Physics II [III] <i>or</i>	5
PH 202 College Physics II [III]	
Minor	3-20

The group science minor uses the other required courses and requires three additional credits; see page 74.

Chemistry Major

This major prepares students for further work in areas outside pure chemistry such as forensic science, the biological sciences, medicine, dentistry, pharmacy, engineering, material science, pollution control or ecology. Students in this major may satisfy the minor subject requirement by completing the sequence of courses listed as an academic minor in another department or completing the group science minor.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	41
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
CH 241 Chemical Equilibrium	3
CH 242 Quantitative Analysis	2
CH 321 Organic Chemistry I	4
CH 322 Organic Chemistry II	4
CH 341 Physical Chemistry I	4
CH 342 Physical Chemistry II	4
CH 415 Inorganic Chemistry	4
Chemistry Electives	6
<i>Must be at the 400 level, including at least one of the following:</i>	
CH 435 Gas and Liquid Chromatography (2 cr.)	
CH 436 Modern Spectrometry (3 cr.)	
CH 437 Atomic Absorption Spectrometry (1 cr.)	
Other Required Courses	19
MA 161 Calculus I [III]	5
MA 163 Calculus II	4
PH 220 Introductory Physics I [III] <i>or</i> PH 201 College Physics I [III]	5
PH 221 Introductory Physics II [III] <i>or</i> PH 202 College Physics II [III]	5
Minor	3-20
<i>The group science minor uses the other required courses and requires three additional credits; see page 74.</i>	

Forensic Biochemistry Major

This major is designed to prepare students for a career in the field of forensic science. It provides the science background required for working as a forensic investigator in a crime lab. In addition, it prepares students for entry into a graduate program in forensic science. The forensic biochemistry curriculum includes courses from multiple departments and is the credit-hour equivalent of a major plus a minor, therefore no additional minor is required. Students who are interested in pursuing this degree should have a strong background in science, including two years of high school algebra and one year of high school chemistry. The capstone course for this major, CH 440, is offered every other year, therefore students should consult with their adviser early in their program to ensure that they are prepared to take CH 440 when it is offered.

Total Credits Required for Degree	128
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	33
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
CH 241 Chemical Equilibrium	3
CH 242 Quantitative Analysis	2
CH 321 Organic Chemistry I	4
CH 322 Organic Chemistry II	4
CH 435 Gas and Liquid Chromatography	2
CH 440 Forensic Chemistry	4
CH 450 Introductory Biochemistry	4
Other Required Courses	48
BI 111 Introductory Biology: Principles [III]	4
BI 112 Introductory Biology: Diversity [III]	4
BI 203 Medical Microbiology <i>or</i> BI 303 General Microbiology	5
BI 312 Genetics	4
BI 418 Molecular Biology	4
CJ 110 Introduction to Criminal Justice	4
CJ 214 Investigative Process I	4
MA 161 Calculus I [III]	5
MA 171 Statistics [V]	4
PH 220 Introductory Physics I [III] <i>or</i> PH 201 College Physics I [III]	5
PH 221 Introductory Physics II [III] <i>or</i> PH 202 College Physics II [III]	5
Electives	17
<i>Choose from the following:</i>	
CH 215 Chemistry of the Elements (4 cr.)	
CH 341 Physical Chemistry I (4 cr.)	
CH 342 Physical Chemistry II (4 cr.)	
CH 415 Inorganic Chemistry (4 cr.)	
CH 436 Modern Spectroscopy (3 cr.)	
CH 437 Atomic Absorption Spectrometry (1 cr.)	
CH 454 Biochemical Techniques (4 cr.)	
CH 490/1 Senior Research and Seminar I & II (2-4 cr.)	
CH 493 Forensic Laboratory Internship (1-4 cr.)	
CJ 414 The Investigative Process II (4 cr.)	
MA 163 Calculus II (4 cr.)	

Note: Students interested in pursuing graduate studies in biochemistry or chemistry should take MA 163, CH 342, CH 452 and CH 454 or MA 163, CH 341, CH 342 and CH 415, respectively.

Secondary Education Chemistry Major

Completion of the chemistry courses as well as the professional education sequence lead to certification as a secondary teacher of chemistry. Students in this program must select an academic minor in another department. A minor in physics education is recommended. Advising for this major is provided by Dr. Mitchell D. Klett in the School of Education.

Total Credits Required for Degree	138-152
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	32
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
CH 220 Introductory Organic Chemistry	5
CH 241 Chemical Equilibrium	3
CH 242 Quantitative Analysis	2
CH 341 Physical Chemistry I	4
CH 342 Physical Chemistry II	4
CH 450 Introductory Biochemistry	4
Other Required Courses	27
PH 220 Introductory Physics I [III] <i>or</i> PH 201 College Physics I [III]	5
PH 221 Introductory Physics II [III] <i>or</i> PH 202 College Physics II [III]	5
MA 161 Calculus I [III]	5
MA 163 Calculus II	4
BI 111 Introductory Biology: Principles [III]	4
GC 246 Earth Science <i>or</i> GC 255 Physical Geography [III] <i>or</i> GC 385 Weather and Climate	4
Teaching Minor, Minimum*	10-24
Professional Education	37
ED 201 Introduction to Education	2
ED 231 Teaching and Learning in the Secondary Classroom	4
ED 301 Dimensions of American Education	2
ED 319 Teaching of Reading for Secondary Teachers	3
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	2
ED 361 Special Education and the General Classroom Teacher	2
ED 483 Educational Media and Technology	2
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1
MSED 340 Fundamental Concepts in Science	4
MSED 350 Methods and Materials in the Teaching of Science Education	4

*Students who minor in Physics Education can complete the minor with an additional 10 credit hours of physics.

Water Science Major

This major prepares students who are planning to pursue an advanced degree in oceanography, limnology, water chemistry, aquatic biology or environmental science. It also prepares students for state, federal and industrial positions related to water pollution and water quality. Students can select an adviser from either the chemistry or biology department. The water science major includes the credit-hour equivalent of a major plus a minor.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	60-63
BI 111 Introductory Biology: Principles [III]	4
BI 112 Introductory Biology: Diversity [III]	4
BI 210 Principles of Ecology	4
BI 303 General Microbiology	5
BI 411 Limnology	4
BI 412 Biometrics	4
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
CH 220 Introductory Organic Chemistry (5 cr.) <i>or</i> CH 321 Organic Chemistry I (4 cr.) <i>and</i> CH 322 Organic Chemistry II (4 cr.)	5-8
CH 241 Chemical Equilibrium	3
CH 242 Quantitative Analysis	2
CH 430 Environmental Chemistry	5
PH 220 Introductory Physics I [III] <i>or</i> PH 201 College Physics I [III]	5
PH 221 Introductory Physics II [III] <i>or</i> PH 202 College Physics II [III]	5
Other Required Courses	16
<i>Choose from the following:</i>	
BI 310 Ecology Theory and Methods (4 cr.)	
BI 324 Invertebrate Zoology (4 cr.)	
BI 423 Parasitology (3 cr.)	
BI 441 Fisheries Management (4 cr.)	
BI 465 Aquatic Insect Ecology (4 cr.)	
BI 492 Research in Water Science (2 cr.) <i>or</i> CH 492 Research in Water Science (2 cr.) <i>or</i> GC 492 Research in Water Science (2 cr.)	
CH 215 Chemistry of the Elements (4 cr.)	
CH 435 Gas and Liquid Chromatography (2 cr.)	
CS 120 Computer Science I (4 cr.) [V]	
GC 225 Introduction to Maps (2 cr.)	
GC 255 Physical Geology (4 cr.) [III]	
GC 320 Environmental Policy and Regulation (4 cr.)	
GC 390 Oceanography (2 cr.)	
GC 465 Hydrology (4 cr.)	

MINOR PROGRAMS

Chemistry Minor

Total Credits Required for Minor	22
CH 111 General Chemistry I	5
CH 112 General Chemistry II	5
Chemistry Electives (200 level or above)	12

Chemistry Education Minor

Total Credits Required for Minor	22-30
CH 111 General Chemistry I	5
CH 112 General Chemistry II	5
CH 220 Introductory Organic Chemistry	5
CH 215 Chemistry of the Elements (4 cr.) <i>or</i> CH 241 Chemical Equilibrium (2 cr.) <i>and</i> CH 242 Quantitative Analysis (2 cr.)	4-5
Chemistry Electives (200 level and above)	2-3
MSED 340 Fundamental Concepts in Science*	4
MSED 350 Methods and Materials in Teaching Science Education*	4

**Not required if major is biology education, earth science education, physics education or integrated science education.*

Group Science Minor

This minor is available only to students with majors in chemistry or Chemistry ACS Certified.

Total Credits Required for Minor	22
MA 161 Calculus I	5
MA 163 Calculus II	4
PH 220 Introductory Physics I	5
PH 221 Introductory Physics II	5
MA or PH Elective (300 level and above)	3

CLINICAL LABORATORY SCIENCES

DEPARTMENT OFFICE

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Clinical Laboratory Sciences at NMU

The Clinical Laboratory Sciences Department has a strong commitment to the career ladder approach to higher education. All programs and degrees are designed to be transferable to higher-level degrees. All programs are based heavily in the sciences with an application to clinical pathology. Depending on program selection, graduates find employment in hospital laboratories, clinics, industry, microbiology, biotechnology, forensics and research.

The clinical laboratory science field is made up of professionals who rely on their knowledge of basic science and laboratory skills to assume a variety of responsibilities in various laboratory and clinical settings. Graduates of the clinical laboratory sciences curricula must possess appropriate knowledge, skills and attributes to become competent practitioners who are readily adaptable to changing technologies. Advancement opportunities exist for the graduate as specialists, directors, managers and consultants with experience and/or further education.

The clinical laboratory sciences curriculum includes 12 programs: bachelor's degrees include clinical laboratory scientist, clinical laboratory scientist/microbiology concentration, diagnostic genetics, clinical systems analyst, cytotechnology, histotechnology and science technologist. Associate in applied science degrees include clinical laboratory technician, histotechnician and science technician; and certificate programs include clinical assistant and surgical technology. The department also offers a minor program in clinical laboratory techniques.

The university maintains CLS affiliations with a variety of hospitals in Michigan, Wisconsin and Minnesota. A list of the affiliations is available on the department's Web site.

The clinical laboratory science, clinical laboratory technician, diagnostic genetics, histotechnology, clinical assistant and histotechnician programs are accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). The cytotechnology program is accredited by the American Society of Cytology (ASC). The surgical technology program is accredited by the Commission on Accreditation of Allied Health Education (CAAHE).

Department/Program Policies

Clinical Systems Analyst, Cytotechnology, Histotechnologist, Histotechnician, Science Technologist and Technician, Clinical Laboratory Technician, Clinical Assistant or Clinical Laboratory Techniques minor.

Students in these majors and minor must maintain a 2.00 grade point average in the major/minor and an NMU cumulative grade point average of 2.00. Students must receive no less than a "C-" in any CLS course for the clinical laboratory technician and clinical assistant program. Based on the chosen major, upon graduation, students are qualified to take a national certification exam in either cytotechnology, histotechnology, histotechnician, CLT or phlebotomy. Additional special criteria and policies for internships are further described in the *CLS Policy Manual*.

Clinical Laboratory Scientist and Clinical Laboratory Scientist/Microbiology

In order to be granted a bachelor's degree as a clinical laboratory scientist, a student must maintain an NMU cumulative grade point average of 2.60 and a 2.50 grade point average in the major. Students must receive no less than a "C-" in any CLS course. Students are eligible to take national certification examinations for clinical laboratory scientists or the microbiology categorical exam upon program completion. Criteria for placement into the practicum can be found under the appropriate course descriptions.

Diagnostic Genetics

In order to be granted a bachelor's degree in diagnostic genetics, a student must have an NMU cumulative grade point average of 2.60, a grade point average of 2.60 in the major, meet specific course grade requirements, and receive no less than a "C" in any course of the major. Students are then qualified to take the national certification exams for cytogenetics and molecular biology. Criteria for placement into the practicum includes a minimum 2.80 GPA in the major. Other requirements can be found under the appropriate course descriptions.

Surgical Technology

Students in baccalaureate degree programs may apply up to six credits of cosmetology (COS), practical nursing (PN) and surgical technology (ST) courses combined toward graduation unless otherwise prohibited. Students in associate degree programs may apply three credits of these courses toward graduation, and those in certificate programs other than cosmetology, practical nursing and surgical technology may apply two credits of these courses combined toward graduation unless otherwise prohibited.

Admission to the Surgical Technology Clinical Program

Admissions to the surgical technology clinical sequence of courses is limited. The Admissions Committee reserves the right to select students to be admitted. Students who have the highest grade point average and pre-admission test scores (if required) will be admitted first until the class is filled. Not all students who have met the minimum standards will be admitted if the space is not available.

To be considered for admission into the surgical technology clinical program a student must meet the following qualifications:

1. Must have met all NMU admission requirements and be in good standing.
2. Must have taken the Pre-Surgical Technology Assessment test and achieved a passing score in all of the subsets of the test if required by the department.
3. Must have a minimum cumulative grade point average of 2.00 (C) in all the prerequisite college courses required in the program with no grade below "C." In addition, students must have a cumulative NMU GPA of 2.00.
4. Must have successfully passed all required nursing/surgical technology courses after a maximum of two tries.

Surgical technology students will be notified of their acceptance into the clinical sequence by December 23.

Retention in the Surgical Technology Sequence

For a student to remain in the surgical technology sequence he or she must meet the following conditions:

1. Maintain a minimum cumulative grade point average of 2.00 in all surgical technology courses with no course below a "C", and maintain a cumulative Northern Michigan University grade point average of 2.00.
2. Adhere to the university's *Student Code* and *Surgical Technology Student Policies*.
3. Demonstrate a pattern of safe clinical practice commensurate with his or her educational experience to date.

Surgical Technology Readmission Criteria

Surgical technology courses are sequential, and there is limited space in some courses. When a student wishes to be readmitted

into the surgical technology sequence of courses after having a withdrawal or failure in a previously enrolled course, the student must apply for readmission to the department coordinator.

Students who have failed any surgical technology courses more than once are ineligible for readmission.

Additional Policies

For further information on policies, essential functions, application procedures, specific affiliation sites, hospital placement eligibility, costs, certification requirements, and job markets, see the *CLS Policy Manual* (available at the Northern Michigan University Bookstore) or the *Surgical Technology Student Handbook* (available in the Clinical Laboratory Sciences Department office). The Clinical Laboratory Sciences Department reserves the right to withdraw any student whose health, conduct, scholastic standing or clinical practice is such that it is inadvisable for the student to remain in the department. In any of the programs offered by this department, clinical placement for training cannot be guaranteed. In addition to the academic placement policies, students must be recommended by the departmental faculty. Any negative recommendations may override an otherwise acceptable academic record.

Students majoring in department programs may be required to have certain immunizations. Further information is available in the department office and appropriate program handbooks.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Clinical Laboratory Science Major

This major prepares graduates to perform a variety of laboratory assays on human and other types of specimens in clinical, research, commercial (biotechnology, pharmaceutical, etc.) and forensic laboratories to provide diagnostic data and information necessary to support health care, ensure quality control, facilitate product development and solve problems.

The program incorporates didactic and clinical education throughout the four-year curriculum. Students gain marketable skills after two years in the program through CLT certification.

Upon completion of the degree, students are eligible to take one of the national certification tests: CLS/MT Generalist or the Microbiology Categorical. The sophomore and senior practica provide an opportunity for students to experience two different clinical settings prior to graduation.

Total Credits Required for Degree	131
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	61
CLS 100 Obtaining a Blood Specimen	1
CLS 109 Introduction to Diagnostic Sciences	1
CLS 190 Microscopy and Laboratory Techniques	1
CLS 200 Urine and Body Fluid Analysis	1
CLS 201 Clinical Hematology/Coagulation	3
CLS 202 Clinical Chemistry	4
CLS 203 Immunohematology	3
CLS 204 Clinical Microbiology	2
CLS 213 Clinical Immunology and Serology	1
CLS 214 Diagnostic Microbiology	3
CLS 250T Clinical Practice	2
CLS 251 Clinical Hematology Practicum	3
CLS 252 Clinical Chemistry Practicum	4
CLS 253 Blood Banking Practicum	3
CLS 254 Clinical Microbiology Practicum	4
CLS 301 Advanced Hematology/Coagulation	3
CLS 302 Advanced Clinical Chemistry	2
CLS 303 Advanced Immunohematology	2
CLS 304 Advanced Clinical Microbiology	2
CLS 420 Clinical Educational Practices	1
CLS 250S Clinical Practice	1
CLS 451 Advanced Hematology Practicum	3
CLS 452 Advanced Clinical Chemistry Practicum	3
CLS 453 Advanced Clinical Immunohematology Practicum	4
CLS 454 Advanced Microbiology Practicum	4
Other Required Courses	44
BI 104 Human Anatomy and Physiology [III]	4
BI 111 Introductory Biology: Principles [III]	4
BI 206 Human Genetics	3
BI 218 Cell and Molecular Biology	4
BI 405 Immunology	3
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
CH 220 Introductory Organic Chemistry	5
CH 450 Introductory Biochemistry	4
MA 171 Introduction to Probability and Statistics [V]	4
MGT 240 Organizational Behavior and Management	3

Clinical Laboratory Science–Clinical Microbiology Concentration *Microbiology Categorical Certification Option*

This program allows CLT graduates an opportunity to focus on microbiology at the baccalaureate level. Graduates are eligible for national certification in the microbiology category and may be employed in hospitals and clinics as well as in research and industrial laboratories.

Total Credits Required for Degree	128
Liberal Studies	30-40
Health Promotion	2
Major Core	28
CLS 100 Obtaining a Blood Specimen	1
CLS 109 Introduction to Diagnostic Sciences	1
CLS 190 Microscopy and Laboratory Techniques	1
CLS 200 Urine and Body Fluid Analysis	1
CLS 201 Clinical Hematology/Coagulation	3
CLS 202 Clinical Chemistry	4
CLS 203 Immunohematology	3
CLS 213 Clinical Immunology and Serology	1
CLS 250T-253 Clinical Practicum	12
CLS 420 Clinical Educational Practices	1
Major Concentration	26
CLS 204 Clinical Microbiology	2
CLS 214 Diagnostic Microbiology	3
CLS 254 Clinical Microbiology Practicum	4
CLS 304 Advanced Clinical Microbiology	2
CLS 440 Advanced Clinical Bacteriology	8
CLS 441 Advanced Clinical Mycology	2
CLS 442 Advanced Clinical Parasitology	2
CLS 443 Advanced Clinical Mycobacteriology/ Virology	2
CLS 250M Clinical Practice	1
Supportive Courses for Microbiology	14
BI 303 General Microbiology	5
BI 423 Parasitology	3
BI 404 Virology	3
BI 405 Immunology	3
Other Required Courses	34
BI 104 Human Anatomy and Physiology [III]	4
BI 111 Introductory Biology: Principles [III]	4
BI 206 Human Genetics	3
BI 218 Cell and Molecular Biology	4
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
CH 220 Introductory Organic Chemistry	5
MA 171 Introduction to Probability and Statistics [V]	4

Clinical Systems Analyst Major

This program prepares graduates to work in a clinical laboratory setting, in a hospital information systems department or as a laboratory information systems consultant. Students receive training and first become certified laboratory professionals at the clinical laboratory technical level. The clinical systems analyst major is augmented with a comprehensive background in computer information systems. There is a pressing need nationwide for skilled computer information systems graduates who understand the unique requirements of a clinical laboratory.

Total Credits Required for Degree	128
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	66-69

CLS Concentration	39-40
CLS 100 Obtaining a Blood Specimen	1
CLS 109 Introduction to Diagnostic Sciences	1
CLS 190 Microscopy and Laboratory Techniques	1
CLS 200 Urine and Body Fluid Analysis	1
CLS 201 Clinical Hematology/Coagulation	3
CLS 202 Clinical Chemistry	4
CLS 203 Immunohematology	3
CLS 204 Clinical Microbiology	2
CLS 213 Clinical Immunology and Serology	1
CLS 214 Diagnostic Microbiology	3
CLS 250-254 CLT Clinical Practicum	16
CLS 420 Clinical Educational Practices	1

CLS Electives	2
<i>Choose from the following:</i>	
CLS 301 Advanced Clinical Hematology Coagulation (3 cr.)	
CLS 302 Advanced Clinical Chemistry (2 cr.)	
CLS 303 Advanced Immunohematology (2 cr.)	
CLS 304 Advanced Clinical Microbiology (2 cr.)	
CLS 391 Laboratory Experience (1-3 cr.)	
CLS 498 Directed Study (1-4 cr.)	

CIS Concentration	28-30
IS 120 Computer Concepts [V]	2
CIS 155 Software Development with Databases	4
CIS 220 Network Concepts	2
CIS 250 Systems Development I	4

CIS Elective	2-4
<i>Choose one course from the following:</i>	
CIS 230 Novell Operating Systems (2 cr.)	
CIS 234 Microsoft Network Operating Systems (2 cr.)	
CS 302 Unix System Administration (4 cr.)	
CIS 255 Systems Development II	4
CIS 355 Web Applications Programming	3
CIS 415 Systems Development Project	3
CIS 464 Database Management	3
CIS 440 Management Information Systems (3 cr.) <i>or</i>	1-3
CIS 491 Internship in Computer Information Systems (1-4 cr.)	

Other Required Courses	29
BI 104 Human Anatomy and Physiology [III]	4
CH 105 Chemical Principles (or higher) [III]	8
CS 120 Computer Science I [V]	4
CS 122 Computer Science II	4
ET 281 Computer System Servicing	3
MA 171 Probability and Statistics* [V]	4

*Math placement scores may require MA 105 or equivalent to be taken prior to this course.

Cytotechnology Major

This major prepares students with the basic science background needed to meet admission requirements of clinical programs approved by the ASC or NAACLS. Cytology is the study of the structure and the function of cells. Cytotechnologists prepare cellular samples for study under the microscope and assist in the diagnosis of disease by the examination of these samples. Cytotechnologists are trained clinical laboratory science

professionals who work with pathologists to detect microscopic changes in body cells that may be important in the early diagnosis of cancer.

The first three years of the curriculum are at the university while the fourth year is completed through an accredited cytotechnology practicum. The university is affiliated with hospitals in Wisconsin and Michigan; however, students may apply to any accredited school in the United States. If students meet the hospital's standards and are accepted, they register for the cytotechnology practicum courses at NMU and pursue a 12-month program under the direction of the hospital.

Total Credits Required for Degree 124

Liberal Studies 30-40
Health Promotion 2

Required Courses in Major 44

CLS 109 Introduction to Diagnostic Sciences	1
CLS 190 Microscopy and Laboratory Techniques	1
CLS 200 Urine and Body Fluid Analysis	1
CLS 201 Clinical Hematology/Coagulation	3
CLS 204 Clinical Microbiology	2
CLS 213 Clinical Immunology and Serology	1
CLS 250C Clinical Practice	2
CLS 420 Clinical Educational Practices	1
CLS 480 Cytology Orientation	1
CLS 481 Tissue Cytology I	8
CLS 482 Tissue Cytology II	8
CLS 483 Tissue Cytology III	8
CLS 484 Applied Clinical Practicum	5
CLS 485 Advanced Cytology Techniques	2

Other Required Courses 41

BI 111 Introductory Biology: Principles [III]	4
BI 201 Human Anatomy	3
BI 206 Human Genetics	3
BI 218 Cell and Molecular Biology	4
BI 313 Cell Biology	4
BI 426 Human Histology	4
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
CH 220 Introduction to Organic Chemistry	5
MA 171 Introduction to Probability and Statistics [V]	4

Biology Elective 2-5

<i>Choose from the following:</i>	
BI 202 Human Physiology (5 cr.)	
BI 405 Immunology (3 cr.)	
BI 414 Electron Microscopy (3 cr.)	
BI 416 Experimental Cytogenetics (2-3 cr.)	
BI 423 Parasitology (3 cr.)	

Electives 8-11

<i>Choose from the following:</i>	
Any mathematics course above 100 excluding MA 171	
Any Physics course 200 level or above	
CH 450 Introductory Biochemistry (4 cr.)	

HL 101 Medical Terminology (1 cr.)
 CIS 110 Principles of Computer Information Systems [V] or
 IS electives [V] (1-4 cr.)
 Any CLS course (4 cr.)

Diagnostic Genetics Major with Two Tracks

The program offers a cytogenetics or molecular biology track. These tracks require the same course work at NMU but differ in the senior practicum. Diagnostic genetics focuses on the identification of abnormalities of chromosomes or regions of DNA associated with pathology and disease. This field is growing rapidly and is driven in part by discoveries of genes associated with inherited disorders that are reported by the human genome project, and in part by advances in biotechnology. The small-group, high-tech laboratory environments at Northern prepare students to function in clinical, research and commercial work settings. Students participate in two clinical practicum experiences—one at the sophomore level and another at the senior level. The senior practicum is conducted at Mayo Clinic in Rochester, Minnesota.

Total Credits Required for Degree	126
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	58
CLS 100 Obtaining a Blood Specimen	1
CLS 109 Introduction to Diagnostic Sciences	1
CLS 190 Microscopy and Laboratory Techniques	1
CLS 201 Clinical Hematology/Coagulation	3
CLS 204 Clinical Microbiology (2 cr.) <i>and</i> CLS 214 Diagnostic Microbiology (3 cr.) <i>or</i> BI 203 Medical Microbiology (5 cr.) <i>or</i> BI 303 General Microbiology (5 cr.)	5
CLS 420 Clinical Education Practices	1
BI 218 Cell and Molecular Biology	4
BI 312 Genetics	4
BI 313 Cell Biology	4
BI 416 Cytogenetics	2
BI 418 Molecular Biology	4
CH 454 Biochemical Techniques	4
CLS Electives	3
<i>Choose from the following:</i>	
CLS 200 Urine and Body Fluid Analysis (1 cr.)	
CLS 202 Clinical Chemistry (4 cr.)	
CLS 203 Immunohematology (3 cr.)	
CLS 213 Clinical Immunology and Serology (1 cr.)	
CLS 391 Laboratory Experience (1-3 cr.)	
*CLS Practicum (5 weeks)	5
<i>Choose 250T plus from the following to correspond with prerequisite courses chosen above: CLS 251, CLS 252, CLS 253, CLS 254, CLS 391</i>	

CLS Senior Practicum (6 months)	16
<i>Choose cytogenetics practicum or molecular biology practicum below.</i>	
Cytogenetics Practicum	
CLS 250G Clinical Practice	2
CLS 460 Specimen Processing and Culture	4
CLS 461 Microscopic Analysis	4
CLS 462 FISH Technology	3
CLS 463 CG Specialized Tech/Projects	3
Molecular Biology Practicum	
CLS 250G Clinical Practice	2
CLS 470 DNA Purification	2
CLS 471 Southern Blot Analysis	5
CLS 472 PCR Analysis	5
CLS 473 MB Specialized Tech/Projects	2
Other Required Courses	33-35
BI 111 Introductory Biology: Principles [III]	4
BI 104 Human Anatomy and Physiology [III] <i>or</i> BI 201 Human Anatomy	3-4
BI 404 Virology <i>or</i> BI 419 Biology of Cancer	3-4
BI 405 Immunology	3
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
CH 220 Introductory Organic Chemistry	5
CH 450 Introductory Biochemistry	4
MA 171 Introduction to Probability and Statistics [V]	4
Diagnostic Genetics Electives	3-5

**Note: Students may substitute any clinical laboratory science practicum (above 200) in place of the CLS 2XX series.*

Histotechnologist Major

This program prepares students with the basic science background needed to meet the requirements for admission to clinical programs approved by the ASC or NAACLS. Histology is the study of tissues. Histotechnologists perform all functions of the histotechnician plus they identify tissue structures, cell component and staining characteristics, relate these to physiologic functions, implement and evaluate new techniques and procedures, make quality control judgments and apply principles of management and education methodology when appropriate. The first three years of the curriculum are at the university, while the fourth year is completed through an accredited histotechnology practicum. The university is affiliated with hospitals in Wisconsin and Michigan; however, students may apply to any accredited school in the United States. If students meet the hospital's standards and are accepted, they register for the histotechnology practicum courses at NMU and pursue a twelve-month program under the direction of the hospital.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	42
CLS 109 Introduction to Diagnostic Sciences	1
CLS 190 Microscopy and Laboratory Techniques	1
CLS 200 Urine and Body Fluid Analysis	1
CLS 201 Clinical Hematology/Coagulation	3
CLS 204 Clinical Microbiology	2
CLS 213 Clinical Immunology and Serology	1
CLS 250H Clinical Practice	2
CLS 380 Histotechnique I	7
CLS 381 Histotechnique II	7
CLS 382 Histotechnique III	3
CLS 383 Histochemistry/Pathology	8
CLS 384 Advanced Histology	5
CLS 420 Clinical Educational Practices	1
Other Required Courses	54
BI 111 Introductory Biology: Principles [III]	4
BI 201 Human Anatomy	3
BI 202 Human Physiology	5
BI 206 Human Genetics	3
BI 218 Cell and Molecular Biology	4
BI 313 Cell Biology	4
BI 405 Immunology	3
BI 426 Human Histology	4
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
CH 220 Introductory Organic Chemistry	5
CH 450 Introductory Biochemistry	4
HL 101 Medical Terminology	1
MA 171 Introduction to Probability and Statistics [V]	4

Science Technologist Major

This major prepares graduates to be premier laboratorians who are employable in a variety of laboratory settings (clinical, commercial, research, biotechnology, forensic). Students are exposed to a wide variety of methods, principles, instruments, technical skills and laboratory problems. The curriculum is built upon a firm foundation in clinical techniques, but students have options in course selection to pursue one of three areas: clinical certification, biotechnology or forensics. Students who have first completed an associate degree program in clinical lab technician, histotechnician or science technician will find that much of their course work may be applied to the science technologist degree.

Total Credits Required for Degree	128
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	39
CLS 302 Advanced Clinical Chemistry	2
CLS 391 Laboratory Experience	1-4
CLS 420 Clinical Educational Practices	1

CLS Electives 15-19

Choose from the following:

CLS 100 Obtaining a Blood Specimen (1 cr.)	
CLS 109 Introduction to Diagnostic Sciences (1 cr.)	
CLS 190 Microscopy and Laboratory Techniques (1 cr.)	
CLS 200 Urine and Body Fluid Analysis (1 cr.)	
CLS 201 Clinical Hematology/Coagulation (3 cr.)	
CLS 202 Clinical Chemistry (4 cr.)	
CLS 203 Immunohematology (3 cr.)	
CLS 204 Clinical Microbiology (2 cr.)	
CLS 213 Clinical Immunology and Serology (1 cr.)	
CLS 214 Diagnostic Microbiology (3 cr.)	
CLS 301 Advanced Hematology/Coagulation (3 cr.)	
CLS 303 Advanced Immunohematology (2 cr.)	
CLS 304 Advanced Clinical Microbiology (2 cr.)	

Clinical Laboratory Technology Emphasis* 16

Must have taken the following courses: CLS 100, CLS 109, CLS 190, CLS 200, CLS 201, CLS 202, CLS 203, CLS 204, CLS 213 and CLS 214 or equivalent.

CLS 250T Clinical Practice	2
CLS 251 Clinical Hematology Practicum	3
CLS 252 Clinical Chemistry Practicum	4
CLS 253 Blood Banking Practicum	3
CLS 254 Clinical Microbiology Practicum	4

DNA/Forensic Emphasis 16

BI 418 Molecular Biology	4
CJ 110 Introduction to Criminal Justice	4

Criminal Justice Electives 8

Choose from the following

CJ 213 The Judicial Function (4 cr.)	
CJ 214 The Investigative Process I (4 cr.)	
CJ 414 The Investigative Process II (4 cr.)	

Biotechnology Emphasis 16

BI 313 Cell Biology	4
BI 418 Molecular Biology	4
CH 450 Introductory Biochemistry	4
CH 454 Biochemical Techniques	4

Other Required Courses 48-49

BI 111 Introduction to Biology: Principles [III]	4
BI 104 Human Anatomy and Physiology [III]	4
BI 206 Human Genetics <i>or</i>	3-4
BI 312 Genetics	
BI 218 Cell and Molecular Biology	4
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
CH 220 Introductory Organic Chemistry	5
MA 171 Introduction to Probability and Statistics [V]	4
PH 201 College Physics I [III]	5
PH 202 College Physics II [III]	5
CH 450 Introduction to Biochemistry	4

Science Technologist Electives** 14-15

Recommend that electives be chosen from the following courses:

BI 303 General Microbiology (3 cr.)	
BI 404 Virology (3 cr.)	
BI 405 Immunology (3 cr.)	
BI 414 Electron Microscopy (4 cr.)	
BI 416 Experimental Cytogenetics (3 cr.)	

- BI 426 Human Histology (3 cr.)
- MGT 240 Organizational Behavior and Management (3 cr.)
- CIS 110 Principles of Computer Information Systems (4 cr.) [V]
- CH 241 Chemical Equilibrium (3 cr.)
- CH 242 Quantitative Analysis (2 cr.)
- CLS Electives

**Any clinical laboratory technology certification at the associate level or above is acceptable.*

***Other electives may be chosen depending on student interest. Students interested in graduate education should choose additional courses in organic chemistry, physical chemistry, calculus and cell biology. Students may also consider a major in biology/physiology or biochemistry if graduate education is the goal.*

ASSOCIATE DEGREE PROGRAMS

Clinical Laboratory Technician *Associate of Applied Science*

This program develops proficiency in the performance of a variety of tests as well as an understanding of the interrelationships of laboratory data and physiological processes. Clinical laboratory technicians perform routine laboratory tests under supervision to provide diagnostic data in clinical and biomedical industries. The first three semesters of the program consist of liberal arts, science and clinical laboratory science courses taken on campus. During the last six months of the second year, students are placed in an affiliated hospital to complete a clinical practicum.

Total Credits Required for Degree	64
Liberal Studies	12
EN 111 College Composition I	4
EN 211 College Composition II	4
Humanities or Social Science Elective	4
Health Promotion	1
HP 200 Physical Well Being	1
Required Courses in Major	36
CLS 100 Obtaining a Blood Specimen	1
CLS 109 Introduction to Diagnostic Sciences	1
CLS 190 Microscopy and Laboratory Techniques	1
CLS 200 Urine and Body Fluid Analysis	1
CLS 201 Clinical Hematology/Coagulation	3
CLS 202 Clinical Chemistry	4
CLS 203 Immunohematology	3
CLS 204 Clinical Microbiology	2
CLS 213 Clinical Immunology and Serology	1
CLS 214 Diagnostic Microbiology	3
CLS 250T Clinical Practice	2
CLS 251 Clinical Hematology Practicum	3
CLS 252 Clinical Chemistry Practicum	4
CLS 253 Blood Banking Practicum	3
CLS 254 Clinical Microbiology Practicum	4
Other Required Courses	12
BI 104 Human Anatomy and Physiology	4
CH 105 Chemical Principles (or higher)	8

General Elective 3

Students who score below a predictive "C" on Northern Michigan University's mathematics placement test for MA 104 are required to take MA 100. Students who score a "C" or higher are exempt from the mathematics requirement.

Histotechnician *Associate of Applied Science*

This major provides students with a basic science background needed to meet the requirements for admission to a clinical program accredited by The National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). Histotechnicians prepare sections of body tissue for examination by a pathologist to diagnose body dysfunction and malignancy. The specimens may be used for diagnostic, research or teaching purposes.

Total Credits Required for Degree	71-89
Liberal Studies	12
EN 111 College Composition I	4
EN 211 College Composition II	4
Humanities or Social Science Elective	4
Health Promotion	1
HP 200 Physical Well Being	1
Required Courses in Major	9
CLS 109 Introduction to Diagnostic Sciences	1
CLS 190 Microscopy and Laboratory Techniques	1
CLS 200 Urine and Body Fluid Analysis	1
CLS 201 Clinical Hematology/Coagulation	3
CLS 204 Clinical Microbiology	2
CLS 213 Clinical Immunology and Serology	1
Practicum	
<i>Choose one of the following:</i>	
6-month practicum or	14
CLS 380 Histotechnique I	7
CLS 381 Histotechnique II	7
12-month practicum:	32
CLS 250H Clinical Practice	2
CLS 380 Histotechnique I	7
CLS 381 Histotechnique II	7
CLS 382 Histotechnique III	3
CLS 383 Histochemistry/Pathology	8
CLS 384 Advanced Histology	5
Other Required Courses	35
MA 104 College Algebra with Applications in the Sciences and Technologies (or above)	4
BI 111 Introductory Biology: Principles	4
BI 201 Human Anatomy	3
BI 202 Human Physiology	5
BI 206 Human Genetics	3
CH 111 General Chemistry I	5
CH 112 General Chemistry II	5
CH 220 Introduction to Organic Chemistry	5
HL 101 Medical Terminology	1

Science Technician Associate of Applied Science

This program prepares graduates to work in a variety of laboratory settings (biomedical, commercial, etc.). Students are provided with a basic foundation in clinical techniques complemented with science, math and computer courses. The science technician degree may "ladder" into the science technologist degree with no loss of credit.

Total Credits Required for Degree	65
Liberal Studies	12
EN 111 College Composition I	4
EN 211 College Composition II	4
Humanities or Social Science Elective	4
Health Promotion	1
HP 200 Physical Well Being	1
Required Courses in Major	23
CLS 109 Introduction to Diagnostic Sciences	1
CLS 190 Microscopy and Laboratory Techniques	1
CLS 200 Urine and Body Fluid Analysis	1
CLS 201 Clinical Hematology/Coagulation	3
CLS 202 Clinical Chemistry	4
CLS 203 Immunohematology	3
CLS 204 Clinical Microbiology	2
CLS 213 Clinical Immunology and Serology	1
CLS 214 Diagnostic Microbiology	3
BI 104 Human Anatomy and Physiology	4
Other Required Courses	29
BI 111 Introductory Biology: Principles	4
BI 218 Cell and Molecular Biology	4
MA 104 College Algebra with Applications in the Sciences and Technologies (or above)	4
CH Electives (100 level or above)	8
PH Electives (200 level or above)	5
CIS 110 Principles of Computer Information Systems <i>or</i> IS Electives	4

CERTIFICATE PROGRAMS

Clinical Assistant Certificate

Clinical assistants are members of the health care delivery team. They perform a variety of duties under the supervision of a laboratory scientist, nurse or other medical personnel such as specimen procurement and sample processing, basic laboratory testing, patient processing, basic technical nursing procedures and secretarial work. This one-year program includes an introduction to fundamental laboratory, office, and nursing skills. During the second semester, students train in clinical sites within the Marquette area. The first phase of the program allows students to gain proficiency in phlebotomy (obtaining a blood specimen)

and become eligible for phlebotomy certification. The second phase expands into the multi-skilled areas so graduates are eligible for employment in a variety of health care settings.

Total Credits Required for Certificate	33
Liberal Studies	4
EN 111 College Composition I	4
Health Promotion	1
HP 200 Physical Well Being	1
Required Courses in Major	18
CLS 100 Obtaining a Blood Specimen	1
CLS 109 Introduction to Diagnostic Sciences	1
CLS 190 Microscopy and Laboratory Techniques	1
CLS 150 Phlebotomy Practicum	4
CLS 250A Clinical Practice	2
AH 125 Clinical Assistant Skills	3
OIS 101 Keyboarding for Info. Processing	1
OIS 103 Beginning Formatting/Typing	1
OIS 183 Office Procedures	4
Other Required Courses	10
BI 104 Human Anatomy and Physiology	4
HL 242 Emergency Health Care	2
MA 090 Beginning Algebra (if needed)*	4

Elective (if MA 090 not needed)

**If math placement test indicates placement into a higher level math, math is not needed.*

Surgical Technology Certificate

This program prepares graduates to assist the surgeon and other members of the operating room team. Duties may include such tasks as setting up sterile trays and equipment for procedures; scrubbing for procedures with the surgeon; draping patients, passing instruments, and holding retractors; sterilizing instruments and supplies; and maintaining stock inventory. The program consists of theory and practical experience in the operating room setting. Courses must be taken sequentially. Graduates are qualified to take the Liaison Council on Certification for Surgical Technologist (LCC-ST) national examinations.

Total Credits Required for Certificate	39
Required Prerequisite Courses	
Fall Semester	14
BI 104 Human Anatomy and Physiology	4
EN 111 College Composition I	4
ST 104 Introduction to Surgical Technology	1
HP 200 Physical Well Being	1
OIS 171 Medical Terminology	4

Upon receiving notice of acceptance into the surgical technology program the following sequence of classes will be followed:

Winter Semester	13
ST 111 Basic Surgical Concepts/Techniques	5
ST 112 Surgical Technology I	2
ST 113 Surgical Technology I Practicum	6
Summer Semester	12
ST 114 Surgical Technology II	2
ST 115 Surgical Technology II Practicum	10

MINOR PROGRAM

Clinical Laboratory Techniques Minor

Total Credits Required for Minor **20**

20 credits of CLS courses. No more than 4 credits in Directed Studies or CLS 391 may be used.

COMMUNICATION AND PERFORMANCE STUDIES

DEPARTMENT OFFICE

203 Russell Thomas Fine Arts Building

Phone: 906-227-2045

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Web Page: www.nmu.edu/caps

Department Head: Donald J. Rybacki • drybacki@nmu.edu

Director of Theatre: James A. Panowski • jpanowsk@nmu.edu



Communication and Performance Studies at NMU

Communication empowers us to remember the past, act in the present and anticipate the future. It is the vehicle by which we manage relationships with others in contexts ranging from “one-to-one” to “one-to-many” using personal, public and mass-mediated channels of communication. The disciplines within the Communication and Performance Studies Department represent a body of knowledge concerning verbal and nonverbal symbols that are spoken, enacted, heard and seen. The department covers seven major areas of study and also serves the needs of students who wish to develop more effective communication skills. While excellent teaching is the department’s first priority, faculty members are also engaged in a variety of professional development activities, including research and creative endeavors, as well as service to the university and community.

Forest Roberts Theatre

The Forest Roberts Theatre is one of the finest university theatres in the nation, boasting computerized lighting control and an upgraded sound system. Theatre majors put what they learn in performance and technical theatre classes into practice onstage and backstage in five major productions per year.

Experimental theatre space in the McClintock Building is home to numerous student-directed productions as well as many performance classes.

Student Organizations

- WUPX student-operated radio station
- Public Eye News (student-run TV news program)
- *The North Wind* student newspaper
- Public Relations Student Society of America (PRSSA)
- Media Alliance for Communication Students (MACS)

Department/Program Policies

All department majors must maintain a 2.50 grade point average in the major and earn at least a “C-” in all major courses that are required for graduation, unless otherwise noted. Department minors must maintain a 2.00 grade point average.

Speech Communication Majors

All speech communication majors are required to complete and pass a senior qualifying examination and to present and receive a passing evaluation for a graduation presentation during the semester in which they intend to graduate.

Details regarding either requirement may be obtained from a student’s departmental adviser or the department head. Students will be contacted at the beginning of their final semester and given instructions for the completion of both requirements, and should register for SP 485.

Theatre Majors

Each semester all theatre majors are required to participate in a jury presentation scheduled and critiqued by the theatre faculty. Juries are evaluated on a “pass/fail” basis; the evaluations are not reflected in students’ academic transcripts. Students who fail two consecutive theatre juries at a given level may be dropped from the major.

Transfer students who wish to major in theatre must receive credit for at least sixteen hours of academic work in the theatre area at NMU unless a waiver is approved by the student’s adviser and department head.

All theatre majors are required to have at least one field studies experience as part of their degree program. Only the New York Field Studies, the Stratford Summer Tour or a comparable substitute approved by theatre faculty will fulfill this requirement.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Electronic Journalism Major

This major is designed for the student seeking a career in the news industry. Students are taught how to research, write, shoot, edit and produce news stories for electronic media (radio, TV and the Internet). Students are also taught leadership and responsibility through study of communication ethics and law. The course work is integrated with "live" student-produced newscasts.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	40
SP 110 Interpersonal Communication	4
EN 206 Survey of Journalism	4
BC 265 Writing and Announcing for Broadcast	4
BC 271 Audio Production	4
BC 272 Studio TV Production	4
BC 365 Broadcast News Writing and Reporting	4
BC 470 Mass Communication Law	4
BC 471 Mass Communication and Society	4
BC 420 Global Communication <i>or</i>	4
BC 415 Intercultural Communication	
BC course 300 or above <i>or</i>	4
SP 432 Environmental Communication	
Minor	20
Any minor except media production and new technology or media studies.	
Other Required Course	4
PS 101 Introduction to Political Science [IV] <i>or</i>	4
PS 105 American Government [IV]	

Entertainment and Sports Promotion Major

This major prepares students for entry-level positions as communication practitioners ranging from being a publicist for an individual artist or entertainer to being a sports information director for a university or professional team, as well as for the pursuit of a graduate education in entertainment or sports management. It teaches students to develop skills and understand the nature of media relations, promotes intellectual inquiry and emphasizes sound, professional ethics.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	41-42
ESPR Core	32
BC 165 Introduction to Mass Communication	4
BC 470 Mass Communication Law	4
SP 110 Interpersonal Communication	4
SP 300 Rhetorical Theory <i>or</i>	4
SP 310 Communication Theory <i>or</i>	
SP 401 Persuasion	
ESPR 160 Introduction to Entertainment and Sports Promotion	4
ESPR 260 Fundamentals of Entertainment and Sports Promotion	4
ESPR 360 Publicity Techniques for Entertainment and Sports Promotion	4
ESPR 431 Campaigns	4
ESPR Electives	9-10
ESPR 463 Field Studies, TH 493 Theatre Field Studies, ESPR 491 Practicum or ESPR 492 Internship	1-2
<i>Choose from the following:</i>	8
BC 310 Sports and Special Events Programming (4 cr.)	
PE 110 Introduction to Physical Education (2 cr.) <i>and</i>	
PE 411 Organization and Administration of Physical Education and Athletics (2 cr.)	
SP 100 Public Address (4 cr.) <i>or</i>	
SP 220 Interviewing (4 cr.)	
TH 132 Acting I (4 cr.) <i>or</i>	
TH 330 Intermediate Acting (w/instructor permission) (4 cr.)	
TH 404 American Musical Theatre (4 cr.)	
TH 456 Theatre Management (4 cr.)	
ESPR 295 Special Topics in Entertainment and Sports Promotion (4 cr.)	
ESPR 495 Special Topics in Entertainment and Sports Promotion (4 cr.)	
Other Graduation Requirements	2-4
BC 325 Communication and Performance in Africa (4 cr.) [VI]	
EN 125 Introduction to Film (4 cr.) [VI]	
MU 125 Music and Society (4 cr.) [VI]	
MU 325 World Music (4 cr.) [VI]	
SO 251 Sports in Society (2 cr.) [IV]	
SP 402 Communication Criticism (4 cr.) [II]	
TH 130 Introduction to Theatre (4 cr.) [VI]	
TH 360 History of Theatre (4 cr.) [VI]	
TH 361 Modern Drama (4 cr.) [VI]	

Computer Use Elective

Choose from the following:

- IS 100 Introduction to Windows, E-mail and the Internet (1 cr.) [V]
- IS 101 Beginning Word Processing (1 cr.) [V]
- IS 201 Advanced Word Processing (1 cr.) [V]
- IS 102 Beginning Spread Sheets (1 cr.) [V]
- IS 202 Intermediate Spread Sheets (1 cr.) [V]
- IS 104 Beginning Database (1 cr.) [V]
- IS 204 Advanced Database (1 cr.) [V]
- IS 105 Presentation/Multimedia Software (1 cr.) [V]
- IS 107 Beginning Desktop Publishing (1 cr.) [V]
- IS 207 Intermediate Desktop Publishing (1 cr.) [V]
- IS 111 Computerized Personal Accounting (1 cr.)
- IS 112 Computerized Small Business Accounting (1 cr.) [V]
- IS 208 Web Page Development (1 cr.) [V]
- IS 209 Statistical Software (1 cr.) [V]
- IS 120 Computer Concepts (2 cr.) [V]
- CIS 110 Principles of Computer Information Systems (4 cr.) [V]

Minor 20

Choose any minor except public relations.

Other Required Course 4

- EN 211E Critical Thinking and Writing (I) *or* 4
- SP 200 Argumentation (If the EN 211 requirement was met prior to declaration of the major.)

Media Production and New Technology Major

This major focuses on a wide variety of production careers such as music recording and corporate video. Students use professionally equipped studios to learn concepts and apply them to create award-winning media content. The department's labs include professional audio and video equipment using the latest digital technology such as Digidesign ProTools, Final Cut Pro and Trinity.

Total Credits Required for Degree 124

Liberal Studies 30-40

Health Promotion 2

Required Courses in Major 42

- SP 110 Interpersonal Communication 4
- BC 165 Introduction to Mass Communication 4
- BC 265 Writing and Announcing for Broadcast 4
- BC 271 Audio Production 4
- BC 272 Studio TV Production 4
- BC 470 Mass Communication Law 4
- BC 473A Advanced Audio Production *or* 4
- BC 473F Advanced Field Production *or*
- BC 473W Advanced Writing
- BC 471 Mass Communication and Society *or* 4
- BC 420 Global Communication
- Broadcasting Electives (300 or above) 8
- BC 491 Practicum *or* 2
- BC 492 Internship

Minor 20

Any minor except electronic journalism or media studies.

3 Media Studies Major

This is a non-production major that examines media from a theoretical perspective. Topics include mass communication theory, social effects of media and intercultural aspects of mass communication. In addition to analyzing media and media messages, students are also engaged in writing for the mass media. This major is especially helpful for students considering graduate or professional degrees.

Total Credits Required for Degree 124

Liberal Studies 30-40

Health Promotion 2

Required Courses in Major 40

- SP 110 Interpersonal Communication 4
- BC 165 Introduction to Mass Communication 4
- BC 265 Writing and Announcing for the Media 4
- BC 473W Advanced Media Writing 4
- BC 470 Mass Communication Law *or* 4
- BC 471 Mass Media and Society 4
- BC 415 Intercultural Communication *or* 4
- BC 420 Global Communication
- BC 410 The Documentary *or* 4
- SP 402 Communication Criticism [II]
- BC 325 Communication and Performance in Africa *or* 4
- SP 404 Communication and the Arts

Electives 8

Choose from the courses listed above (BC 470 or BC 471; BC 415 or BC 420; BC 410 or SP 402; BC 325 or SP 404) that have not yet been taken.

Minor 20

Other Required Course 4

- TH 361 Modern Drama [VI] *or* 4
- EN 125 Introduction to Film [VI]

Public Relations Major

This major is a professional program designed to meet, and in some cases surpass, the Public Relations Society of America's Guidelines for Undergraduate Education. It teaches the kind of research, writing, planning and budgeting skills that students need to succeed in the job market and allows them to employ these skills on behalf of a variety of clients. An extremely active chapter of Public Relations Student Society of America gives students additional opportunities for learning and service.

Total Credits Required for Degree 124

Liberal Studies 30-40

Health Promotion 2

Required Courses in Major 40

Core 36

- BC 165 Introduction to Mass Communication 4
- BC 470 Mass Communication Law 4
- SP 110 Interpersonal Communication 4

SP 300 Rhetorical Theory *or*
 SP 310 Communication Theory
 PR 231 Introduction to Public Relations
 PR 250 Public Relations Research
 PR 330 Public Relations Message Design
 PR 430 Public Relations Case Studies
 PR 431 Campaigns

Theoretical Elective

Choose from the following:

BC 410 The Documentary (4 cr.)
 BC 320 Media Management (4 cr.)
 BC 415 Intercultural Communication (4 cr.)
 BC 420 Global Communication (4 cr.)
 BC 471 Mass Communication and Society (4 cr.)
 BC 495 Special Topics in Broadcasting (4 cr.)
Adviser approved topic.
 EN 404 The English Language (4 cr.)
 SP 401 Persuasion (4 cr.)
 SP 421 Organizational Communication (4 cr.)
 SP 425 Communication Ethics (4 cr.)
 SP 432 Environmental Communication (4 cr.)
 SP 495 Special Topics In Speech Communication (4 cr.)
Adviser approved topic.
 PR 495 Special Topics in Public Relations (4 cr.)

Other Required Course

May be satisfied by courses in the major, minor, liberal studies or general electives. Contact department or see department adviser for more information.

EN 211E Critical Thinking and Writing [I] *or*
 SP 200 Argumentation (If the EN 211 requirement was met prior to declaration of the major.)

Environmental Issues Elective

Choose from the following:

AN 100 Introduction to Cultural Anthropology (4 cr.) [IV]
 AN 210 People, Culture and Nature (4 cr.) [IV]
 BI 210 Principles of Ecology (4 cr.)
 BI 305 Ecology of the Northern Forest (3 cr.) [III]
 ENV 101 Introduction to Environmental Science (4 cr.) [III]
 GC 100 Physical Geography (4 cr.) [III]
 GC 164 Human Geography (4 cr.) [IV]
 GC 320 Environmental Policy and Regulation (4 cr.)
 GC 401 Biogeography (4 cr.)
 GC 470 Environmental Ethics (4 cr.)
 GC 475 Environmental Impact Assessment (4 cr.)
 SP 432 Environmental Communication (4 cr.)

Economic Issues Elective

Choose from the following:

EC 101 The American Economy (4 cr.) [IV]
 EC 201 Microeconomic Principles (4 cr.)
 EC 202 Macroeconomic Principles (4 cr.)
 EC/HS 337 American Economic History (4 cr.) [IV]
 GC 220 Economic Geography (4 cr.)

Computer Use Elective

Choose from the following:

CIS 110 Principles of Computer Information Systems (4 cr.) [V]
 IS 100 Introduction to Windows, E-mail and the Internet (1 cr.) [V]
 IS 101 Beginning Word Processing (1 cr.) [V]
 IS 201 Advanced Word Processing (1 cr.) [V]

4 IS 102 Beginning Spread Sheets (1 cr.) [V]
 IS 105 Presentation/Multimedia Software (1 cr.) [V]
 4 IS 107 Beginning Desktop Publishing (1 cr.) [V]
 4 IS 202 Intermediate Spread Sheets (1 cr.) [V]
 4 IS 104 Beginning Database (1 cr.) [V]
 4 IS 204 Advanced Database (1 cr.) [V]
 4 IS 111 Computerized Personal Accounting (1 cr.)
 4 IS 112 Computerized Small Business Accounting (1 cr.) [V]
 IS 207 Intermediate Desktop Publishing (1 cr.) [V]
 IS 208 Web Page Development (1 cr.) [V]
 IS 120 Computer Concepts (2 cr.) [V]
 OIS 450 Advanced Desktop Publishing (3 cr.)

Minor

20

Choose any minor except speech cluster or entertainment and sports promotion.

Speech Communication Major

This major teaches face-to-face communication skills and critical thinking skills based upon a body of knowledge that is transportable and applicable to a variety of career paths.

Performance and theoretical electives afford students the opportunity to tailor their studies to their interests as they prepare for careers ranging from sales to supervision, from the ministry to law. A background in speech communication is an asset to all career-minded individuals who must communicate clearly, forcefully and persuasively.

Total Credits Required for Degree 124

Liberal Studies 30-40
Health Promotion 2

Required Courses in Major 44

Core 24

SP 100 Public Address 4
 SP 110 Interpersonal Communication 4
 SP 120 Small Group Process 4
 SP 250 Research in Speech Communication 4

Note: Students may not take more than one course at the 300 or 400 level prior to completing SP 250 with a C- or better.

SP 300 Rhetorical Theory 4
 SP 310 Communication Theory 4
 SP 485 Outcome Assessment 0

Performance Elective 4

SP 200 Argumentation *or*

Required if EN 211E is not taken in liberal studies.

SP 203 Advanced Public Address (4 cr.) *or*
 SP 220 Interviewing (4 cr.) *or*
 SP 240 Oral Interpretation of Literature (4 cr.) [III] *or*
 SP 295 Special Topics in Speech (1-4 cr.)

Speech Communication Electives 16

Choose from the following:

BC 415 Intercultural Communication (4 cr.)
 SP 401 Persuasion (4 cr.)
 SP 402 Communication Criticism (4 cr.) [II]
 SP 404 Communication and the Arts (4 cr.)

- SP 405 Negotiating (4 cr.)
- SP 410 Advanced Interpersonal Communication (4 cr.)
- SP 412 Nonverbal Communication (4 cr.)
- SP 421 Organizational Communication (4 cr.)
- SP 425 Communication Ethics (4 cr.)
- SP 432 Environmental Communication (4 cr.)
- SP 495 Special Topics in Speech (4 cr.)

Minor 20

Theatre Major

The theatre program offers a full range of courses plus extensive applied experiences both on and off stage. Students prepare for professional, community and educational theatre positions. A special audition class has helped ensure 90 percent placement of theatre students over the past decade.

Total Credits Required for Degree 128

Liberal Studies 30-40

Health Promotion 2

Required Courses in Major 48

Core 27

TH 131 Stagecraft 4

TH 132 Acting I 4

TH 245 Voice and Diction 4

TH 352 Directing Theory 4

TH 358 Directing Practicum 1

TH 360 History of Theatre [VI] 4

TH 361 Modern Drama [VI] 4

TH 432 Audition 1

TH 493 Field Studies 1

Theatre Electives 6-8

Choose from the following:

TH 141 Methods of Design Presentation (4 cr.)

TH 232 Stage Costume (3 cr.)

TH 234 Stage Makeup (4 cr.)

TH 241 Scenic Design (3 cr.)

TH 340 Stage Lighting (3 cr.)

TH 341 Stage Properties (4 cr.)

TH 456 Theatre Management (4 cr.)

Theatre Electives 13-15

Minor 20

MINOR PROGRAMS

Communication and Performance Studies Minor

Only for departmental majors except public relations.

Total Credits Required for Minor 24

Note: Students may elect a cluster of courses totaling 24 credit hours from two or more departments outside of their major in lieu of a regular minor.

The major adviser must submit a list of courses in the cluster to the Degree Audits Office before the second semester of the student's junior year.

Departments that contribute two or more courses to the cluster minor must sign off on the list.

Electronic Journalism Minor

Total Credits Required for Minor 20

EN 206 Survey of Journalism 4

BC 265 Writing and Announcing for Broadcast 4

BC 271 Audio Production 4

BC 272 Studio TV Production 4

BC 365 Broadcast News Writing and Reporting 4

Entertainment and Sports Promotion Minor

Because enrollment in ESPR prefix courses is tightly controlled, any student electing this minor must notify the CAPS Department at the time the minor is chosen. Students majoring in public relations may not minor in entertainment and sports promotion. Students majoring in any other departmental program that requires BC 165 and/or SP 110, who elect this minor, should count these courses in their major and bring the total number of hours in the minor to 20 by choosing courses totaling four credit hours from the following: ESPR 295, ESPR 495, BC 325, EN 125, MU 125, MU 325, SO 251, SP 402, TH 130, TH 360 and TH 361.

Total Credits Required for Minor 20

BC 165 Introduction to Mass Communications *or* 4

SP 110 Interpersonal Communication

ESPR 160 Introduction to Entertainment and Sports Promotion 4

ESPR 260 Fundamentals of Entertainment and Sports Promotion 4

ESPR 360 Publicity Techniques for Entertainment

and Sports Promotion 4

ESPR 431 Campaigns 4

Media Production and New Technology Minor

Total Credits Required for Minor 20

BC 165 Introduction to Mass Communication 4

BC 265 Writing and Announcing for Broadcast 4

BC 271 Audio Production 4

BC 272 Studio TV Production 4

BC 473A Advanced Audio Production *or* 4

BC 473F Advanced Field Production *or*

BC 473W Advanced Writing

Media Studies Minor

Students majoring in a departmental program that requires SP 110, who elect this minor, should count SP 110 in their major and replace it in the minor with TH 130.

Total Credits Required for Minor	20
SP 110 Interpersonal Communication	4
BC 165 Introduction to Mass Communication	4
BC 415 Intercultural Communication <i>or</i> BC 420 Global Communication	4
BC 410 The Documentary <i>or</i> SP 402 Communication Criticism	4
BC 325 Communication and Performance in Africa <i>or</i> SP 404 Communication and the Arts	4

Performance Theatre Minor

Total Credits Required for Minor	22
TH 130 Introduction to Theatre	4
TH 131 Stagecraft	4
TH 132 Acting I	4
TH 330 Intermediate Acting	4
TH 491 Practicum in Theatre	2
TH Performance Course Elective	4

Public Relations Minor

Because enrollment in PR prefix courses is tightly controlled, any student electing this minor must notify the CAPS Department at the time the minor is chosen. Students majoring in entertainment and sports promotion may not choose this minor. Students majoring in any other departmental program that requires SP 110, who elect this minor, should count SP 110 in their major and replace it in the minor with one of the theoretical electives listed for the public relations major.

Total Credits Required for Minor	24
SP 110 Interpersonal Communication	4
PR 231 Introduction to Public Relations	4
PR 250 Research in Public Relations	4
PR 330 Public Relations Message Design	4
PR 430 Public Relations Case Studies	4
PR 431 Campaigns	4

Speech Communication Minor

Total Credits Required for Minor	20
SP 100 Public Address	4
SP 110 Interpersonal Communication	4
SP 120 Small Group Process	4
Speech Electives	8
One course must be at the 400 level.	

Technical Theatre Minor

Total Credits Required for Minor	22
TH 130 Introduction to Theatre	4
TH 131 Stagecraft	4
TH 491 Practicum in Theatre	2-4
Theatre Electives	10-12
<i>Choose from the following:</i>	
TH 141 Methods of Design Presentation (4 cr.)	
TH 232 Stage Costume (3 cr.)	
TH 234 Stage Makeup (4 cr.)	
TH 241 Scenic Design (3 cr.)	
TH 340 Stage Lighting (3 cr.)	
TH 341 Stage Properties (4 cr.)	
TH 456 Theatre Management (4 cr.)	

Theatre Minor

Total Credits Required for Minor	22
TH 130 Introduction to Theatre	4
TH 131 Stagecraft	4
TH 132 Acting I	4
TH 360 History of Theatre <i>or</i> TH 361 Modern Drama	4
TH 352 Directing Theory	4
TH 491 Practicum in Theatre	2

Speech Cluster Minor

Only for departmental majors except public relations

Total Credits Required for Minor	24
<i>Note: Students may elect a cluster of courses totalling 24 credit hours from two or more departments outside of their major in lieu of a regular minor. The major adviser must submit a list of courses in the cluster to the Degree Audits Office before the second semester of the student's junior year. Departments that contribute two or more courses to the cluster minor must sign off on the list.</i>	

CRIMINAL JUSTICE

DEPARTMENT OFFICE

110 Walter F. Gries Hall

Phone: 906-227-2660

Fax: 906-227-1754

Web Page: www.nmu.edu/cj

Department Head: Paul L. Lang • plang@nmu.edu

Criminal Justice at NMU

The Criminal Justice Department provides students with an understanding of the process by which justice is distributed in our society, the function and operation of the criminal justice system (law enforcement, criminal courts and corrections), and the role of individuals in the allocation of justice. The department offers a bachelor's degree in criminal justice, an associate degree in criminal justice and an associate of applied science degree in law enforcement. The department also offers a master's degree in criminal justice.

The curriculum prepares students for a range of careers in law enforcement, adult and juvenile corrections with federal, state or local criminal justice agencies, or for graduate study. The faculty is dedicated to providing a challenging learning experience and to graduating outstanding candidates for entry into their professional careers or graduate school. The department is committed to excellence in teaching, research and community service.

Student Organization

- Criminal Justice Association

Department Facilities

- Forensics laboratory
- NMU Regional Police Academy

Department/Program Policies

Course Prerequisite Notes

CJ 110 Introduction to Criminal Justice is a prerequisite to all of the CJ 200-, 300- and 400-level courses. Students must complete CJ 110 and attain junior status in order to be eligible to enroll in CJ 300- and 400-level courses.

Requirements for Transfer Students

Transfer students who want to major in criminal justice for the bachelor's degree must complete a minimum of 20 credits with the NMU Criminal Justice Department. At least 8 of these credits must be at the 300-level or above. Transfer students who want to enter the associate degree program in criminal justice must complete a minimum of 12 credits with the NMU Criminal Justice Department.

GPA Requirements

All criminal justice courses used for the criminal justice major, the criminal justice minor, or the associate degrees in criminal justice, law enforcement, and corrections must be completed with a grade of "C" or better.

Language Recommendations

Students are encouraged to complete at least one year of study in a foreign language. Language study could be undertaken to satisfy either the formal studies requirement or the requirement for a bachelor of arts degree.

Police Academy

The associate of applied science degree in law enforcement provides students with the opportunity to obtain Michigan Commission on Law Enforcement Standards (MCOLES) certified training through its Regional Police Academy. Michigan Public Act 203, 1965, and Michigan Administrative Code R 28.4101 requires that anyone seeking employment in the state as a police officer must first successfully complete the basic (MCOLES) approved police training curriculum. For information about the academy, including admission requirements, contact the Police Academy by calling 906-227-1408 or by visiting the Web site at <http://publicsafety.nmu.edu/Academy.htm>.

Corrections Officer Certification Program

(Temporarily suspended. No new students will be accepted during the 2006-2007 academic year.)

Internships

The Criminal Justice Department offers students in the bachelor's degree program an opportunity to participate in an internship program during their junior or senior year. This experience provides first-hand knowledge about the criminal justice field and an opportunity to apply knowledge and skills in the classroom to a professional setting. Internships enhance a student's career potential after graduation as well as provide important information regarding career selection.

BACHELOR DEGREE PROGRAM

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Criminal Justice Major

This major provides a basic understanding of the criminal justice system and its components. Students additionally complete a number of advanced criminal justice electives selected to address their individual interests and professional goals.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	42
Criminal Justice Core	22
CJ 110 Introduction to Criminal Justice	4
CJ 212 The Law Enforcement Function <i>or</i> CJ 220 The Corrections Function	4
CJ 213 The Judicial Function	4
CJ 263 Criminology	4
CJ 315 Criminal Procedure	4
CJ 490 Professional Development and Assessment	2
Criminal Justice Electives*	20
<i>Choose from the following. At least 16 credits must be at the 300 level or above.</i>	
CJ 214 Investigative Process I (4 cr.)	
CJ 221 Roles of the Corrections Client (4 cr.)	
CJ 227 Correctional Institutions (4 cr.)	
CJ 245 Legal Issues in Corrections (4 cr.)	
CJ 250 Investigative Interviewing and Interrogation (4 cr.)	
CJ 255 Drugs, Crime and the Justice System (4 cr.)	
CJ 275 Legal Aspects of Retail Security (4 cr.)	
CJ 276 Retail Loss Prevention Management (4 cr.)	
CJ 280 Criminal Law (4 cr.)	
CJ 295 Special Topics in Criminal Justice (1-4 cr.)	
CJ 302 Community Relations and Crime Prevention (4 cr.)	
CJ 323 Community-Based Corrections (4 cr.)	
CJ 360 Case Studies in Crime (4 cr.)	
CJ 412 Crisis Intervention and Stress Analysis (4 cr.)	
CJ 414 Investigative Process II (4 cr.)	
CJ 420 Forensic Psychology (4 cr.)	
CJ 426 International Crime and Comparative Criminal Justice Systems (4 cr.)	
CJ 435 Domestic and International Terrorism (4 cr.)	
CJ 440 Discretionary Justice (4 cr.)	
CJ 465 Problem Solving in Criminal Justice (4 cr.)	
CJ 470 Liability Law in Criminal Justice (4 cr.)	
CJ 480 Cybercrime (4 cr.)	
CJ 495 Special Topics** (1-4 cr.)	
CJ 497 Teaching/Research Apprenticeship*** (1-4 cr.)	
CJ 498 Directed Study *** (1-4 cr.)	

Minor

20

**Other approved CJ course work (e.g., transfer credit or newly approved CJ courses) at the 200-400 level, not listed, may be used to satisfy the requirements in the CJ elective area.*

***No more than 8 credits of CJ 495 may be counted toward the major.*

****No more than 4 credits of CJ 497 and/or CJ 498 may be counted toward the criminal justice major.*

CJ 191, CJ 298 and CJ 299 do not apply toward the bachelor's degree program.

ASSOCIATE DEGREE PROGRAMS

Criminal Justice Associate of Science Degree

This degree is designed for a smooth transition into the bachelor's degree program for students who choose to continue their education after receiving the associate degree.

Total Credits Required for Degree	67
Liberal Studies	32
EN 111 College Composition I	4
EN 211 College Composition II	4
Humanities Electives	8
<i>Must be from more than one discipline.</i>	
Natural Sciences/Mathematics Electives	8
<i>Must be from more than one discipline and one course must be a laboratory science.</i>	
Social Sciences Electives	8
<i>Must be from more than one discipline.</i>	
Health Promotion	1
HP 200 Physical Well Being	1
Criminal Justice Required Courses	8
CJ 110 Introduction to Criminal Justice	4
CJ 212 The Law Enforcement Function <i>or</i> CJ 220 The Corrections Function	4
Criminal Justice Electives*	16
<i>Choose from the following:</i>	
CJ 191 Training Seminar (1-4 cr.) (Specific Topic)**	
CJ 213 The Judicial Function (4 cr.)	
CJ 214 Investigative Process I (4 cr.)	
CJ 221 Roles of the Corrections Client (4 cr.)	
CJ 227 Correctional Institutions (4 cr.)	
CJ 245 Legal Issues in Corrections (4 cr.)	
CJ 250 Investigative Interviewing and Interrogation (4 cr.)	
CJ 255 Drugs, Crime and the Justice System (4 cr.)	
CJ 263 Criminology (4 cr.)	
CJ 275 Legal Aspects of Retail Security (4 cr.)	
CJ 276 Retail Loss Prevention Management (4 cr.)	
CJ 280 Criminal Law (4 cr.)	
CJ 295 Special Topics in Criminal Justice (1-4 cr.)	
CJ 298 Directed Study** (1-4 cr.)	
CJ 302 Community Relations/Crime Prevention (4 cr.)	
CJ 315 Criminal Procedures (4 cr.)	
CJ 323 Community-Based Corrections (4 cr.)	
CJ 360 Case Studies in Crime (4 cr.)	

General Electives **10**

**Other approved CJ course work (e.g., transfer credit or newly approved CJ courses) at the 200 level, not listed, may be used to satisfy the requirements in the CJ elective area.*

***No more than 4 credits of CJ 191 and/or CJ 298 may be applied toward this degree. CJ 191 and CJ 298 do not apply toward the major in the bachelor's degree.*

Law Enforcement
Associate of Applied Science Degree

This degree provides training that will produce well-rounded and competent law enforcement practitioners. This includes, but is not limited to, competence in oral and written communications, an understanding of psychological and social issues relevant to criminal justice, the role of law enforcement in social control and in the larger criminal justice system and an appreciation for the dilemma inherent in policing a free society.

Total Credits Required for Degree **65**

Liberal Studies **24**

EN 111 College Composition I 4
EN 211 College Composition II 4

Humanities Elective 4
Natural Sciences/Mathematics Elective 4
Social Science Electives 8

Health Promotion **1**
HP 200 Physical Well Being 1

Criminal Justice Required Courses **20**

CJ 110 Introduction to Criminal Justice 4
CJ 212 Law Enforcement Function 4
CJ 299 Police Academy** 12

Criminal Justice Electives* **8**

Choose from the following:

- CJ 191 Training Seminar (1-4 cr.) (Specific Topic)***
- CJ 213 Judicial Function (4 cr.)
- CJ 214 Investigative Process I (4 cr.)
- CJ 220 Corrections Function (4 cr.)
- CJ 250 Investigative Interviewing and Interrogation (4 cr.)
- CJ 255 Drugs, Crime and the Justice System (4 cr.)
- CJ 263 Criminology (4 cr.)
- CJ 275 Legal Aspects of Retail Security (4 cr.)
- CJ 276 Retail Loss Prevention Management (4 cr.)
- CJ 280 Criminal Law (4 cr.)
- CJ 295 Special Topics in Criminal Justice (1-4 cr.)
- CJ 298 Directed Study*** (1-4 cr.)
- CJ 302 Community Relations/Crime Prevention (4 cr.)
- CJ 315 Criminal Procedures (4 cr.)
- CJ 323 Community-Based Corrections (4 cr.)
- CJ 360 Case Studies in Crime (4 cr.)

General Electives **12**

**Other approved CJ course work (e.g., transfer credit or newly approved CJ courses) at the 200 level, not listed, may be used to satisfy the requirements in the CJ elective area.*

***Or satisfactory completion of a Michigan Commission on Law Enforcement Standards (MCOLES) approved police academy or equivalent.*

****No more than 4 credits of CJ 191 and/or CJ 298 may be applied toward this degree. CJ 191 and CJ 298 do not apply toward the bachelor's degree major. CJ 299 only applies to this degree. It cannot be applied to any other diploma, certificate, associate's or bachelor's degree at NMU.*

MINOR PROGRAM

Criminal Justice Minor

Total Credits Required for Minor **20**

CJ110 Introduction to Criminal Justice 4
Criminal Justice Electives* 16

**Criminal justice electives are planned with a criminal justice adviser and an adviser from the student's major department. Students can obtain a copy of the minor form from the Criminal Justice Department secretary or Web site. The student's plan for a minor should be approved no later than the end of the junior year and filed with the Degree Audits Office.*

Any course selected for the criminal justice minor at the 300-400 level will require instructor permission.

CERTIFICATION PROGRAM

Corrections Certification

(Temporarily suspended. No new students will be accepted during the 2006-2007 academic year.)

ECONOMICS

DEPARTMENT OFFICE

208 Cohodas Administrative Center

Phone: 906-227-2220

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Interim Department Head: Robert Quinn • roquinn@nmu.edu

Economics at NMU

The Economics Department offers courses for majors and minors in economics, courses supporting other majors and courses for general electives and liberal studies requirements. Accordingly, economics courses fall into four types: introductory, basic principles, rigorous theory and applied economics.

The department takes pride in its long-standing tradition of emphasizing the application of theory to relevant and current economic issues. It aims to provide students with a solid understanding of how economics sheds light on the way property rights, social institutions, and market and political processes affect real-world economic activity at all levels, from the local to the global. Although the subject matter can be challenging, many students who have never taken economics courses before are pleasantly surprised with both the power and the wide scope of economic analysis.

The department offers bachelor of arts and bachelor of science degrees in economics and secondary education economics, and minors in economics and economics education. In cooperation with other departments, the Economics Department offers a major in social science and in secondary education social studies.

Department programs are tailored to meet the particular needs and vocational aims of students. Students planning to use the undergraduate major in economics as a foundation for further study in graduate school should minor in mathematics. For careers with the government, mathematics is recommended; for law school, accounting and finance is recommended; and for high school teaching, another social science is recommended. There are many career opportunities for the economics major; correspondingly, there are many alternatives in choosing electives and a minor field of study.

Student Organizations

- Economics Students Association
- Omicron Delta Epsilon Honor Society
- Student Michigan Education Association



Department/Program Policies

All economics majors and minors are urged to become familiar with computers and statistics regardless of career choice.

All majors and minors offered by the department require a 2.00 or higher grade point average for all economic courses. In addition, only courses passed with a "C-" or higher will be counted toward a major. Any exception must be requested by petition to the department.

Students majoring in secondary education economics or minoring in economics education must maintain a grade point average of 2.70 or greater with no grade below a "C" in the professional education sequence, the major and/or minors and required cognates combined.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Economics Major

This major prepares students for graduate work or to enter the field as professional economists. Students also frequently use this major as the basis for entry into professional schools such as law, business and public administration, while others directly enter careers in business or government.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	32
EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
EC 401 Intermediate Microeconomics	4
EC 402 Intermediate Macroeconomics	4
Economics Electives	16
MA 171 Introduction to Probability and Statistics [V] may be counted as an elective toward the economics major.	
Minor	20

Secondary Education Economics Major

Completion of this major, a teaching minor and the professional education sequence leads to certification as a secondary school teacher in economics.

Total Credits Required for Degree	127-131
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	32
EC 101 The American Economy [IV]	4
EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
EC 320 Money and Banking	4
EC 401 Intermediate Microeconomics	4
EC 337 American Economic History [IV] or EC 402 Intermediate Macroeconomics	
EC Electives	8
Teaching Minor, minimum	20-24

Professional Education	33
ED 201 Introduction to Education	2
ED 231 Teaching and Learning in the Secondary Classroom	4
ED 301 Dimensions of American Education	2
ED 319 Teaching of Reading for Secondary Teachers	3
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	2
EC 350 Methods and Materials in Teaching Social Studies Education	4
ED 361 Special Education and the General Classroom Teacher	2
ED 483 Educational Media and Technology	2
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1

MINOR PROGRAMS

Economics Minor

Total Credits Required for Minor	20
EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
EC Electives	12

Economics Education Minor

Total Credits Required for Minor	20-24
EC 101 The American Economy	4
EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
EC 320 Money and Banking	4
EC 350 Methods and Materials in Teaching Social Studies Education*	4
EC 401 Intermediate Microeconomics	4

**Not required if major is social studies education, geography education, history education or political science education.*

SCHOOL OF EDUCATION

SCHOOL OF EDUCATION OFFICE

179 Whitman Hall

Phone: 906-227-2728

Fax: 906-227-2764

Web Page: www.nmu.edu/education

Associate Dean of Teacher Education and Director: To be named

Director, Teacher Education Field Experience: Rodney H. Clarken • rclarken@nmu.edu

Director, Teacher Education Student Services: Lynne Gerhardt • lgerhardt@nmu.edu

Certification Counselor: Nancy Carter • ncarter@nmu.edu

Education at NMU

The School of Education offers professional studies courses leading to the Michigan Professional or Provisional Teaching Certificate at the elementary and secondary levels as well as courses for continuing professional development through the master's degree. Students must be eligible for admission to the School of Education in order to enroll in education courses.

All NMU education programs are accredited by the National Council for the Accreditation of Teacher Education and approved by the Michigan Department of Education.

Northern's School of Education carries primary responsibility for the following:

- Curriculum for elementary school teachers.
- Curriculum for teachers of children with cognitive impairment.
- Curriculum for teachers of children with emotional impairment. (Temporarily suspended.)
- A sequence of professional courses in education for secondary school teachers.

In cooperation with other departments, the school also sponsors graduate programs for teachers and school service personnel leading to the master of arts in education. These programs are described in the *Graduate Studies Bulletin*.

Most education courses at Northern Michigan University include field experience in K-12 classrooms. A number of education courses meet in public school buildings to expand teaching opportunities. Another learning opportunity is an apprenticeship in special education, which provides students with a chance to refine goals and polish skills.

Student Organizations

- Michigan Student Council for Exceptional Children
- Student Michigan Education Association

Elementary Education Programs

Satisfactory completion of the program in elementary education qualifies a student for a Michigan Elementary Provisional Certificate, which is valid for teaching kindergarten through grade five and major and minor fields in grades six, seven and eight, and self-contained grades six, seven and eight.

Special Education Programs

Satisfactory completion of a program for teaching students with cognitive impairment (CI) or students with emotional impairment (EI) qualifies graduates for an Elementary or Secondary Provisional Certificate and an endorsement to teach children in kindergarten through grade twelve in the specialty area, as well as elementary classrooms in kindergarten through grade five or middle school and secondary grades six through twelve in major or minor area only.

Secondary Education Majors

Students who satisfactorily complete a curriculum for secondary teaching qualify for a Michigan Secondary Provisional Certificate, which is valid for teaching grades seven through twelve in majors and minors only. Some programs, however, are kindergarten through grade twelve.

Post-Degree Teacher Certification

Baccalaureate degree graduates without teaching certification may complete a provisional certification plan of study for teaching at the elementary or secondary level by enrolling in undergraduate courses. If a student has completed courses as an undergraduate that are applicable to a teachable major or minor, the undergraduate credits may be counted toward the state requirement for provisional certification. If additional credit hours are required, they may be obtained through enrollment in undergraduate courses. In addition to the major and minor requirements, the student must complete the State of Michigan requirement in professional education. Provisional certification programs are available in elementary education, secondary education and special education.

Students who qualify for a Michigan Provisional Certificate do not receive another Northern Michigan University degree.

Department/Program Policies

Admission to Teacher Education Program

Admission to Northern Michigan University does not necessarily imply full admission to a teacher education program. Admission to teacher education is determined by the director of teacher education student services or the certification counselor in the School of Education or, on appeal, by the Teacher Selection and Retention Committee.

The complete set of standards (*Teacher Selection and Retention Standards*) to which all students in the teacher education program must adhere is available in the School of Education and can be accessed through the following Web site: www.nmu.edu/education/standards.htm.

Admission requirements to a teacher education program of study are as follows:

- A. First-semester freshmen applicants entering directly out of high school must have:
 - an ACT composite score of 20 or an SAT score of verbal 450 and math 500; and
 - a high school GPA of 2.75 in college preparatory subjects.
- B. All other undergraduate applicants must have:
 - a cumulative GPA of 2.70 in undergraduate-level college credits;
 - at least 24 credits in liberal studies courses outside of their major and minor with a GPA of 2.50; and
 - ACT, SAT or PPST scores as listed below in D.
- C. All post-baccalaureate applicants must have:
 - a cumulative GPA of 2.70 in undergraduate-level college credits; or
 - at least 40 credits in liberal studies courses outside of their major and minor with a GPA of 2.70; and
 - ACT, SAT or PPST scores as listed below in D.
- D. All students, prior to enrolling in education courses, must be able to show competency in the areas of reading, mathematics and writing in one of the following ways:
 - ACT subscores of 21 in English and reading, and 20 in mathematics; or
 - SAT scores of verbal 450 and mathematics 500; or
 - Pre-Professional Skills Test (PPST) scores of reading 174, mathematics 173, and writing 173. If the computer-based PPST is taken, the required scores are reading 321, mathematics 318 and writing 319.

Applicants may be denied admission if they do not meet the above requirements or if they have:

- more than five repeats in college courses;
- a combination of excessive repeats and withdrawals from classes; or
- more than one repeated course in any of the following areas: major, minor, professional education sequence, or the planned program and required cognates combined.

Retention in the Program

To retain eligibility in the professional teacher education program, a student must do the following:

- A. Maintain an overall GPA of 2.70 or above.
- B. Maintain a GPA of 2.70 or greater with no grade below

“C” in the professional education sequence, the major and/or minor(s), and the planned program and required cognates combined.

- C. Have no more than five total repeats, with no more than one repeat in each of the following:
 - major(s)
 - minor(s)
 - professional teacher education sequence courses
 - the planned program and required cognates combined
- D. Maintain minimum standards of behavior as outlined in the *Teacher Selection and Retention Standards*.

Appeals

Students who are denied admission or are academically dismissed from the program may appeal the decision to the Teacher Selection and Retention Committee by contacting the committee's chairperson or the director of teacher education student services. Hearing procedures are stated in the document titled “Academic Dismissal from the Teacher Education Program,” available in the School of Education.

Limitations on Acceptance of Transfer Courses and Validity of Courses

Students are expected to take their professional education sequence courses at Northern Michigan University. Guidelines for specific courses are as follows:

- A. *ED 201 Introduction to Education*
 - Transfer credit will be accepted but given only a satisfactory or unsatisfactory grade designation. An “S” grade will be assigned when the grade earned is “C” or greater, and a “U” grade will be assigned when the grade earned is below “C.”
- B. *Methods-level courses*: a minimum of 20 credits of methods-level courses must be taken at NMU, including the following:

Elementary Education

- ED 311 (3 credits)
- ED 316 (3 credits)
- ED 420 (11 credits)
- ED 450 (1 credit)

Secondary Education

- ED 319 (3 credits)
- ED 349 (2 credits)
- 350 (3-4 credits)
- ED 430 (11 credits)
- ED 450 (1 credit)

Special Education

- ED 311 (3 credits)
- ED 316 (3 credits)
- ED 401 or ED 408 (4 credits)
- ED 406 or ED 409 (2 credits)

Elementary Base (Special Education)

ED 423A (5 credits)

ED 423B or ED 423C (6 credits)

ED 450 (1 credit)

Secondary Base (Special Education)

ED 424A or ED 424B (11 credits)

ED 450 (1 credit)

All education courses are invalid after six years. MA 150 Mathematics for the Elementary Teacher I, MA 151 Mathematics for the Elementary Teacher II, and MA 353 Methods and Materials in Teaching Elementary School Mathematics Education are also invalid after six years.

These requirements apply to all provisional certification programs of study. Exceptions to the requirements may be made by the director of teacher education student services or the certification counselor in consultation with the appropriate faculty member.

Repeats of all education courses must be taken at NMU.

Eligibility for Student Teaching Placement

Students should plan to do their student teaching when they have completed all prerequisite course work. Students should notify the student teaching office of their intent to do student teaching two semesters in advance and must submit a complete student teaching application one semester in advance. Forms, policies, procedures and other information are available in the Field Experience Office.

Student teaching placements are made by the university. Students are not to contact school personnel to arrange student teaching placements.

Occasionally the university finds it difficult to secure a student teaching assignment. Although the university may request an assignment, school districts are under no obligation to accept a student teacher. Reasons such as a poor academic record or a lack of a suitable supervising teacher are responses typically given by districts when not offering a student teaching placement. Students should be aware of this possibility as they progress toward a degree in teacher education.

Eligibility for Recommendation for Certification

To be eligible to be recommended for certification, students must satisfy the following requirements:

- A. Comply with all of the previously stated admission and retention requirements.
- B. Complete the baccalaureate degree in accordance with the above criteria and any additional criteria as established by other academic departments, where applicable.
- C. Satisfactorily complete the student teaching assignment

with a recommendation for certification by the supervising teacher and the university supervisor.

- D. Satisfactorily complete all MTTC subject area competency tests as required by Public Act 451 as amended (major, minor(s), and elementary education where applicable).
- E. Beginning July 1, 2004, in order to be certified, new teachers must possess a valid certificate of course completion for first aid training that includes cardiopulmonary resuscitation (CPR). This training must be from the American Red Cross or the American Heart Association.

Other Requirements

All education majors must complete EN 111 College Composition I and EN 211 College Composition II (or equivalent) with a grade of "C" or better.

Students who do not meet requirements for continuous enrollment (e.g., those who drop out for one or more semesters or withdraw from all courses in which they are enrolled) are required to re-apply for admission to the level of the teacher education program that they were enrolled in at the time of their departure.

Students may be required to complete other tests or evaluation procedures for admission to any phase of the teacher education program, for removal of any suspension from the program, or for teacher certification.

Title II Requirements

NMU complies with all federal and state Title II requirements. NMU's teacher education program has a 100 percent pass rate on MTTC subject-area tests for students who complete the program, and is nationally accredited. More information can be found at www.nmu.edu/education/titleII.

Information for Elementary Education Majors

Academic advising for students in the elementary education program takes place through the School of Education, once students have been admitted into the teacher education program. Students are required to adhere to state standards that do not necessarily apply to students outside the program. We strongly encourage students to maintain contact with their advisers and to be familiar with the *Teacher Selection and Retention Standards* that they receive upon admission to the program. Detailed planning sheets for the various major/minor options are available in the Teacher Education Student Services Office.

Social Studies Component

All students in the elementary education curriculum must complete a 16-credit-hour social studies requirement. Any AN, EC,

HS, PS or SO prefixed course fulfills this requirement, as well as ENV 101, FR 310, GC 100, GC 164, GC 300, NAS 204, PL 270 and SN 314. These credits can be double counted with other program requirements.

Major/Minors Program Guidelines

A major or two minors are required. Majors are available only in the five core content subject areas listed below. If two minors are chosen, one of the minors must be selected from the five core content subject areas.

Core Content Subject Areas for Majors and Minors

1. *Language Arts (group)*: contains English, journalism, speech and reading courses.
2. *English (straight)*: contains literature, writing and grammar courses.
3. *Integrated Science (group)*: contains biology, earth/space science and physical science courses.
4. *Social Studies (group)*: contains economics, geography, history and political science courses.
5. *Mathematics (straight)*: contains math and computer science courses.

Minor Subject Areas

- French
- Geography
- German
- History
- Physical Education
- Reading
- Spanish

Minors that overlap in content (e.g., English, reading and language arts) are prohibited.

Information for Secondary Education Majors

The School of Education contributes professional studies courses in education to the secondary education curricula. Information about entrance, test and certification requirements is available from the Teacher Education Student Services Office.

Prospective secondary school teachers are advised on course selection and other academic matters by faculty members of the department or area in which students plan to major.

Approved Secondary Education Majors and Minors

Majors

- Art and Design
- Biology
- Business (under revision; not available 2006-2007)
- Chemistry
- Earth Science

- Economics
- English
- French
- Geography
- Health
- History
- Industrial Technology
- Integrated Science
- Mathematics
- Music
- Physical Education
- Physics
- Political Science
- Social Studies
- Special Education
- Spanish

Minors

- Biology
- Chemistry
- Earth Science
- Economics
- English
- French
- Geography
- German
- Health
- History
- Journalism (pending state approval)
- Mathematics
- Physical Education
- Physics
- Political Science
- Spanish

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

English Major-Elementary Education

Total Credits Required for Degree	136-141
Liberal Studies	30-40
Health Promotion	2
Core	30
EN 309 The Teaching of Writing	4
EN 112 Mythology [II]	4
EN 282 Introduction to Literature	4
EN 200 Basic English Grammar and Usage for Teachers	2
ED 306 Children's Literature	3
EN 404 The English Language	4
English Electives	9
Professional Education	25
ED 201 Introduction to Education	2
ED 230 Teaching and Learning in the Elementary Classroom	4
ED 301 Dimensions of American Education	2
ED 318 Elementary Reading Instruction II	3
ED 361 Special Education and the General Classroom Teacher	2
ED 420 Teaching in the Elementary School	11
ED 450 Seminar in Teaching	1
Required Cognates	25
MSED 250 Physical Science for Educators	4
MSED 251 Life Science for Educators	4
MSED 252 Earth Science for Educators	4
MA 150 Mathematics for the Elementary School Teacher I	4
MA 151 Mathematics for the Elementary School Teacher II	4
MA 353 Methods and Materials in Teaching Elementary School Mathematics	3
ED 483 Educational Media and Technology	2
Planned Program	22
ED 310 Social Studies Methods and Materials for Elementary Teachers	3
ED 312 Science Methods and Materials for Elementary Teachers	3
ED 311 Language Arts Methods and Materials for Elementary Teachers	3
ED 316 Elementary Reading Instruction I	3
HL 150 Health Education for the Elementary School Teacher	2
MU 149A Music in the Elementary School I	2
AD 310 Art for the Elementary Classroom Teacher	2
ED 307 Integrating the Arts into the Elementary Curriculum	2
PE 224 Developmental Physical Education for Elementary Teachers	2
Other Required Course	4
HS 126 The United States to 1865 [IV]	4

Integrated Science Major-Elementary Education

Total Credits Required for Degree	129-133
Liberal Studies	30-40
Health Promotion	2
Core	36
MSED 250 Physical Science for Educators	4
MSED 251 Life Science for Educators	4
MSED 252 Earth Science for Educators	4
Biology Electives	8
<i>Choose from the following:</i>	
BI 100 Biological Science (4 cr.) [III]	
BI 104 Human Anatomy and Physiology (4 cr.) [III]	
BI 111 Introductory Biology: Principles (4 cr.) [III]	
BI 112 Introductory Biology: Diversity (4 cr.) [III]	
Physical Science Electives	8
<i>Choose 1 of the following chemistry courses:</i>	
CH 105 Chemical Principles (4 cr.) [III]	
CH 107 Introductory Chemistry I (4 cr.) [III]	
CH 111 General Chemistry I (5 cr.) [III]	
<i>Choose 1 of the following physics courses:</i>	
PH 201 College Physics I (5 cr.) [III]	
PH 220 Introductory Physics I (5 cr.) [III]	
Earth/Space Science Electives	8
<i>Choose from the following:</i>	
AS 103 Observational and Solar System Astronomy (4 cr.) [III]	
ENV 101 Introduction to Environmental Science (4 cr.) [III]	
GC 255 Physical Geology (4 cr.) [III]	
GC 385 Weather and Climate (4 cr.)	
GC 465 Hydrology (4 cr.)	
Professional Education	25
ED 201 Introduction to Education	2
ED 230 Teaching and Learning in the Elementary Classroom	4
ED 301 Dimensions of American Education	2
ED 318 Elementary Reading Instruction II	3
ED 361 Special Education and the General Classroom Teacher	2
ED 420 Teaching in the Elementary School	11
ED 450 Seminar in Teaching	1
Required Cognates	13
MA 150 Mathematics for the Elementary School Teacher I	4
MA 151 Mathematics for the Elementary School Teacher II	4
MA 353 Methods and Materials in Teaching Elementary School Mathematics	3
ED 483 Educational Media and Technology	2
Planned Program	25
ED 310 Social Studies Methods and Materials for Elementary Teachers	3
ED 306 Children's Literature	3
ED 311 Language Arts Methods and Materials for Elementary Teachers	3
ED 312 Science Methods and Materials for Elementary Teachers	3
ED 316 Elementary Reading Instruction I	3
HL 150 Health Education for the Elementary School Teacher	2
MU 149A Music in the Elementary School I	2
AD 310 Art for the Elementary Classroom Teacher	2
ED 307 Integrating the Arts into the Elementary Curriculum	2
PE 224 Developmental Physical Education for Elementary Teachers	2
Other Required Course	4
HS 126 The United States to 1865 [IV]	4

Language Arts Major-Elementary Education

Total Credits Required for Degree	135-140
Liberal Studies	30-40
Health Promotion	2
Core	36
ED 306 Children's Literature	3
EN 309 The Teaching of Writing	4
EN 200 Basic English Grammar and Usage for Teachers	2
SP 100 Public Address	4
SP 110 Interpersonal Communication	4
EN 206 Survey of Journalism	4
ED 311 Language Arts Methods and Materials for Elementary Teachers	3
ED 316 Elementary Reading Instruction I	3
SP 240 Oral Interpretation of Literature [III] <i>or</i> SP 402 Communication Criticism [III]	4
English Electives	5
Professional Education	25
ED 201 Introduction to Education	2
ED 230 Teaching and Learning in the Elementary Classroom	4
ED 301 Dimensions of American Education	2
ED 318 Elementary Reading Instruction II	3
ED 361 Special Education and the General Classroom Teacher	2
ED 420 Teaching in the Elementary School	11
ED 450 Seminar in Teaching	1
Required Cognates	14
MSED 250 Physical Science for Educators	4
MSED 251 Life Science for Educators	4
MSED 252 Earth Science for Educators	4
ED 483 Educational Media and Technology	2
Planned Program	27
ED 310 Social Studies Methods and Materials for Elementary Teachers	3
ED 312 Science Methods and Materials for Elementary Teachers	3
MA 150 Mathematics for the Elementary School Teacher I	4
MA 151 Mathematics for the Elementary School Teacher II	4
MA 353 Methods and Materials in Teaching Elementary School Mathematics	3
HL 150 Health Education for the Elementary School Teacher	2
MU 149A Music in the Elementary School I	2
AD 310 Art for the Elementary Classroom Teacher	2
ED 307 Integrating the Arts into the Elementary Curriculum	2
PE 224 Developmental Physical Education for Elementary Teachers	2
Other Required Course	4
HS 126 The United States to 1865 [IV]	4

Mathematics Major-Elementary Education

Total Credits Required for Degree	132-135
Liberal Studies	30-40
Health Promotion	2
Core	33
MA 103 Finite Mathematics [III]	4
MA 150 Mathematics for the Elementary School Teacher I	4
MA 151 Mathematics for the Elementary School Teacher II	4
MA 250 Algebraic Structures for the Elementary School Teacher	4

MA 251 Probability and Statistics for the Elementary School Teacher	4
MA 271 Calculus with Applications	4
MA 351 Models and Problem Solving for the Elementary School Teacher	4
MA 353 Methods and Materials in Teaching Elementary School Mathematics	3
MA 354 Methods and Materials in Teaching Junior High School Mathematics	2
Professional Education	25
ED 201 Introduction to Education	2
ED 230 Teaching and Learning in the Elementary Classroom	4
ED 301 Dimensions of American Education	2
ED 318 Elementary Reading Instruction II	3
ED 361 Special Education and the General Classroom Teacher	2
ED 420 Teaching in the Elementary School	11
ED 450 Seminar in Teaching	1
Required Cognates	14
MSED 250 Physical Science for Educators	4
MSED 251 Life Science for Educators	4
MSED 252 Earth Science for Educators	4
ED 483 Educational Media and Technology	2
Planned Program	25
ED 310 Social Studies Methods and Materials for Elementary Teachers	3
ED 312 Science Methods and Materials for Elementary Teachers	3
ED 306 Children's Literature	3
ED 311 Language Arts Methods and Materials for Elementary Teachers	3
ED 316 Elementary Reading Instruction I	3
HL 150 Health Education for the Elementary School Teacher	2
MU 149A Music in the Elementary School I	2
AD 310 Art for the Elementary Classroom Teacher	2
ED 307 Integrating the Arts into the Elementary Curriculum	2
PE 224 Developmental Physical Education for Elementary School Teachers	2
Other Required Courses	8
HS 126 The United States to 1865 [IV]	4
CS 255 Computing for the Elementary School Teacher [V]	4

Social Studies Major-Elementary Education

Total Credits Required for Degree	129-133
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	36
Economics Electives	8
Choose from the following:	
EC 101 The American Economy (4 cr.) [IV]	
EC 201 Microeconomic Principles (4 cr.)	
EC 202 Macroeconomic Principles (4 cr.)	
Geography Electives	8
Choose from the following:	
ENV 101 Introduction to Environmental Science (4 cr.) [III] <i>or</i> GC 100 Physical Geography (4 cr.) [III]	
GC 164 Cultural Geography (4 cr.) [IV]	

History Electives 8

Choose from the following:

- HS 101 History of Western Civilization to 1600 (4 cr.) [III] or
- HS 102 History of Western Civilization Since 1600 (4 cr.) [III]
- HS 126 The United States to 1865 (4 cr.) [IV]

Political Science Electives 8

Choose from the following:

- PS 101 Introduction to Political Science (4 cr.) [IV]
- PS 105 American Government (4 cr.) [IV]
- PS 203 Comparative Government and Politics (4 cr.)
- PS 309 State and Local Government (4 cr.)

EC/GC/HS/PS Electives 4

Choose a 300-level course if PS 309 is not taken above.

Professional Education 25

- ED 201 Introduction to Education 2
- ED 230 Teaching and Learning in the Elementary Classroom 4
- ED 301 Dimensions of American Education 2
- ED 318 Elementary Reading Instruction II 3
- ED 361 Special Education and the General Classroom Teacher 2
- ED 420 Teaching in the Elementary School 11
- ED 450 Seminar in Teaching 1

Required Cognates 25

- MSED 250 Physical Science for Educators 4
- MSED 251 Life Science for Educators 4
- MSED 252 Earth Science for Educators 4
- MA 150 Mathematics for the Elementary School Teacher I 4
- MA 151 Mathematics for the Elementary School Teacher II 4
- MA 353 Methods and Materials in the Teaching of Elementary School Mathematics 3
- ED 483 Educational Media and Technology 2

Planned Program 25

- ED 310 Social Studies Methods and Materials for Elementary Teachers 3
- ED 312 Science Methods and Materials for Elementary Teachers 3
- ED 306 Children's Literature 3
- ED 311 Language Arts Methods and Materials for Elementary Teachers 3
- ED 316 Elementary Reading Instruction I 3
- HL 150 Health Education for the Elementary School Teacher 2
- MU 149A Music in the Elementary School I 2
- AD 310 Art for the Elementary Classroom Teacher 2
- ED 307 Integrating the Arts into the Elementary Curriculum 2
- PE 224 Developmental Physical Education for Elementary Teachers 2

Two Minors-Elementary Education

Total Credits Required for Degree 128-157

Liberal Studies 30-40

Health Promotion 2

Two Minors 40-56

Professional Education 25

- ED 201 Introduction to Education 2
- ED 230 Teaching and Learning in the Elementary Classroom 4
- ED 301 Dimensions of American Education 2
- ED 318 Elementary Reading Instruction II 3
- ED 361 Special Education and the General Classroom Teacher 2

- ED 420 Teaching in the Elementary School 11
- ED 450 Seminar in Teaching 1

Required Cognates 17-40

- MA 150 Mathematics for the Elementary School Teacher I 4
- MA 151 Mathematics for the Elementary School Teacher II 4
- MA 353 Methods and Materials in Teaching Elementary School Mathematics 3
- MSED 250 Physical Science for Educators 4
- MSED 251 Life Science for Educators 4
- MSED 252 Earth Science for Educators 4
- ED 306 Children's Literature 3
- MU 149A Music in the Elementary School I 2
- AD 310 Art Elementary Classroom Teacher 2
- ED 307 Integrating the Arts into the Elementary Curriculum 2
- PE 224 Developmental Physical Education for Elementary Teachers 2
- ED 483 Educational Media and Technology 2

Planned Program 14

- ED 310 Social Studies Methods and Materials for Elementary Teachers 3
- ED 312 Science Methods and Materials for Elementary Teachers 3
- ED 311 Language Arts Methods and Materials for Elementary Teachers 3
- ED 316 Elementary Reading Instruction I 3
- HL 150 Health Education for the Elementary School Teacher 2

Other Required Course

- HS 126 The United States to 1865 [IV] 4

ELEMENTARY EDUCATION MINORS

English Minor-Elementary Education

Total Credits Required for Minor 20

- EN 112 Mythology [II] 4
- EN 200 Basic English Grammar and Usage for Teachers 2
- EN 282 Introduction to Literature 4
- EN 309 The Teaching of Writing 4
- EN 404 The English Language 4
- English Electives 2

French Minor-Elementary Education

Total Credits Required for Minor 24

- FR 201 Intermediate French I [V] 4
- FR 202 Intermediate French II [V] 4
- FR 300 Reading and Writing 4
- FR 305 Conversational French [V] 4
- FR 400 Advanced French Composition and Grammar 4
- LG 350 Methods and Materials in Teaching Language Education 4

Geography Minor-Elementary Education

Total Credits Required for Minor 22

- ENV 101 Introduction to Environmental Science [III] 4
- GC 100 Physical Geography [III] 4
- GC 164 Cultural Geography [III] 4
- GC 200 North America 4

GC 225 Introduction to Maps 2
 GC 435 Geography of Michigan 4

German Minor-Elementary Education

Total Credits Required for Minor 24
 GR 201 Intermediate German I [V] 4
 GR 202 Intermediate German II [V] 4
 GR 300 Reading and Writing 4
 GR 305 Conversational German [V] 4
 GR 400 Advanced Composition and Grammar 4
 LG 350 Methods and Materials in Teaching Language Education 4

History Minor-Elementary Education

Total Credits Required for Minor 20
 HS 104 The Third World in Historical Perspective [IV] 4
 HS 126 The United States to 1865 [IV] 4
 HS 127 The United States Since 1865 [IV] 4
 HS 200 Historical Thinking and Writing 4
 HS 101 History of Western Civilization to 1500 [II] *or* 4
 HS 102 History of Western Civilization Since 1500 [II]

Integrated Science Minor-Elementary Education

Total Credits Required for Minor 24-25
 MSED 250 Physical Science for Educators 4
 MSED 251 Life Science for Educators 4
 MSED 252 Earth Science for Educators 4
Biology Electives 4
Choose from the following:
 BI 100 Biological Science (4 cr.) [III]
 BI 104 Human Anatomy and Physiology (4 cr.) [III]
 BI 111 Introductory Biology: Principles (4 cr.) [III]
 BI 112 Introductory Biology: Diversity (4 cr.) [III]
Physical Science Electives 4-5
Choose from the following:
 CH 105 Chemical Principles (4 cr.) [III]
 CH 107 Introductory Chemistry I (4 cr.) [III]
 CH 111 General Chemistry I (5 cr.) [III]
 PH 201 College Physics I (5 cr.) [III] *or*
 PH 220 Introductory Physics I (5 cr.) [III]

Earth/Space Science Electives 4
Choose from the following:
 AS 103 Observational and Solar System Astronomy (4 cr.) [III]
 ENV 101 Introduction to Environmental Science (4 cr.) [III]
 GC 255 Physical Geology (4 cr.) [III]
 GC 385 Weather and Climate (4 cr.)

Language Arts Minor-Elementary Education

Total Credits Required for Minor 24
 ED 306 Children's Literature 3
 EN 200 Basic English Grammar and Usage for Teachers 2
 EN 206 Survey of Journalism 4

EN 309 The Teaching of Writing 4
 English Electives 3
 SP 100 Public Address 4
 SP 110 Interpersonal Communication 4

Mathematics Minor-Elementary Education

Total Credits Required for Minor 27
 MA 150 Mathematics for the Elementary School Teacher I 4
 MA 151 Mathematics for the Elementary School Teacher II 4
 MA 250 Algebraic Structures for the Elementary School Teacher 4
 MA 251 Probability and Statistics for the Elementary School Teacher 4
 MA 351 Models and Problem Solving for the Elementary School Teacher 4
 MA 353 Methods and Materials in Teaching Elementary School Mathematics 3
 CS 255 Computing for the Elementary School Teacher [V] 4

Physical Education Minor-Elementary Education

Total Credits Required for Minor 22
 PE 110 Introduction to Physical Education 2
 PE 203 Dance for Children *or* 1
 PE 211 Dance Survey
 PE 224 Developmental Physical Education for Elementary Teachers 2
 PE 310 Measurement and Evaluation in Physical Education 3
 PE 315 Physiology of Exercise 4
 PE 346 Adapted Physical Education 2
 PE 350 Methods and Materials in Teaching Physical Education 3
 HL 242 Emergency Health Care 2
Activity Courses 3
Choose from the following
 PE 100 Rhythmic Movement Fundamentals (.5 cr.)
 PE 101 Volleyball (.5 cr.)
 PE 103 Tumbling Activities (.5 cr.)
 PE 199 Team Sports (.5 cr.)
 PE 200 Track and Field (.5 cr.)
 HP 231B Skiing-Cross County *or* HP 216 Skating-Beginning (1 cr.)
 HP 218 Folk Dance (1 cr.)
 HP 226 Modern Dance-Beginning (1 cr.)

Reading Minor-Elementary Education

Total Credits Required for Minor 22
 EN 200 Basic English Grammar and Usage for Teachers 2
 EN 309 The Teaching of Writing 4
 ED 306 Children's Literature 3
 ED 111 Language Arts Methods and Materials for Elementary Teachers 3
 ED 316 Elementary Reading Instruction I 3
 ED 318 Elementary Reading Instruction II 3
 ED 462 Literature for Young Adults 3
 ED 491 Seminar in Education: Reading 1

Social Studies Minor-Elementary Education

Total Credits Required for Minor* 32

Economics Electives 8

Choose from the following:

EC 101 The American Economy (4 cr.) [IV]

EC 201 Microeconomic Principles (4 cr.)

EC 202 Macroeconomic Principles (4 cr.)

Geography Electives 8

Choose from the following:

ENV 101 Introduction to Environmental Science (4 cr.) [III] or

GC 100 Physical Geography (4 cr.) [III]

GC 164 Human Geography (4 cr.) [IV]

History Electives 8

Choose from the following:

HS 101 History of Western Civilization to 1600 (4 cr.) [II] or

HS 102 History of Western Civilization Since 1600 (4 cr.) [II]

HS 126 The United States to 1865 (4 cr.) [IV]

Political Science 8

Choose from the following:

PS 101 Introduction to Political Science (4 cr.) [IV]

PS 105 American Government (4 cr.) [IV]

PS 203 Comparative Government and Politics (4 cr.)

PS 309 State and Local Government (4 cr.)

*This minor may be met by transfer students with 6 credit hours in each area for a total of 24 credit hours.

Spanish Minor-Elementary Education

Total Credits Required for Minor 24

SN 300 Reading and Writing 4

SN 305 Conversational Spanish [V] 4

SN 310 Introduction to Spanish Civilization and Culture 4

SN 312 Introduction to Spanish America 4

SN 400 Advanced Spanish Composition and Grammar 4

LG 350 Methods and Materials in Teaching Language Education 4

Special Education Major-Elementary Education

(Enrollment in the emotional impairment track is temporarily suspended. No new students are being accepted.)

Total Credits Required for Degree 143-147

Liberal Studies 30-40

Health Promotion 2

Required Courses in Major* 30

ED 360 Orientation to Special Education 4

ED 402 Teaching Life Skills to Students with Disabilities 2

ED 403 Transition for Students with Disabilities 2

ED 404 Assistive Technology for Students with Disabilities 2

ED 405 Diagnosis and Assessment in Special Education 4

ED 410 Legal Rights and Services 2

Choose one of the following specialty areas: 14

A. Cognitive Impairments

ED 400 Introduction to Cognitive Impairment 4

ED 401 Curriculum and Methods for Teaching Students with Cognitive Impairment 4

SL 150 Introduction to Speech, Language and Hearing Sciences 4

ED 406 Supervised Apprenticeship in Teaching Students with Cognitive Impairment in K-12 Settings 2

B. Emotional Impairment (Temporarily suspended)

ED 407 Introduction to Emotional Impairment 4

ED 408 Curriculum and Methods for Teaching Students with Emotional Impairment 4

ED 411 Violence in Schools 4

ED 409 Supervised Apprenticeship in Teaching Students with Emotional Impairment in K-12 Settings 2

Planned Program 50

ED 201 Introduction to Education 2

ED 230 Teaching and Learning in the Elementary Classroom 4

ED 301 Dimensions in American Education 2

ED 306 Children's Literature 3

ED 310 Social Studies Methods and Materials for Elementary Teachers 3

ED 311 Language Arts Methods and Materials for Elementary Teachers 3

ED 312 Science Methods and Materials for Elementary Teachers 3

ED 316 Elementary Reading Instruction I 3

ED 318 Elementary Reading Instruction II 3

MA 150 Mathematics for the Elementary School Teacher I 4

MA 151 Mathematics for the Elementary School Teacher II 4

MA 353 Methods and Materials in Teaching Elementary School Mathematics 2

MSED 250 Physical Science for Educators 4

MSED 251 Life Science for Educators 4

MSED 252 Earth Science for Educators 4

ED 483 Educational Media and Technology 2

Psychology Requirement 16

PY 100S, L, or H, Psychology as a Natural Science [III] or PY 100G Psychology as a Social Science [IV] 4

PY 203 Applied Behavioral Analysis 4

PY 211 Learning 4

PY 335 Social Psychology 4

Note: Add PY 355 Abnormal Psychology for special education psychology minor. This minor is not approved as a teaching minor.

Professional Education 12

Note: Students who elect to complete majors in both specialty areas must student teach in emotional impairment and cognitive impairment.

ED 423A Teaching in the Elementary School 5

ED 423B Teaching Students with Cognitive Impairment in K-12 Schools or 6

ED 423C Teaching Students with Emotional Impairment in K-12 Schools 6

ED 450 Seminar in Teaching 1

Other Required Course 4

HS 126 The United States to 1865 [IV] 4

*Social Studies Component

All students in the elementary education curriculum must complete a 16 credit hour social studies requirement. Any AN, EC, HS, PS or SO prefixed course fulfills this requirement, as well as ENV 101, FR 310, GC 100, GC 164, GC 300, GR 310, NAS 204, PL 270 and SN 314. These credits can be double counted with other program requirements.

Special Education Major-Secondary Education

(Enrollment in the emotional impairment track is temporarily suspended. No new students are being accepted.)

Total Credits Required for Degree	133-158
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	30
ED 360 Orientation to Special Education	4
ED 402 Teaching Life Skills to Students with Disabilities	2
ED 403 Transition for Students with Disabilities	2
ED 404 Assistive Technology for Students with Disabilities	2
ED 405 Diagnosis and Assessment in Special Education	4
ED 410 Legal Rights and Services	2
<i>Choose one of the following specialty areas</i>	14
A. Cognitive Impairments	
ED 400 Introduction to Cognitive Impairment	4
ED 401 Curriculum and Methods for Teaching Students with Cognitive Impairment	4
SL 150 Introduction to Speech, Language and Hearing Sciences	4
ED 406 Supervised Apprenticeship in Teaching Students with Cognitive Impairment in K-12 Settings	2
B. Emotional Impairment (Temporarily suspended)	
ED 407 Introduction to Emotional Impairment	4
ED 408 Curriculum and Methods for Teaching Students with Emotional Impairment	4
ED 411 Violence in Schools	4
ED 409 Supervised Apprenticeship in Teaching Students with Emotional Impairment in K-12 Settings	2
Planned Program	34
ED 201 Introduction to Education	2
ED 231 Teaching and Learning in the Secondary Classroom	4
ED 301 Dimensions in American Education	2
ED 311 Language Arts Methods and Materials	3
ED 316 Elementary Reading Instruction I	3
ED 318 Elementary Reading Instruction II	3
ED 319 The Teaching of Reading for Secondary Teachers	3
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	2
ED 483 Educational Media and Technology	2
MA 150 Mathematics for the Elementary School Teacher I	4
MA 151 Mathematics for the Elementary School Teacher II	4
MA 353 Methods and Materials in Teaching Elementary School Mathematics	2
Psychology Requirement	16
PY 100S, L, or H, Psychology as a Natural Science [III] <i>or</i> PY 100G Psychology as a Social Science [IV]	4
PY 203 Applied Behavioral Analysis	4
PY 211 Learning	4
PY 335 Social Psychology	4
<i>Note: Add PY 355 for special education psychology minor. This minor is not approved as a teaching minor.</i>	
Teaching Minor, minimum	24

Professional Education

12

Note: Students who elect to complete majors in both specialty areas must student teach in cognitive impairment and emotional impairment.

ED 424A Teaching Students with Cognitive Impairment in K-12 Schools <i>or</i>	11
ED 424B Teaching Students with Emotional Impairment in K-12 Schools <i>or</i>	
ED 425 Teaching Students with Emotional Impairment and/or Cognitive Impairment in K-12 Schools	
ED 450 Seminar in Teaching	1

ENGINEERING TECHNOLOGY

DEPARTMENT OFFICE

School of Technology and Applied Sciences

101 D. J. Jacobetti Center

Phone: 906-227-2135

Fax: 906-227-1549

Web Page: www.nmu.edu/technology

Department Head: To be named

Engineering Technology at NMU

Programs offered by the Engineering Technology Department prepare students for careers in fields such as electronics engineering technology, mechanical engineering technology, industrial technology, technology and applied sciences and industrial technology education. These programs have a foundation in mathematics, physical science, and computer science, as well as an in-depth technical focus.

The department also offers associate degrees in engineering design, electronics technology, industrial electrical technology, and manufacturing as well as a one-year certificate program in computer numerical control. These programs are designed for students who are seeking quick entry into the workforce. In most instances, courses completed toward an associate degree are applicable to a baccalaureate degree.

Student Organizations

- Society of Automotive Engineers
- Student Michigan Education Association

Department Facilities

- Automation Lab
- CAD Lab
- Data Acquisition Lab
- Electronics Lab
- Hydraulics Lab
- Machine Tool Lab
- Materials Testing Lab
- Process Control/PLC Lab

Department/Program Policies

Students must have a minimum grade of "C" and a grade point average of 2.25 for all major courses and minor programs. Students majoring in industrial technology education must maintain a grade point average of 2.70 or greater with no grade below a "C" in the professional education sequence, the major and/or minor(s) and required cognates combined.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Electronics Engineering Technology Major

This major provides students with the necessary preparation for positions in industry as engineering technologists. Students choose a concentration in either digital systems or industrial electrical technology. Graduates of the program are employed as field service engineers, application engineers, software engineers and technicians.

Total Credits Required for Degree	128
Liberal Studies	30-40
Health Promotion	2
Major Courses	28
ET 112 DC Circuit Analysis	4
ET 113 AC Circuit Analysis	4
ET 201 Visual Programming for Technicians	4
ET 210 Discrete Semiconductors	4
ET 211 Digital Electronics	4
ET 212 Advanced Linear Circuits	3
ET 410 Interfacing and Data Acquisition	3
ET 430 Electronics Senior Project	2
Major Concentration	20-21
<i>Choose one concentration from the following:</i>	
Industrial Electrical Technology Concentration	20
ET 250 Industrial Electrical Machinery	4
ET 252 Industrial Motor Controls	4
ET 311 Applied Programmable Controllers	2
ET 360 Process Control Systems	3
IT 180 Introduction to Fluid Power	3
IT 265 Total Productive Maintenance	1
IT 214 Industrial Observation	1
IT 215 General Industrial Safety	2
Digital Systems Concentration	21
ET 320 Advanced Digital Systems	3
ET 420 Microcontroller Applications	3
CIS 430 Data Communication	3

Electives

Choose from the following:

ET 281 Computer Systems Servicing (3 cr.)	
ET 282 Software Systems (3 cr.)	
CIS 220 Network Concepts (2 cr.)	
CIS 230 Novell Network Operating Systems I (2 cr.)	
CIS 234 Microsoft Network Operating Systems I (2 cr.)	
CS 120 Computer Science I (4 cr.) [V]	
CS 122 Computer Science II (4 cr.)	
CS 222 Data Structures (4 cr.) <i>or</i>	
CS 228 Network Programming (3 cr.)	

Other Required Courses

CH 105 Chemical Principles [III]	4
DD 105 Schematic/Diagram Drafting	2
EN 211D Technical and Report Writing [I]	4
MA 104 College Algebra with Applications in the Sciences and Technologies [III]	4
MA 106 Trigonometry [III]	3
MA 171 Introduction to Probability and Statistics [V]	4
MA 271 Calculus with Applications	4
PH 201 College Physics I [III]	5

Industrial Technology Major

The program provides students with the skills to hold supervisory and technical positions in industry. Graduates of the program are hired as quality control technicians, production supervisors and managers. Students are strongly urged to meet with their adviser to select a minor that will support their career goals.

Minimum Credits Required for Degree 124

Liberal Studies	30-40
Health Promotion	2

Major Courses 32

IT 180 Introduction to Fluid Power	3
MET 211 Mechanics-Statics	4
MET 213 Materials Science I	3
IT 214 Industrial Observation	1
IT 261 Robotics and Automation Systems	4
IT 265 Total Productive Maintenance	1
IT 300 Industrial Supervision	3
IT 340 Enterprise Resource Planning	3
IT 380 Facility Planning	3
IT 400 Industrial Safety and Ergonomics	2
IT 420 Quality Control	3
MET 430 Senior Project	2

Other Required Courses 47

ACT 202 Accounting Concepts for Management	4
CH 105 Chemical Principles [III]	4
DD 100 Technical Drafting/Introduction to CAD	4
ET 110 Introduction to Electricity	4
IS 100 Introduction to Windows, E-mail and the Internet [V]	1
IS 101 Beginning Word Processing [V]	1
IS 102 Beginning Spreadsheets [V]	1
IS 104 Beginning Database [V]	1
MA 104 College Algebra with Applications in the Sciences and Technologies [III]	4

12 MA 171 Probability and Statistics [V]	4
MF 134 Manufacturing Processes	4
MGT 221 Business Law	3
MKT 230 Introduction to Marketing	3
PH 201 College Physics I [III]	5
SP 100 Public Address	4

Minor, Contracted Minor or General Electives 20

Mechanical Engineering Technology Major

This major provides students with a solid foundation in science, mathematics and engineering principles. Graduates are employed as designers, manufacturing engineers and related positions.

Total Credits Required for Degree 128

Liberal Studies	30-40
Health Promotion	2

Technology Core 57

DD 100 Technical Drafting/Introduction to CAD	4
DD 102 Engineering Graphics	3
DD 202 Product Development and Design	4
ET 112 DC Circuit Analysis	4
ET 201 Visual Programming for Technicians	4
ET 410 Interfacing and Data Acquisition <i>or</i>	3
ET 420 Microcontroller Applications	
IT 180 Introduction to Fluid Power	3
IT 214 Industrial Observation	1
MET 211 Mechanics Statics	4
MET 213 Materials Science I	3
MET 216 Materials Science II	3
MET 310 Mechanics-Dynamics	3
MET 311 Strength of Materials	4
MET 320 Mechanical Design	4
MET 410 Thermodynamics	4
MET 430 Senior Project	2
MF 134 Manufacturing Processes	4

Other Required Courses 34

CH 105 Chemical Principles [III]	4
EN 211D Technical and Report Writing [I]	4
IS 100 Introduction to Windows, E-Mail and the Internet [V]	1
IS Electives [V]	3
MA 104 College Algebra with Applications in the Sciences and Technologies [III]	4
MA 171 Introduction to Probability and Statistics [V]	4
MA 271 Calculus with Applications	4
PH 201 College Physics I [III]	5
PH 202 College Physics II [III]	5

Technical Electives 12

Choose from the following:

DD 103 Geometric Dimensioning and Tolerancing (2 cr.)	
DD 105 Schematic/Diagram Drafting (2 cr.)	
DD 203 Industrial Drawing and Design (4 cr.)	
ET 113 AC Circuit Analysis (4 cr.)	
ET 250 Industrial Electrical Machinery (4 cr.)	
ET 252 Industrial Motor Controls (4 cr.)	
ET 311 Applied Programmable Controllers (2 cr.)	
ET 360 Process Control Systems (3 cr.)	

- IT 265 Total Productive Maintenance (1 cr.)
- IT 300 Industrial Supervision (3 cr.)
- IT 340 Enterprise Resource Planning (3 cr.)
- IT 380 Facility Planning (3 cr.)
- IT 400 Industrial Safety and Ergonomics (2 cr.)
- IT 420 Quality Control (3 cr.)
- MF 233 Numerical Control (4 cr.)
- MF 383 Computer Aided Manufacturing (4 cr.)
- MGT 210 Time Management (1 cr.)
- BI 104 Human Anatomy and Physiology (4 cr.) [III] *or*
 B1 201 Human Anatomy (3 cr.)
- PE 317 Anatomical Kinesiology (2 cr.)
- PE 417 Biomechanics (2 cr.)
- DD 295, ET 295, IT 295 or MF 295 Special Topics (1-4 cr.)
- DD 298, ET 298, IT 298 or MF 298 Directed Study and Research (1-4 cr.)

Secondary Education Industrial Technology Major

Completion of the technical courses, a teaching minor and the professional education sequence lead to certification as a secondary teacher of industrial technology.

Total Credits Required for Degree	135
<hr/>	
Liberal Studies	30-40
Health Promotion	2
Major Courses	37
DD 100 Technical Drafting/Introduction to CAD	4
ET 110 Introduction to Electricity	4
MF 134 Manufacturing Processes	4
WD 140 Introduction to Welding	4
WT 161 Wood Processes I	2
IT 180 Introduction to Fluid Power	3
DD 202 Product Development and Design	4
MET 213 Materials Science I	3
IT 214 Industrial Observation	1
CN 156 Construction Systems and Methods	3
TE 100 Graphic Arts Printing	2
Technical Elective	3
<hr/>	
Teaching Minor, minimum	24
<hr/>	
Professional Education	32
ED 201 Introduction to Education	2
ED 231 Teaching and Learning in the Secondary Classroom	4
ED 301 Dimensions of American Education	2
ED 319 Teaching of Reading-Secondary Teacher	3
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	2
ED 361 Special Education & the General Classroom Teacher	2
ED 483 Educational Media and Technology	2
TE 350 Methods and Materials/Industrial Technology	3
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1
<hr/>	
Other Required Courses	12
EN 211D Technical and Report Writing [I]	4
MA 104 College Algebra with Applications in the Sciences and Technologies [III]	4
TE 351 Humanity and Technology [II]	4

Technology and Applied Sciences Major

This major provides students with a foundation in science and mathematics along with a core of technology classes and a technical focus.

Total Credits Required for Degree	124
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Liberal Studies	30-40
Health Promotion	2
<hr/>	
Major Courses	34
ET 110 Introduction to Electricity <i>or</i> ET 100 Fundamentals of Electricity (2 cr.) <i>and</i> ET 101 Principles of Electrical Wiring (2 cr.)	4
DD 100 Technical Drafting with an Introduction to CAD	4
MF 134 Manufacturing Processes	4
IT 180 Introduction to Fluid Power	3
MET 211 Mechanics-Statics	4
MET 213 Materials Science I	3
IT 214 Industrial Observation	1
IT 300 Industrial Supervision	3
IT 380 Facility Planning	3
IT 400 Industrial Safety and Ergonomics	2
IT 420 Quality Control	3
<hr/>	
Other Required Courses	16-17
EN 211D Technical and Report Writing [I]	4
MA 104 College Algebra with Applications in the Sciences and Technologies [III]	4
CH 105 Chemical Principles [III] <i>or</i> PH 201 Physics [III] (5 cr.)	4-5
MA 171 Introduction to Probability and Statistics [V]	4
<hr/>	
Technical or Contracted Minor	20

ASSOCIATE DEGREE PROGRAMS

Engineering Design

Associate of Applied Science

This major gives students a background in the use of computer-aided design software for the design of mechanical parts devices. Students learn to use AutoCAD and Solid Works design software to qualify for positions as CAD designers and mechanical engineering aids.

Total Credits Required for Degree	64
<hr/>	
Liberal Studies	15-17
EN 111 College Composition I	4
EN 211D Technical and Report Writing	4
MA 104 College Algebra with Applications in the Sciences and Technologies	4
PH 201 College Physics I (5 cr.) <i>or</i> MA 106 Trigonometry (3 cr.)	3-5
<hr/>	
Health Promotion	1
HP 200 Physical Well Being	1
<hr/>	
Major Courses	19
DD 100 Technical Drafting/Introduction to CAD	4
DD 102 Engineering Graphics	3
DD 103 Geometric Dimensioning and Tolerancing	2
DD 105 Schematic/Diagram Drafting	2
DD 202 Product Development and Design	4
DD 203 Industrial Drawing and Design	4
<hr/>	
Other Required Courses	24-28
MF 134 Manufacturing Processes	4
MF 233 Computer Numerical Control (4 cr.) <i>or</i> IT 180 Introduction to Fluid Power (3 cr.) <i>or</i>	3-4
MET 211 Mechanics-Statics	4
MET 213 Materials Science I	3
IT 214 Industrial Observation	1
CIS 110 Principles of Computer Information Systems <i>or</i> IS 100 Introduction to Windows, E-mail and the Internet <i>and</i> Three IS Electives <i>or</i>	3-4
DD 207 Architectural Design <i>or</i> DD 208 Architectural Detailing <i>or</i> DD 302 Architectural Drawing-Residential <i>or</i> DD 303 Architectural Drawing-Commercial <i>or</i> IT 380 Facility Planning (3 cr.)	3-4
ET 100 Fundamentals of Electricity <i>or</i> ET 110 Introduction to Electricity (4 cr.)	2-4
General Electives	0-5

Electronics Technology

Associate of Applied Science

This major offers students a solid foundation in electronics with the opportunity to chose technical electives. Students may choose to concentrate in computer maintenance, application software, computer interfacing, or biomedical technology through an internship at Marquette General Hospital.

Total Credits Required for Degree	64
<hr/>	
Liberal Studies	25
EN 111 College Composition I	4
EN 211D Technical and Report Writing	4
MA 104 College Algebra with Applications in the Sciences and Technologies	4
PH 201 College Physics I	5
IS 100 Introduction to Windows, E-mail and the Internet	1
Social Science elective	4
IS Electives	3
<hr/>	
Health Promotion	1
HP 200 Physical Well Being	1
<hr/>	
Major Courses	23
ET 112 DC Circuit Analysis	4
ET 113 AC Circuit Analysis	4
ET 201 Visual Programming for Technicians	4
ET 210 Discrete Semiconductors	4
ET 211 Digital Electronics	4
ET 212 Advanced Linear Circuits	3
General Electives	15

Industrial Electrical Technology

Associate of Applied Science

This program prepares students for employment as technicians in environments where electrical machinery, hydraulic and pneumatic systems, or motor control systems are prevalent. Graduates are employed in paper mills and other industrial companies.

Total Credits Required for Degree	64
<hr/>	
Liberal Studies	21
EN 111 College Composition I	4
EN 211D Technical and Report Writing	4
MA 104 College Algebra with Applications in the Sciences and Technologies	4
PH 201 College Physics I	5
IS 100 Introduction to Windows, E-mail and the Internet	1
IS Electives	3
<hr/>	
Health Promotion	1
HP 200 Physical Well Being	1

Major Courses	39
ET 112 DC Circuit Analysis	4
ET 113 AC Circuit Analysis	4
ET 202 Industrial Wiring Concepts	2
ET 210 Discrete Semiconductors	4
ET 211 Digital Electronics	4
ET 212 Advanced Linear Circuits	3
ET 250 Industrial Electrical Machinery	4
ET 252 Industrial Motor Controls	4
ET 311 Applied Programmable Controllers	2
ET 360 Process Control Systems	3
IT 180 Introduction to Fluid Power	3
IT 215 General Industrial Safety	2

General Electives	3
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Manufacturing Technology
Associate of Applied Science

This program prepares students for employment as manufacturing technicians, computer numerical control (CNC) programmers, and quality technicians.

Total Credits Required for Degree	64
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Liberal Studies	16
EN 111 College Composition I	4
EN 211D Technical and Report Writing	4
IS 100 Introduction to Windows, E-mail and the Internet	1
IS 101 Beginning Word Processing	1
IS 102 Beginning Spreadsheets	1
IS 104 Beginning Databases	1
CH 105 Chemical Principles	4

Health Promotion	1
HP 200 Physical Well Being	1

Technical Concentration	19
DD 100 Technical Drafting/Introduction to CAD	4
DD 103 Geometric Dimensioning and Tolerancing	2
MF 134 Manufacturing Processes	4
MF 133 Machinery Handbook	2
MF 233 Numerical Control	4
MET 213 Materials Science I	3

Other Required Courses	20
ET 110 Introduction to Electricity <i>or</i> ET 100 Fundamentals of Electricity <i>and</i> ET 101 Principles of Electrical Wiring	4
MET 216 Materials Science II	3
IT 215 General Industrial Safety	2
IT 180 Introduction to Fluid Power	3
MA 100 Intermediate Algebra	4
SP 100 Public Address	4

General Electives	8
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MINOR PROGRAMS

Alternative Energies Minor

Total Credits Required for Minor	20
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ET 112 DC Circuit Analysis	4
ET 221 Solar Power	3
ET 222 Wind Power	3
HV 270 Heating Systems	4
MET 200 Introduction to Alternative Energies	3
MET 230 Bioenergy	3

Engineering Design Minor

Total Credits Required for Minor	20
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DD 102 Engineering Graphics	3
DD 103 Geometric Dimensioning and Tolerancing	2
DD 105 Schematics/Diagram Drafting	2
DD 202 Product Development and Design	4
DD 203 Industrial Drawing and Design	4

Drafting and Design Electives	5
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Electronics Minor

Total Credits Required for Minor	20
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ET 110 Introduction to Electricity	4
ET 210 Discrete Semiconductors	4
ET 211 Digital Electronics	4
ET 212 Advanced Linear Circuits	3
ET 430 Senior Project	2
ET 410 Interfacing and Data Acquisition	3

Industrial Electrical Technology Minor

Total Credits Required for Minor	20
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ET 210 Discrete Semiconductors	4
ET 211 Digital Electronics	4
ET 250 Industrial Electrical Machinery	4
ET 252 Industrial Motor Controls	4
IT 215 General Industrial Safety	2
ET 311 Applied Programmable Controllers	2

Manufacturing Minor

Total Credits Required for Minor	23
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DD 103 Geometric Dimensioning and Tolerancing	2
DD 202 Product Development and Design	4
MF 133 Machinery Handbook	2
MF 233 Numerical Control	4
MET 216 Materials Science II	3
WD 140 Introduction to Welding	4
MF 383 Computer-Aided Manufacturing	4

Contracted Minor

Total Credits Required for Minor 20

The contracted minor consists of courses that emphasize a technical or industrial area of study. Courses comprising this minor must be submitted to the Degree Audits Office along with department head and adviser approval.

This minor is available to students in the Industrial Technology and Applied Sciences majors and to students in the General University Studies Associate Degree.

CERTIFICATE PROGRAM

Computer Numerical Control Technician Certificate

Graduates of this program are employed by manufacturers as CNC technicians.

Total Credits Required for Certificate 31

Health Promotion	1
HP 200 Physical Well Being	1

Technical Concentration	19
DD 100 Technical Drafting/Introduction to CAD	4
DD 103 Geometric Dimensioning and Tolerancing	2
MF 133 Machinery Handbook	2
MF 134 Manufacturing Processes	4
MF 233 Numerical Control	4
MF 235 Computer Numerical Control	3

Other Required Course	1
IS 100 Introduction to Windows, E-mail and the Internet	1

General Electives	10
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Pioneer Surgical Internship Option*

**Students seeking participation in the Pioneer Surgical Internship program should take the following courses as electives: IT 150 Industrial Practices I (2 cr.), IT 151 Industrial Practices II (2 cr.), and DD 202 Product Development and Design (4 cr.).*

ENGLISH

DEPARTMENT OFFICE

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English at NMU

While serving all students in the university with composition and study skills courses, the English Department also offers strong programs in literature and specialized writing. As literature courses challenge students to consider matters of broad human significance, so the many offerings in creative writing, exposition and journalism encourage students to develop their talents for expressing ideas and emotions. The department directs its majors and minors toward courses that will further enhance their abilities to analyze and discuss literature or to write fiction, nonfiction or poetry. A career in one of these fields, either teaching or another professional endeavor, can be a richly rewarding experience.

The department offers four undergraduate English majors and six minors. The majors are in English, English/graduate-bound, English secondary education, and writing. The six minors offered are in writing, journalism, journalism education, film studies, English and English education. The department also participates in the interdisciplinary majors in technical communications and liberal arts and sciences, as well as the gender studies and Native American studies minors.

Student Organizations

- *The North Wind* Student Newspaper
- *Passages North* Literary Magazine
- Sigma Tau Delta Honor Society
- Student Michigan Education Association

Department Facilities

The department operates the Writing Center in the Learning Resources Center. This facility is open daily to help all students, whether or not they are enrolled in writing courses. This assistance is free to NMU students.

Department/Program Policies

English graduate-bound majors are required to have proficiency at the 202 level in a language other than English. Other

students in English are encouraged, although not required, to complete at least one year of study in a language.

Students majoring in English secondary education or minoring in secondary education English or secondary education journalism must maintain a grade point average of 2.70 or greater with no grade below a "C" in the professional education sequence, the major and/or minors and required cognates combined.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

English Major

This major prepares students for careers in business and government, and for professions ranging from law and medicine to publishing.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
<hr/>	
Required Courses in Major*	40
EN 280 Patterns and Continuity of the Literary Past I	1
EN 281 Patterns and Continuity of the Literary Past II	1
EN 282 Introduction to Literature	4
EN 493 Senior Seminar: Issues in Literature	4
British Literature Survey or Period Courses	6-8
<i>Choose from the following:</i>	
EN 283 Survey of British Literature I (4 cr.) [II]	
EN 284 Survey of British Literature II (4 cr.) [III]	
EN 312 Medieval British Literature (3-4 cr.)	
EN 320 Renaissance British Literature (3-4 cr.)	
EN 322 Restoration Eighteenth Century British Literature (3-4 cr.)	
EN 330 British Romantic Literature (3-4 cr.)	
EN 340 Victorian Literature (3-4 cr.)	
EN 360 Modern British Literature (3-4 cr.)	
American Literature Survey Course	4
<i>Choose from the following:</i>	
EN 370 American Literature I (4 cr.) [II]	
EN 371 American Literature II (4 cr.) [II]	
EN 372 American Literature III (4 cr.) [II]	
EN 373 American Literature IV (4 cr.) [II]	
EN 375 Diverse Traditions in American Literature (4 cr.) [II]	
EN 375Z Diverse Traditions in American Literature (4 cr.) [II]	
Major Author Course	3-4
<i>Choose from the following:</i>	
EN 412 Chaucer (3-4 cr.)	
EN 420 Shakespeare (3-4 cr.)	
EN 422 Milton (3-4 cr.)	
EN 430 Major Authors (3-4 cr.)	
Genre Course	3-4
<i>Choose from the following:</i>	
EN 361 Studies in Genre, Poetry (3-4 cr.)	
EN 362 Studies in Genre, Narrative (3-4 cr.)	
EN 363 Studies in Genre, Drama (3-4 cr.)	
EN 364 Studies in Genre, Film (3-4 cr.)	

EN 381 Contemporary Dramatic Literature (3-4 cr.)
EN 410 Genres of Writing (1-4 cr.)

Upper-level writing course or research paper option in two variable credit courses 2-4

Choose from the following writing courses or complete a research paper (4th credit) in two variable credit courses from major author, genre, world literature/diverse traditions, or British literature survey or period courses:

EN 300 Creative Writing: Fiction (4 cr.)
EN 301 Creative Writing: Poetry (4 cr.)
EN 302 Nonfiction Writing (4 cr.)
EN 303 Technical and Professional Writing (4 cr.)
EN 400 Narrative Writing Seminar (4 cr.)
EN 401 Poetry Writing Seminar (4 cr.)
EN 402 Nonfiction Writing Seminar (4 cr.)
EN 403 Drama and Script Writing Seminar (4 cr.)
EN 405 Technical Writing Seminar (4 cr.)

World Literature/Diverse Traditions Course 3-4

Choose from the following:

EN 250 Images of Women (4 cr.)
EN 311 World Literature in English (4 cr.) [II]
EN 311Z World Literature in English (4 cr.) [II]
EN 314 Traditional Oral Literature (4 cr.) [II]
EN 316 Native American Novels and Poetry (4 cr.) [II]
EN 317 Native American Drama, Non-Fiction and Short Stories (4 cr.) [II]
EN 375 Diverse Traditions in American Literature (4 cr.) [II]
EN 375Z Diverse Traditions in American Literature (4 cr.) [II]
EN 411 Topics in World Literature (3-4 cr.)
EN 411Z Topics in World Literature (3-4 cr.)
EN 440 Topics in Gender in Literature (3-4 cr.)

English Electives 4-8

Minor 20

**No more than eight credits may be at the 100 level and at least nine credits must be in courses 400 or above.*

English Graduate Bound Major Bachelor of Arts

This major is recommended for those interested in graduate school and post-secondary teaching.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	52
EN 283 Survey of British Literature I [II]	4
EN 284 Survey of British Literature II [II]	4
EN 366 Applied Literary Theory	3-4
EN 420 Shakespeare	3-4
Research paper option in two variable credit courses	2
EN 493 Senior Seminar: Issues in Literature	4
British Literature Courses	6-8
<i>Choose from the following:</i>	
EN 312 Medieval British Literature (3-4 cr.)	
EN 320 Renaissance British Literature (3-4 cr.)	
EN 322 Restoration Eighteenth Century British Literature (3-4 cr.)	
EN 330 British Romantic Literature (3-4 cr.)	
EN 340 Victorian Literature (3-4 cr.)	
EN 360 Modern British Literature (3-4 cr.)	
EN 412 Chaucer (3-4 cr.)	
EN 422 Milton (3-4 cr.)	
American Literature Survey Courses	8
<i>Choose from the following:</i>	
EN 370 American Literature I (4 cr.) [II]	
EN 371 American Literature II (4 cr.) [II]	
EN 372 American Literature III (4 cr.) [II]	
EN 373 American Literature IV (4 cr.) [II]	
EN 375 Diverse Traditions in American Literature (4 cr.) [II]	
EN 375Z Diverse Traditions in American Literature (4 cr.) [II]	
World Literature/Diverse Traditions Course	3-4
<i>Choose from the following:</i>	
EN 311 World Literature in English (4 cr.) [II]	
EN 311Z World Literature in English (4 cr.) [II]	
EN 314 Traditional Oral Literature (4 cr.)	
EN 316 Native American Novels and Poetry (4 cr.) [II]	
EN 317 Native American Drama, Non-fiction and Short Stories (4 cr.) [II]	
EN 375 Diverse Traditions in American Literature (4 cr.) [II]	
EN 375Z Diverse Traditions in American Literature (4 cr.) [II]	
EN 411 Topics in World Literature (3-4 cr.) [II]	
EN 411Z Topics in World Literature (3-4 cr.) [II]	
EN 440 Topics in Gender in Literature (3-4 cr.) [II]	
Genre Course	3-4
<i>Choose from the following:</i>	
EN 300 Creative Writing: Fiction (4 cr.)	
EN 301 Creative Writing: Poetry (4 cr.)	
EN 302 Nonfiction Writing (4 cr.)	
EN 403 Drama and Script Writing Seminar (4 cr.)	
EN 361 Studies in Genre, Poetry (3-4 cr.)	
EN 362 Studies in Genre, Narrative (3-4 cr.)	
EN 363 Studies in Genre, Drama (3-4 cr.)	

EN 364 Studies in Genre, Film (3-4 cr.)
EN 410 Genres of Writing (1-4 cr.)

English Electives (any level)	12
Other Required Courses	4
FR 202 Intermediate French [V] <i>or</i>	4
GR 202 Intermediate German [V] <i>or</i>	
SN 202 Intermediate Spanish [V]	

English Writing Major

This major enables students to acquire a solid background in literature while preparing for careers that require regular, extensive writing as part of professional duties.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	41
Literature Component	20
EN 282 Introduction to Literature	4
Literature Electives (300-400 level)	4-6
EN 493 Senior Seminar: Issues in Literature	4
Literary Surveys and Period Courses	6-8
<i>Choose from the following:</i>	
EN 283 Survey of British Literature I (4 cr.) [II] <i>or</i>	
EN 284 Survey of British Literature II (4 cr.) [II]	
EN 312 Medieval British Literature (3-4 cr.)	
EN 320 Renaissance British Literature (3-4 cr.)	
EN 322 Restoration Eighteenth Century British Literature (3-4 cr.)	
EN 330 British Romantic Literature (3-4 cr.)	
EN 340 Victorian Literature (3-4 cr.)	
EN 360 Modern British Literature (3-4 cr.)	
EN 380 Contemporary Literature (3-4 cr.)	
EN 381 Contemporary Dramatic Literature (3-4 cr.)	
EN 370 American Literature I (4 cr.) [II] <i>or</i>	
EN 371 American Literature II (4 cr.) [II] <i>or</i>	
EN 372 American Literature III (4 cr.) [II] <i>or</i>	
EN 373 American Literature IV (4 cr.) [II] <i>or</i>	
EN 375 Diverse Traditions in American Literature (4 cr.) [II] <i>or</i>	
EN 375Z Diverse Traditions in American Literature (4 cr.) [II]	
EN 420 Shakespeare (3-4 cr.)	
Writing Component	21
EN 205 Introduction to Professional Writing	1
Concentration Areas	12-20
<i>Select from at least two of the following areas. At least eight credit hours must be at the 400 level.</i>	
Journalism	
EN 207 Journalism: News and Reporting (4 cr.)	
EN 306 Journalism Editing (4 cr.)	
EN 406 Public Affairs Reporting (4 cr.)	
EN 407 Feature and Magazine Writing (4 cr.)	
EN 410 Genres of Writing (1-4 cr.)	
EN 491 Internship (2-6 cr.)	
EN 495W Special Topics-Writing (1-4 cr.)	

Fiction

- EN 215 Introduction to Creative Writing (4 cr.)
- EN 300 Creative Writing: Fiction (4 cr.)
- EN 400 Narrative Writing Seminar (4 cr.)
- EN 410 Genres of Writing (1-4 cr.)
- EN 495W Special Topics-Writing (1-4 cr.)

Nonfiction

- EN 302 Nonfiction Writing (4 cr.)
- EN 402 Nonfiction Writing Seminar (4 cr.)
- EN 410 Genres of Writing (1-4 cr.)
- EN 495W Special Topics-Writing (1-4 cr.)

Poetry

- EN 215 Introduction to Creative Writing (4 cr.)
- EN 301 Creative Writing: Poetry (4 cr.)
- EN 401 Poetry Writing Seminar (4 cr.)
- EN 410 Genres of Writing (1-4 cr.)
- EN 495W Special Topics-Writing (1-4 cr.)

Technical Writing

- EN 303 Technical and Professional Writing (4 cr.)
- EN 405 Technical Writing Seminar (4 cr.)
- EN 410 Genres of Writing (1-4 cr.)
- EN 491 Internship (2-6 cr.)
- EN 495W Special Topics-Writing (1-4 cr.)

Drama

- EN 215 Introduction to Creative Writing (4 cr.)
- EN 403 Drama and Script Writing Seminar (4 cr.)
- EN 410 Genres of Writing (1-4 cr.)
- EN 495W Special Topics-Writing (1-4 cr.)

Media Writing

- BC 265 Writing and Announcing for Broadcast (4 cr.)
- BC 473W Advanced Media Production-Script Writing (4 cr.)
- PR 330 Public Relations Message Design (4 cr.)
- EN 410 Genres of Writing (1-4 cr.)
- EN 495W Special Topics-Writing (1-4 cr.)

Cognates

0-8

Minor (Except Writing)

20

Secondary Education English Major

Completion of this major's required English courses, a teaching minor and the professional education sequence leads to certification as a secondary school teacher in English.

Total Credits Required for Degree 136-138*

Liberal Studies 30-40

Health Promotion 2

Required Courses in Major 36-38*

- EN 200 Basic English Grammar and Usage for Teachers* 2
- EN 280 Patterns and Continuity of the Literary Past I 1
- EN 281 Patterns and Continuity of the Literary Past II 1
- EN 282 Introduction to Literature 4
- EN 309 Teaching of Writing 4
- EN 404 The English Language 4
- EN 420 Shakespeare 3-4

British Literature Survey or Period Course

3-4

Choose from the following:

- EN 283 Survey of British Literature I (4 cr.) [II]
- EN 284 Survey of British Literature II (4 cr.) [II]
- EN 312 Medieval British Literature (3-4 cr.)
- EN 320 Renaissance British Literature (3-4 cr.)
- EN 322 Restoration Eighteenth Century British Literature (3-4 cr.)
- EN 330 British Romantic Literature (3-4 cr.)
- EN 340 Victorian Literature (3-4 cr.)
- EN 360 Modern British Literature (3-4 cr.)
- EN 412 Chaucer (3-4 cr.)
- EN 422 Milton (3-4 cr.)

American Literature Survey

4

Choose from the following:

- EN 370 American Literature I (4 cr.) [II]
- EN 371 American Literature II (4 cr.) [II]
- EN 372 American Literature III (4 cr.) [II]
- EN 373 American Literature IV (4 cr.) [II]

Genre Course

3-4

Choose from the following:

- EN 361 Studies in Genre, Poetry (3-4 cr.)
- EN 362 Studies in Genre, Narrative (3-4 cr.)
- EN 363 Studies in Genre, Drama (3-4 cr.)
- EN 364 Studies in Genre, Film (3-4 cr.)

World Literature/Diverse Traditions Course

3-4

Choose from the following:

- EN 250 Images of Women (4 cr.)
- EN 311 World Literature in English (4 cr.) [II]
- EN 311Z World Literature in English (4 cr.) [II]
- EN 314 Traditional Oral Literature (4 cr.) [II]
- EN 316 Native American Novels and Poetry (4 cr.) [II]
- EN 317 Native American Drama (4 cr.) [II]
- EN 375 Diverse Traditions in American Literature (4 cr.) [II]
- EN 375Z Diverse Traditions in American Literature (4 cr.) [II]
- EN 411 Topics in World Literature (3-4 cr.) [II]
- EN 411Z Topics in World Literature (3-4 cr.) [II]
- EN 440 Topics in Gender in Literature (3-4 cr.)

English Electives

2-7

Teaching Minor, minimum

24

Professional Education

33

- ED 201 Introduction to Education 2
- ED 231 Teaching and Learning in the Secondary Classroom 4
- ED 301 Dimensions of American Education 2
- ED 319 Teaching of Reading for Secondary Teachers 3
- ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community 2
- EN 350 Methods and Materials in Teaching English Education** 4
- ED 361 Special Education and the General Classroom Teacher 2
- ED 483 Educational Media and Technology 2
- ED 430 Teaching in the Secondary School 11
- ED 450 Seminar in Teaching 1

*EN 200 Basic English Grammar and Usage for Teachers is not required for any student who successfully completes a 100 or 200 level language course. EN 200 may be completed by examination. For information, call Zhuang-Zhong Lehmborg at 906-227-2778.

**To be taken the semester prior to student teaching, by instructor permission.

MINOR PROGRAMS

English Minor

Total Credits Required for Minor	20
EN Electives*	12
EN Electives (300 level or above)	8

*Courses below EN 110, and composition courses EN 111, EN 211A, EN 211B, EN 211D and EN 211E or equivalents can not be used for the minor.

Film Studies Minor

This minor, which is designed to complement almost any major, teaches students strong communication skills through the study of film.

Total Credits Required for Minor	20
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Choose at least 12 credits from the following:

EN 125 Introduction to Film (4 cr.)
 EN 225 History of World Cinema (4 cr.)
 EN 325 Authorship in the Cinema (4 cr.)
 EN 326 National Cinema (4 cr.)
 EN 364 Studies in Genre, Film (3-4 cr.)
 EN 425 Topics in Film Theory (4 cr.)

Choose a maximum of 8 credits from the following:

AD 121 Digital Cinema: Introduction (4 cr.)
 AD 221 Digital Cinema: Animation (4 cr.)
 AD 321 Digital Cinema: Seminar (4 cr.)
 BC 410 The Documentary (4 cr.)
 LG 317 World Studies through Literature in Translation (4 cr.)

Journalism Minor

Prepares students for jobs in the newspaper, online news, magazine and corporate public relations and writing professions.

Total Credits Required for Minor	20
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Choose from the following:

EN 206 Survey of Journalism (4 cr.)
 EN 207 Journalism: News Writing and Reporting (4 cr.)
 EN 302 Nonfiction Writing (4 cr.)
 EN 306 Journalism Editing and Design (4 cr.)
 EN 307 Journalism Practicum (2 cr.)
 EN 406 Public Affairs Reporting (4 cr.)
 EN 407 Feature and Magazine Writing (4 cr.)
 EN 491 Internship (2-6 cr.)
 BC 265 Writing and Announcing for Broadcast (4 cr.)

The journalism minor is not a certified teaching minor.

Secondary Education English Minor

Students interested in teaching English at the secondary level are urged to pursue the major in English instead of the minor.

Total Credits Required for Minor	22-26*
EN 200 Basic English Grammar and Usage for Teachers*	2
EN 282 Introduction to Literature	4
EN 309 Teaching of Writing	4
EN 350 Methods and Materials in Teaching English Education	4
EN 404 The English Language	4
British literature survey or period course	3-4
American literature survey or period course	3-4

*EN 200 Basic English Grammar and Usage for Teachers is not required for any student who successfully completes a 100 or 200 level language course. EN 200 may be completed by examination. For information, call Zhuang-Zhong Lehmsberg at 906-227-2778.

Secondary Education Journalism Minor (pending state approval)

Prepares students to teach journalism and act as faculty advisers for student publications. Students interested in teaching English at the secondary level are urged to pursue the English Major.

Total Credits Required for Minor	24
EN 206 Survey of Journalism	4
EN 207 Journalism News and Reporting	4
EN 306 Journalism Editing and Design	4
EN 368 Teaching/Advising Scholastic Journalists	4
Choose from the following:	8

EN 307 Journalism Practicum (4 cr.)
 EN 406 Public Affairs Reporting (4 cr.)
 EN 407 Feature/Magazine Writing (4 cr.)
 EN 491 Internship (4 cr.)
 BC 265 Writing and Announcing for Broadcast (4 cr.)

Writing Minor

Total Credits Required for Minor	20
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Choose from the following:

EN 205 Introduction to Professional Writing (1 cr.)
 EN 215 Introduction to Creative Writing (4 cr.)
 EN 300 Creative Writing: Fiction (4 cr.)
 EN 301 Creative Writing: Poetry (4 cr.)
 EN 302 Nonfiction Writing (4 cr.)
 EN 303 Technical and Professional Writing (4 cr.)
 EN 400 Narrative Writing Seminar (4 cr.)
 EN 401 Poetry Writing Seminar (4 cr.)
 EN 402 Non-Fiction Writing Seminar (4 cr.)
 EN 403 Drama and Script Writing Seminar (4 cr.)
 EN 404 The English Language (4 cr.)
 EN 410 Genres of Writing (1-4 cr.)
 BC 265 Writing and Announcing for Broadcast (4 cr.)
 EN 405 Technical Writing Seminar (4 cr.)
 EN 491 Internship (2-6 cr.)
 EN 495W Special Topics Writing (1-4 cr.)

Note: The writing minor is not a certified teaching minor.

ENVIRONMENTAL SCIENCE PROGRAM

PROGRAM OFFICE

3005 New Science Facility

Phone: 906-227-1359

Fax: 906-227-1621

Web Page: www.nmu.edu/environmentalscience

Program Director: Ronald C. Sundell • rsundell@nmu.edu



Environmental Science at NMU

The environmental science program is an interdisciplinary approach offered jointly by the departments of Biology, Economics, Chemistry, Geography, Mathematics and Computer Science, Physics, and Political Science and Public Administration.

The program provides students an opportunity to gain an understanding of how the physical, biological and social sciences interact with each other in this field of study. The program is designed to prepare students for a variety of professions dealing with both natural and human-made environments, as well as graduate study. Because of the interdisciplinary nature of the environmental field, it is important for students to be proficient in a range of technical skills such as ecological assessment, chemical analysis and geographic information systems. Students should also be familiar with a broad array of environmental policies and regulations, and possess effective communication skills.

Environmental scientists are often required to interact with professionals from a diverse number of disciplines or specialties. Therefore, every environmental science major will take a 36 credit-hour core of courses that provides a basic understanding of several environmentally related disciplines. Each student also must complete 25 to 30 credit hours in one of three areas of program emphasis: (1) biological science, (2) physical science, or (3) environmental policy. The track selected by the student will appear on his or her transcript.

Student Organization

- Student Environmental Science Organization

Facilities

- Environmental Chemistry Laboratory
- Environmental Resource Room
- Lake Superior Research Boat
- Longyear Forest
- Native Plants Study Area

Students also can use a large range of laboratory facilities and field equipment associated with the seven departments involved in the program. See each department's facility list for details.

Environmental Science Program Policies

Environmental science majors must select an area of emphasis (biological sciences, physical sciences or environmental policy) upon entering the program. Students also must select a faculty adviser. The adviser must be either the program director or a faculty member from one of the associated departments (Biology Department faculty for the biological sciences track, Chemistry Department faculty for the physical sciences track, and Geography Department faculty or Political Science and Public Administration Department faculty for the environmental policy track).

As a requirement for graduation, environmental science majors must maintain the minimum grades and cumulative grade point average as set forth by each of the participating departments. For example, a student in the biology track must maintain the same academic standards as biology majors. Likewise, students in the physical track must maintain academic standards as set forth by the Chemistry Department, and those in the environmental policy track must maintain the academic standards as determined by the department of their adviser in either the Geography or Political Science and Public Administration Departments.

BACHELOR DEGREE PROGRAM

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Environmental Science Major

This major provides students with an interdisciplinary approach on how to apply research methods, assessment techniques and management strategies to resolve environmental problems. It provides students an opportunity to gain an understanding of how the physical, biological and social sciences interact with each other in this field of study.

Total Credits Required for Degree	128
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Liberal Studies	30-40
Health Promotion	2

Required Courses in Major (Core + Emphasis)

Students must complete the core and one of the three areas of emphasis. ENV 101 should be taken during the first year of entering the program.

Core	36
ENV 101 Introduction to Environmental Science [III]	4
BI 210 Principles of Ecology	4
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
GC 100 Physical Geography [III]	4
GC 225 Introduction to Maps	2
GC 320 Environmental Policy and Regulation	4
GC 335 Geographic Information Systems	4
MA 171 Probability and Statistics [V] <i>or</i>	4
BI 412 Biometrics (4 cr.) <i>or</i>	
GC 235 Quantitative Methods (4 cr.)	
Biological Sciences Emphasis	28
BI 240 Conservation Biology	4
BI 310 Ecology Theory and Methods	4
BI 402 Microbial Ecology	4
BI 411 Limnology	4
BI 441 Fisheries Management	4
BI 442 Wildlife Management	4
GC 401 Biogeography	4

Physical Sciences Emphasis	27-30
CH 220 Introductory Organic Chemistry (5 cr.) <i>or</i>	5-8
CH 321 Organic Chemistry I (4 cr.) <i>and</i>	
CH 322 Organic Chemistry II (4 cr.)	
CH 241 Chemical Equilibrium	3
CH 242 Quantitative Analysis	2
CH 430 Environmental Chemistry	5
GC 202 Soils	4
GC 370 Geomorphology	4
GC 465 Hydrology	4

Environmental Policy Emphasis	28
GC 330 Planning Theory and Practice	2
GC 340 Land Use Controls	2
GC 470 Environmental Ethics	4
GC 475 Environmental Impact Assessment	4
PS 301 Seminar in Public Policy Analysis	4
PS 307 Principles of Public Administration	4
PS 309 State and Local Government	4
SP 432 Environmental Communication	4

Environmental Science Electives	12-15
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Choose from the following or any course from one of the above emphases, other than the student's chosen emphasis. No more than eight credits can be taken under a single prefix.

BC 415 Intercultural Communication (4 cr.)	
BI 303 General Microbiology (5 cr.)	
BI 305 Ecology of the Northern Forest (3 cr.) [III]	
BI 410 Ecology of the Great Lakes (4 cr.)	
BI 421 Invertebrate Zoology (4 cr.)	
BI 424 Entomology (4 cr.)	
BI 433 Boreal Flora (2-3 cr.)	
BI 460 Ichthyology (4 cr.)	
BI 461 Herpetology (3 cr.)	
BI 462 Ornithology (3 cr.)	
BI 463 Mammalogy (3 cr.)	
BI 498 Directed Studies in Biology (1-4 cr.)	
BI 499 Internship (1-6 cr.)	
CH 435 Gas and Liquid Chromatography (2 cr.)	
CH 490 Senior Research and Seminar I (2-4 cr.)	
CH 491 Senior Research and Seminar II (2-4 cr.)	
EC 345 Environmental and Natural Resource Economics (4 cr.)	
GC 385 Weather and Climate (4 cr.)	
GC 425 Remote Sensing (4 cr.)	
GC 428 Spatial Analysis (4 cr.)	
GC 491 Internship (2-6 cr.)	
GC 498 Directed Studies in Geography (1-4 cr.)	
PH 201 College Physics I (5 cr.) [III]	
PH 202 College Physics II (5 cr.) [III]	
PH 220 Introductory Physics I (5 cr.) [III]	
PR 231 Introduction to Public Relations (4 cr.)	
<i>PR 250 co-requisite is waived</i>	
PS 105 American Government (4 cr.) [IV]	
PS 215 Introduction to Law (4 cr.)	
PS 332 Administrative Law (4 cr.)	
PS 491 Internship in Public Policy or Law (2-6 cr.)	
PS 498 Directed Studies in Political Science (1-4 cr.)	
SP 401 Persuasion (4 cr.)	

Other Required Courses	8
BI 111 Introductory Biology: Principles [III]	4
BI 112 Introductory Biology: Diversity [III]	4

GEOGRAPHY

DEPARTMENT OFFICE

3001 New Science Facility

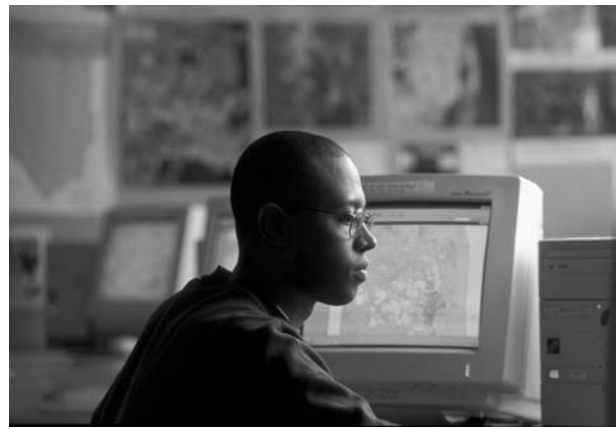
Phone: 906-227-2500

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E-mail: geo@nmu.edu

Web Page: www.nmu.edu/geography

Department Head: Michael J. Broadway • mbroadwa@nmu.edu



Geography at NMU

The Geography Department offers a variety of programs in human geography, earth science, physical geography, geographic information science, planning, environmental conservation, and education, along with a certificate program in geographic information systems (GIS). The department is committed to excellence in teaching and preparing students for graduate study, professional careers in teaching, governmental service, and the private sector.

Since geography is an integrative discipline, students, whether interested in its human or physical aspects, must have a basic understanding of the scope of the discipline and its methodologies. This is reflected in the department's core curriculum, which all geography students are required to take. It consists of courses in human and physical geography, three methods classes and a capstone course that integrates the human and physical aspects of the discipline by focusing on the interactions between humankind and the natural environment.

Geography majors have the opportunity to gain practical work experience through internships with local governmental agencies and the private sector.

Student Organizations

- Gamma Theta Upsilon Honor Society
- Student Michigan Education Association
- Superior Geography Club
- Rock and Mineral Club

Department Facility

- GIS and Remote Sensing Lab

Department/Program Policies

As a requirement for graduation, all non-teaching geography department majors must have a minimum grade of "C" and a minimum cumulative grade point average of 2.25 for all courses constituting the major curriculum. Students majoring in secondary education earth science, secondary education geography, or minoring in geography education or earth science education must maintain a grade point average of 2.70 or greater with no

grade below a "C" in the professional education sequence, the major and/or minors and required cognates combined.

Students majoring in programs in the department must also do the following:

1. Successfully complete EN 211 before taking 300-level courses or above in the major.
2. Complete AIS 101 if required during the freshman year or within the first year of transferring to a major in the department.
3. Satisfy the prerequisites for each major course enrolled in as described in this bulletin.

Note: Petition for exception to any of the program policies must be made in writing and submitted to the Geography Department. The petition must include reasons why an exception should be made and provide documentation of those reasons, if applicable.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Earth Science Major

This major provides students with a thorough knowledge of Earth's physical environment including its geology, weather and climate, astronomical relationships and hydrology.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	44
AS 103 Observational and Solar System Astronomy [III]	4
GC 205 Introduction to Geographic Research	4
GC 225 Introduction to Maps	2
GC 235 Quantitative Methods	4
GC 255 Physical Geology [III]	4
GC 260 Minerals and Rocks	4
GC 365 Historical Geology	4
GC 385 Weather and Climate	4
GC 390 Oceanography	2
GC 489 Human Impact on the Environment	4
GC 335 Geographic Information Systems	4
GC 425 Remote Sensing	4
GC 202 Soils <i>or</i>	4
GC 370 Geomorphology (4 cr.) <i>or</i>	
GC 465 Hydrology (4 cr.)	
Other Required Courses	19
ALS 101 Introduction to Information Resources	1
MA 104 College Algebra with Applications [III] (or higher)	4
PH 201 College Physics I [III] (or higher)	5
Biology Elective	4
(BI 111 <i>Introductory Biology: Principles [III] recommended</i>)	
Chemistry Elective	5
(CH 111 <i>General Chemistry 1 [III] recommended</i>)	
Minor	20

Environmental Conservation Major

This major provides students with an introduction to quantitative and qualitative methods of assessing and analyzing humankind's impact upon the environment.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	38
GC 100 Physical Geography [III]	4
ENV 101 Introduction to Environmental Science [III]	4
GC 205 Introduction to Geographic Research	4
GC 225 Introduction to Maps	2
GC 235 Quantitative Methods	4
GC 320 Environmental Policy and Regulation	4
GC 335 Geographic Information Systems	4
GC 475 Environmental Impact Assessment	4
GC 489 Human Impact Upon the Environment	4
GC 202 Soils <i>or</i>	4
GC 255 Physical Geology (4 cr.) [III] <i>or</i>	
GC 370 Geomorphology (4 cr.) <i>or</i>	
GC 401 Biogeography (4 cr.) <i>or</i>	
GC 465 Hydrology (4 cr.) <i>or</i>	
GC 470 Environmental Ethics (4 cr.)	
Other Required Courses	5
ALS 101 Introduction to Information Resources	1
CIS 110 Principles of Computer Information Systems [V]	4
Minor	20

Geographic Information Science Major

This major provides students with knowledge and skills related to information technology, spatial data management, analysis and visualization.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	34
CIS 155 Software Development with Databases	4
GC 100 Physical Geography [III]	4
GC 205 Introduction to Geographic Research	4
GC 225 Introduction to Maps	2
GC 235 Quantitative Methods	4
GC 335 Geographic Information Systems	4
GC 337 Computer Cartography	4
GC 425 Remote Sensing	4
GC 428 Spatial Analysis	4

Electives	12
CS 120 Computer Science I [V]	4
CS 122 Computer Science II	4
CS 201 Programming in C++	3
CS 222 Data Structures	4
CS 302 Unix System Administration	4
CS 326 Object Oriented Design	3
CS 470 Artificial Intelligence	4
CIS 355 Web Application Programming	3
GC 330 Planning Theory and Practice	2
GC 445 Advanced Aerial Photography Interpretation and Photogrammetry	2
GC 455 Digital Image Processing	2
GC 491 Internship in Geography	2-6
IS 120 Computer Concepts [V]	2
MA 240 Discrete Mathematics	3
Other Required Courses	9
AIS 101 Introduction to Information Resources	1
CIS 110 Principles of Computer Information Systems [V]	4
GC 164 Human Geography [IV]	4
Minor or Cluster Minor	20

Human Geography Major

This major allows students to specialize in different systematic branches of the discipline such as urban, economic, political and regional geography.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Major	38
GC 100 Physical Geography [III]	4
GC 164 Human Geography [IV]	4
GC 200 North America <i>or</i> GC 300 Regional Studies (4 cr.) [IV]	4
GC 205 Introduction to Geographic Research	4
GC 225 Introduction to Maps	2
GC 235 Quantitative Methods	4
GC 489 Human Impact Upon the Environment	4
GC 335 Geographic Information Systems <i>or</i> GC 337 Computer Cartography (4 cr.) <i>or</i> GC 425 Remote Sensing (4 cr.) <i>or</i> GC 428 Spatial Analysis (4 cr.)	4
Geography Electives	8
<i>Choose from the following:</i>	
GC 220 Economic Geography (4 cr.)	
GC 310 Urban Geography (4 cr.)	
GC 316 Geography of Tourism (4 cr.)	
GC 317 Geography of Food Systems (4 cr.)	
GC 360 Population Geography (4 cr.) [IV]	
Other Required Courses	5
AIS 101 Introduction to Information Resources	1
CIS 110 Principles of Computer Information Systems [V]	4
Minor or Cluster Minor	20

Physical Geography Major

This major is designed to provide students with a thorough knowledge of the Earth's physical environment including its climate, soil, vegetation, landforms and geology.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	38
GC 100 Physical Geography [III]	4
GC 164 Human Geography [IV]	4
GC 205 Introduction to Geographic Research	4
GC 225 Introduction to Maps	2
GC 235 Quantitative Methods	4
GC 489 Human Impact Upon the Environment	4
GC 335 Geographic Information Systems <i>or</i> GC 337 Computer Cartography (4 cr.) <i>or</i> GC 425 Remote Sensing (4 cr.) <i>or</i> GC 428 Spatial Analysis (4 cr.)	4

Geography Electives 12

Choose from the following:

GC 202 Soils (4 cr.)	
GC 255 Physical Geology (4 cr.) [III]	
GC 260 Minerals and Rocks (4 cr.)	
GC 365 Historical Geology (4 cr.)	
GC 370 Geomorphology (4 cr.)	
GC 385 Weather and Climate (4 cr.)	
GC 401 Biogeography (4 cr.)	
GC 465 Hydrology (4 cr.)	

Other Required Courses	5
AIS 101 Introduction to Information Resources	1
CIS 110 Principles of Computer Information Systems [V]	4
Minor or Cluster Minor	20

Planning Major

This program applies the planning process to land-use decision-making in small towns and rural areas. Students are provided with a solid background in the tools and techniques of planning and given the opportunity to gain practical experience by working on local planning issues.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	42
GC 100 Physical Geography [III]	4
GC 164 Human Geography [IV]	4
GC 205 Introduction to Geographic Research	4
GC 225 Introduction to Maps	2
GC 235 Quantitative Methods	4
GC 330 Planning Theory and Practice	2
GC 340 Land Use Controls	2
GC 485 Planning Practicum	4

Geography Electives

Choose from the following:

GC 335 Geographic Information Systems (4 cr.)	
GC 337 Computer Cartography (4 cr.)	
GC 425 Remote Sensing (4 cr.)	
GC 428 Spatial Analysis (4 cr.)	

Geography Electives

Choose from the following:

GC 202 Soils (4 cr.)	
GC 220 Economic Geography (4 cr.)	
GC 310 Urban Geography (4 cr.)	
GC 316 Geography of Tourism (4 cr.)	
GC 320 Environmental Policy and Regulation (4 cr.)	
GC 360 Population Geography (4 cr.) [IV]	
GC 370 Geomorphology (4 cr.)	
GC 401 Biogeography (4 cr.)	
GC 465 Hydrology (4 cr.)	
GC 470 Environmental Ethics (4 cr.)	
GC 475 Environmental Impact Assessment (4 cr.)	
GC 491 Internship (2-4 cr.)	

Other Required Courses

ALS 101 Introduction to Information Resources	5
CIS 110 Principles of Computer Information Systems [V]	1
	4

Minor or Cluster Minor 20

Secondary Education Earth Science Major

Teaching certification is obtained by completing a major in earth science, a teaching minor and the professional education sequence. Advising for this major is provided by Dr. Mitchell D. Klett in the School of Education.

Total Credits Required for Degree 143-146

Liberal Studies 30-40
Health Promotion 2

Required Courses in Major

AS 103 Observational and Solar System Astronomy [III]	36
GC 225 Introduction to Maps	4
GC 255 Physical Geology [III]	2
GC 260 Minerals and Rocks	4
GC 365 Historical Geology	4
GC 385 Weather and Climate	4
GC 390 Oceanography	2
GC 465 Hydrology	4
Choose from the following:	8
GC 202 Soils (4 cr.)	
GC 370 Geomorphology (4 cr.)	
GC 425 Remote Sensing (4 cr.)	

Teaching Minor, minimum 20-22

Choose from biology education, chemistry education or physics education.

Other Required Courses

MA 103 Finite Mathematics [III]	16-17
MA 271 Calculus with Applications	4
	4

8 Choose two courses from the following that are not in the selected minor area. 8-9

BI 100 Biological Science (4 cr.) [III]	
BI 111 Introductory Biology: Principles (4 cr.) [III]	
BI 112 Introductory Biology: Diversity (4 cr.) [III]	
CH 105 Chemical Principles (4 cr.) [III]	
PH 201 College Physics I (5 cr.) [III]	

8

Professional Education

ED 201 Introduction to Education	37
ED 231 Teaching and Learning in the Secondary Classroom	2
ED 301 Dimensions of American Education	4
ED 319 Teaching of Reading for Secondary Teachers	2
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	3
ED 361 Special Education and the General Classroom Teacher	2
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1
ED 483 Educational Media and Technology	2
MSED 340 Fundamental Concepts in Science	4
MSED 350 Methods and Materials in Teaching Science Education	4

Secondary Education Geography Major

Teaching certification is obtained by completing a major in geography, a teaching minor and the professional education sequence. Advising for this major is provided by the Geography Department.

Total Credits Required for Degree 129-133

Liberal Studies 30-40
Health Promotion 2

Required Courses in Major

GC 100 Physical Geography [III]	34
GC 164 Human Geography [IV]	4
GC 200 North America or GC 300 Regional Studies [IV]	4
GC 205 Introduction to Geographic Research	4
GC 225 Introduction to Maps	2
GC 235 Quantitative Methods	4
GC 489 Human Impact Upon the Environment	4
GC 337 Computer Cartography or GC 425 Remote Sensing (4 cr.) or GC 428 Spatial Analysis (4 cr.)	4
GC 220 Economic Geography or GC 310 Urban Geography (4 cr.) or GC 316 Geography of Tourism (4 cr.) or GC 360 Population Geography (4 cr.) [IV] or GC 435 Geography of Michigan (4 cr.)	4

Teaching Minor, minimum 20-24

Professional Education

ED 201 Introduction to Education	33
ED 231 Teaching and Learning in the Secondary Classroom	2
ED 301 Dimensions of American Education	4
ED 319 Teaching of Reading for Secondary Teachers	2
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	3
GC 350 Methods and Materials in Teaching Social Studies Education	2
	4

ED 361 Special Education and the General Classroom Teacher	2
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1
ED 483 Educational Media and Technology	2

GC 330 Planning Theory and Practice	2
GC 445 Advanced Aerial Photography Interpretation and Photogrammetry	2
GC 455 Digital Image Processing	2
GC 491 Internship in Geography	2-6
IS 120 Computer Concepts	2
MA 240 Discrete Mathematics	3

MINOR PROGRAMS

Earth Science Minor

Total Credits Required for Minor	20
GC 225 Introduction to Maps	2
GC 255 Physical Geology	4
GC 365 Historical Geology	4
GC 385 Weather and Climate	4
GC 390 Oceanography	2
AS 103 Observational and Solar System Astronomy or GC 202 Soils (4 cr.) or GC 260 Minerals and Rocks (4 cr.) or GC 370 Geomorphology (4 cr.) or GC 465 Hydrology (4 cr.)	4

Environmental Conservation Minor

Total Credits Required for Minor	20
GC 100 Physical Geography	4
ENV 101 Introduction to Environmental Science	4
GC 320 Environmental Policy and Regulation	4
Geography Electives	8
<i>Choose from the following:</i>	
GC 202 Soils (4 cr.)	
GC 401 Biogeography (4 cr.)	
GC 465 Hydrology (4 cr.)	
GC 470 Environmental Ethics (4 cr.)	
GC 475 Environmental Impact Assessment (4 cr.)	

Geographic Information Systems Minor

Total Credits Required for Minor	24
Required Courses	18
GC 225 Introduction to Maps	2
GC 335 Geographic Information Systems	4
GC 337 Computer Cartography	4
GC 425 Remote Sensing	4
GC 428 Spatial Analysis	4
Electives	6
CIS 155 Software Development with Databases	4
CIS 355 Web Application Programming	3
CS 120 Computer Science I	4
CS 122 Computer Science II	4
CS 201 Programming in C++	3
CS 222 Data Structure	4
CS 302 Unix System Administration	4
CS 326 Object Oriented Design	3
CS 470 Artificial Intelligence	4
DD 110 CAD Productivity and Customization	2

Geography Cluster Minor

For geography department non-teaching majors only.

Total Credits Required for Minor	20
<i>Note: The cluster minor may consist of courses that emphasize the physical, cultural or applied (planning) areas of the discipline. Approval of a cluster minor must be obtained from each department contributing two or more courses to the minor. Courses comprising the cluster minor must be submitted to the Degree Audits Office during the student's third semester at NMU.</i>	

Human Geography Minor

Total Credits Required for Minor	22
GC 100 Physical Geography	4
GC 164 Human Geography	4
GC 225 Introduction to Maps	2
Geography Electives	12
<i>Choose from the following:</i>	
GC 220 Economic Geography (4 cr.)	
GC 300 Regional Studies (4 cr.)	
GC 310 Urban Geography (4 cr.)	
GC 316 Geography of Tourism (4 cr.)	
GC 360 Population Geography (4 cr.)	

Physical Geography Minor

Total Credits Required for Minor	22
GC 100 Physical Geography	4
GC 225 Introduction to Maps	2
GC 370 Geomorphology	4
GC 385 Weather and Climate	4
Geography Electives	8
<i>Choose from the following:</i>	
GC 202 Soils (4 cr.)	
GC 255 Physical Geology (4 cr.)	
GC 401 Biogeography (4 cr.)	
GC 465 Hydrology (4 cr.)	

Planning Minor

Total Credits Required for Minor	22
GC 100 Physical Geography	4
GC 105 World Regional Geography <i>or</i> GC 164 Human Geography	4
GC 225 Introduction to Maps	2
GC 330 Planning Theory and Practice	2
GC 340 Land Use Controls	2
Geography Electives	8
<i>Choose from the following:</i>	
GC 220 Economic Geography (4 cr.)	
GC 310 Urban Geography (4 cr.)	
GC 320 Environmental Policy and Regulation (4 cr.)	
GC 335 Geographic Information Systems (4 cr.)	
GC 475 Environmental Impact Assessment (4 cr.)	

Secondary Education Earth Science Minor

Total Credits Required for Minor	22-30*
AS 103 Observational and Solar System Astronomy	4
GC 255 Physical Geology	4
GC 385 Weather and Climate	4
GC 465 Hydrology	4
<i>Choose from the following:</i>	6-8
GC 202 Soils (4 cr.)	
GC 225 Maps (2 cr.)	
GC 365 Minerals and Rocks (4 cr.)	
GC 370 Geomorphology (4 cr.)	
GC 390 Oceanography (2 cr.)	
MSED 340 Fundamental Concepts in Science*	4
MSED 350 Methods and Materials in Teaching Science Education*	4
<i>*Not required if major is biology education, chemistry education, physics education or integrated science education.</i>	

Secondary Education Geography Minor

Total Credits Required for Minor	22-26*
GC 100 Physical Geography	4
GC 164 Human Geography	4
GC 200 North America	4
GC 220 Economic Geography	4
GC 225 Introduction to Maps	2
GC 350 Methods and Materials in Teaching Social Studies Education*	4
GC 435 Geography of Michigan	4
<i>*Not required if major is economics education, history education, political science education or social studies education.</i>	

CERTIFICATE PROGRAM

Geographic Information Systems Certificate

This program is designed to provide students with the practical skills and theoretical knowledge necessary to enter the rapidly expanding field of geographic information science.

Total Credits Required for Certificate	35
Health Promotion	1
HP 200 Physical Well Being	1
Technical Concentration	18
GC 225 Introduction to Maps	2
GC 335 Geographic Information Systems	4
GC 337 Computer Cartography	4
GC 425 Remote Sensing	4
GC 428 Spatial Analysis	4
Electives	4
CIS 155 Software Development with Databases	4
CIS 355 Web Application Programming	3
CS 120 Computer Science I	4
CS 122 Computer Science II	4
CS 201 Programming in C++	3
CS 222 Data Structure	4
CS 302 Unix System Administration	4
CS 326 Object Oriented Design	3
CS 470 Artificial Intelligence	4
DD 110 CAD Productivity and Customization	2
GC 330 Planning Theory and Practice	2
GC 445 Advanced Aerial Photography Interpretation and Photogrammetry	2
GC 455 Digital Image Processing	2
GC 491 Internship in Geography	2-6
IS 120 Computer Concepts	2
MA 240 Discrete Mathematics	3
Other Required Courses	12
CIS 110 Principles of Computer Information Systems <i>or</i> equivalent	4
GC 235 Quantitative Methods <i>or</i> equivalent	4
MA 104 College Algebra <i>or</i> equivalent	4

HEALTH, PHYSICAL EDUCATION AND RECREATION

DEPARTMENT OFFICE

201 Physical Education Instructional Facility

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Department Head: Harvey A. Wallace • hwallace@nmu.edu



Health, Physical Education and Recreation at NMU

The department offers programs leading to a bachelor's degree in either liberal arts or education, with specializations in athletic training, health education, outdoor recreation, physical education or sports science. There are eight majors and 11 minors. A master of science degree is also available for students wishing to pursue advanced study in exercise science. The department's programs are designed to build on a student's liberal studies foundation, give a broad overview of the health and fitness fields and offer a focused preparation in the student's choice of profession.

The health education and management of health and fitness programs include an internship, field experience or student teaching experience. These programs also help students prepare to earn certifications such as the American College of Sports Medicine (ACSM) Health and Fitness Instructor Certification, the Certified Health Education Specialist (CHES) Accreditation, and relevant Michigan teacher certifications.

The athletic training program prepares students to take the National Athletic Trainers Association Board of Certification Examination.

Northern's HPER Department is accredited by the American Alliance for Health, Physical Education, Recreation and Dance, Commission on the Accreditation of Allied Health Education Program (CAAHEP), and Wilderness Education Association.

Student Organizations

- Health Promotion Society
- Organization for Outdoor Recreation Professionals
- Student Athletic Training Organization
- Student Michigan Education Association

Department Facilities

The department has one of the finest physical education buildings of its kind: the Physical Education Instructional Facility (PEIF). This facility includes four gymnasiums, several classrooms, a pool and dive tank, an exercise physiology and biomechanics lab, athletic training labs, a high ropes course and an instructional dance studio.

The Student Recreation Center is also located in the PEIF and features aerobic and weight training equipment, basketball courts, a student lounge and an indoor climbing wall.

The Outdoor Recreation Center provides programs and equipment rental.

Additional facilities include the Superior Dome (the world's largest wooden dome) and Berry Events Center. The Superior Dome seats 8,000 for football, soccer and softball. When the turf is retracted, basketball, tennis, volleyball and track and field are available. The Berry Events Center, which seats 3,675, has an Olympic-sized ice surface and is the home for Wildcat hockey and basketball and United States Olympic Education Center (USOEC) speedskating.

Department/Program Policies

General Information

Student placement and/or employment in public school systems, athletic training agencies and outdoor recreation leadership management agencies generally stipulate that applicants possess good moral character and strong judgment. The ability to successfully pass the rigors of Northern Michigan University's HPER Department helps to validate or ensure these prerequisite qualities in our majors. Each student is therefore advised that school systems and agencies will perform a background investigation on potential employees. The nature and scope of the background investigation is the prerogative of the specific

school system or agency and is ordinarily subject to the consent of the applicant. Lack of consent would ordinarily remove an individual from placement and/or employment consideration. Additional information in this regard is available to you by speaking with your academic adviser, department head or the director of teacher education student services.

Admission to the Baccalaureate Athletic Training Program

Before applying for admission to the athletic training program, applicants must fulfill the following requirements:

1. Be admitted to Northern Michigan University.
2. Have completed, or be in the process of completing the following courses: ATR 110 Introduction to Athletic Training, HL 101 Medical Terminology for Health Educators and HL 242 Emergency Health Care.
3. Achieve a cumulative NMU grade point average of 2.75 or better in their first semester, with a minimum grade of "B" in ATR 110 Introduction to Athletic Training.
4. Complete required athletic training observation hours under the guidance of a member of the NMU certified staff during the first year of enrollment.
5. File an application with current transcript of grades and three letters of recommendation with the Health, Physical Education and Recreation Department by February 1 for the succeeding fall semester.
6. Sit for a formal interview with the director of the athletic training education program and additional certified athletic training staff members after application has been filed.
7. Meet technical standards for admission.

Technical Standards for Admission to the Athletic Training Program

The technical standards set forth by the Northern Michigan University athletic training educational program establish the essential qualities considered necessary for students admitted to this program to achieve the knowledge, skills and competencies of an entry-level athletic trainer, as well as meet the expectations of CAAHEP. The following abilities and expectations must be met by students admitted to the athletic training education program. Failing to fulfill these technical standards with or without reasonable accommodations will result in a student not being admitted into the program. Compliance with the technical standards does not guarantee a student's eligibility for the National Athletic Trainers Association Board of Certification (NATABOC) examination.

Candidates for selection into the NMU athletic training major must demonstrate the following:

1. The mental capacity to assimilate, analyze, synthesize, integrate concepts and problem solve to formulate assessment and therapeutic judgments and to be able to distinguish deviations from the norm.
2. Sufficient postural and neuromuscular control, sensory function and coordination to perform appropriate physical examinations using accepted techniques; and accurately, safely and efficiently use equipment and materials during the assessment and treatment of patients.
3. The ability to communicate effectively and sensitively with patients and colleagues, including individuals from different cultural and social backgrounds. This includes, but is not limited to, the ability to establish rapport with patients and communicate judgments and treatment information effectively. Students must be able to understand and speak the English language at a level consistent with competent professional practice.
4. The ability to record the physical examination results and a treatment plan clearly and accurately.
5. The capacity to maintain composure and continue to function well during periods of high stress.
6. The perseverance, diligence and commitment to complete the athletic training education program as outlined and sequenced.
7. Flexibility and the ability to adjust to changing situations and uncertainty within the clinical situation.
8. Affective skills and appropriate demeanor and rapport that relate to professional education and quality patient care.

Once accepted into the athletic training education program, students will be required to have a brief physical exam to ensure he or she meets all program technical standards. The physical exam is conducted by the contracted medical director of the athletic training education program and is of no charge to the student.

The Health, Physical Education and Recreation Department admits a limited number of students to the athletic training program each year. If the number of eligible applicants exceeds the number of placements available, the faculty reserves the right to select the applicants who shall be admitted. The remaining eligible applicants may apply for admission the following year. Ordinarily, students may expect to complete the entire program in approximately three academic years after being admitted to the athletic training program, assuming that they complete all of their courses satisfactorily and in sequence.

Students are responsible for their own transportation to and from off-campus clinical assignments.

Retention in the Athletic Training Program

1. Maintain a minimum cumulative NMU grade point average of 2.50.
2. Successfully complete an athletic training (ATR) course on the first or second attempt (i.e., student may repeat an athletic training course only once).
3. Complete all courses in the major with a minimum grade of "C", except courses with the ATR prefix must be completed with a minimum grade of "B-".
4. Adhere to the Northern Michigan University Student Code.
5. Demonstrate a pattern of safe clinical practice commensurate with the student's educational experiences.

Students who withdraw from the program and wish to re-enter must follow the same application and admission procedures as all pre-athletic training students.

Department Grade Point Average Requirements

Community health education majors and management of health and fitness majors must achieve a grade of "C" (2.00) or higher in all major courses. In addition, students are expected to follow a lifestyle commensurate with their professional aspirations. Sports science majors must achieve a grade of "C" (2.00) or higher in all major courses.

See Retention in the Athletic Training Program (above) for information on this major.

Students majoring in secondary education health education or secondary education physical education or minoring in health education secondary education or physical education secondary education must maintain a grade point average of 2.70 or higher with no grade below a "C" in the professional education sequence, the major and/or minors and required cognates combined.

Students majoring in outdoor recreation leadership and management must achieve a grade of "C" (2.00) or higher in all major core courses.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Athletic Training Major

This major is designed to prepare and qualify students to take the National Athletic Trainers Association Board of Certification Examination. Upon obtaining certification, students will be qualified athletic trainers for positions in settings such as high schools, colleges, sports medicine clinics, rehabilitation centers or private industry. The program provides solid didactic and clinical education and boasts a fully equipped, 1044-square foot athletic training laboratory facility, campus athletic training rooms and a staff of 17 approved clinical instructors. The program is CAAHEP accredited.

Note: See Admissions Standards, Technical Standards and Retention Standards specific to this program as outlined above.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	60
BI 201 Human Anatomy	3
BI 202 Human Physiology	5
HL 101 Medical Terminology for Health Educators	1
HL 242 Emergency Health Care	2
HN 301 Nutrition for Health Professionals	4
PE 315 Physiology of Exercise	4
PE 317 Anatomical Kinesiology	2
PE 417 Biomechanics	2
PE 421 Physiological Aspects of Conditioning	3
PE 470 Psychological Aspects of Athletic Performance	2
ATR 110 Introduction to Athletic Training	1
ATR 201 Pathology and Pharmacology for the Athletic Trainer	2
ATR 241 Prevention and Care of Injuries	3
ATR 292A Introduction to Practicum I	1
ATR 292B Introduction to Practicum II	1
ATR 320 Advanced Assessment Techniques in Athletic Training I (Lower Quarter)	3
ATR 321 Advanced Assessment Techniques in Athletic Training II (Upper Quarter)	3
ATR 360 Therapeutic Exercise and Rehabilitation Techniques	4
ATR 380 Therapeutic Modalities	2
ATR 392A Intermediate Practicum I	2
ATR 392B Intermediate Practicum II	2
ATR 410 Athletic Training Policies and Procedures	2
ATR 490 Seminar in Athletic Training	2

ATR 492A Advanced Practicum I	2
ATR 292B Advanced Practicum II	2

Other Required Courses	12-13
HL 460 Human Disease	4
CH 105 Chemical Principles (4 cr.) [III] <i>or</i> CH 107 Introductory Chemistry I (4 cr.) [III] <i>or</i> CH 111 General Chemistry I (5 cr.) [III]	4-5
PY 100S, L, or H, Psychology as a Natural Science [III] <i>or</i> PY 100G Psychology as a Social Science (4 cr.) [IV]	4

Community Health Education Major

This major is designed to promote the development of health literacy and prepare students for entry-level community health education positions in line with appropriate professional standards. It teaches students to use health promotion and disease prevention interventions in ethical ways to affect the health knowledge, attitudes and behaviors of various target populations in a variety of settings (worksites, schools, hospitals/clinics, public health agencies, health clubs, geriatric centers and others).

Total Credits Required for Degree	124
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Liberal Studies	30-40
Health Promotion	2

Required Courses in Major	40
HL 101 Medical Terminology for Health Educators	1
HL 110 Introduction to Health and Fitness	2
HL 111 Personal Wellness	4
HL 240 Community Health	2
HL 242 Emergency Health Care	2
HL 250 Applied Health Theory	2
HL 311 Health Communication	2
HL 367 Program Planning and Evaluation	4
HL 430 Grant Writing for Health Educators	2
HL 440 Critical Issues in Health Education	3
HL 460 Human Disease Education	4
HN 210 Nutrition for Humans	4

Health Electives	8
<i>Choose any HL and/or HN courses with the exception of HL 246.</i>	

Other Required Courses	8-9
BI 104 Human Anatomy and Physiology (4 cr.) [III]	4
CH 105 Chemical Principles (4 cr.) [III] <i>or</i> CH 107 Introductory Chemistry I (4 cr.) [III] <i>or</i> CH 111 General Chemistry I (5 cr.) [III]	4-5

Minor	20
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Management of Health and Fitness Major

This major focuses on health and fitness promotion and disease prevention interventions. Completion of this program prepares students for entry-level jobs at worksites, hospitals/clinics, public health agencies, health clubs, geriatric centers and other places where health and fitness are promoted.

Total Credits Required for Degree	124
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Liberal Studies	30-40
Health Promotion	2
HP 200 Physical Well Being	1
HP 245 Weight Training and Conditioning	1

Required Courses in Major	55
HL 101 Medical Terminology for Health Educators	1
HL 110 Introduction to Health and Fitness	2
HL 111 Personal Wellness	4
HN 210 Nutrition for Humans	4
HL 215 Cardiovascular Risk Factors	1
HL 240 Community Health	2
HL 242 Emergency Health Care	2
HL 311 Health Communication	2
PE 230 Fitness Leadership	2
PE 315 Physiology of Exercise	4
PE 317 Anatomical Kinesiology	2
HL 367 Program Planning and Evaluation	4
HL 368 Programming in Health and Fitness	2
HN 415 Obesity and Weight Management	4
HL 440 Critical Issues in Health Education	3
HL 460 Human Disease Education	4
PE 471 Exercise Specialization	2
PE 472 Health and Exercise Leadership Skills	2
HL 491 Internship in Health and Fitness	2-4
HL/HN/PE/RE elective	0-2

Activities	4
<i>Select PE, HP, and/or RE activity courses. One must be an HP outdoor activity.</i>	

Other Required Courses	18-19
BI 104 Human Anatomy and Physiology [III]	4
MGT 240 Organizational Behavior and Management	3
MKT 230 Introduction to Marketing	3
PY 100S, L, or H, Psychology as a Natural Science [III] <i>or</i> PY 100G Psychology as a Social Science [IV]	4
CH 105 Chemical Principles (4 cr.) [III] <i>or</i> CH 107 Introductory Chemistry I (4 cr.) [III] <i>or</i> CH 111 General Chemistry I (5 cr.) [III]	4-5

Outdoor Recreation Leadership and Management Major

This major is for students who expect to pursue a career or graduate work in leisure services, outdoor recreation, protected area management or related fields. The program provides an academic foundation that meets professional standards in leisure studies, in general, and outdoor recreation, in particular. It also provides varied opportunities to develop additional competencies for more specialized entry-level positions in leisure and outdoor recreation settings. The learning environment uses both traditional and experiential learning strategies in a small-scale setting. Graduates may be self-employed or find employment in interpretive or outdoor education centers, organized camps, resorts, outfitters and guide services, colleges, adventure programs, county and city recreation and parks departments, state and federal land and water resource management agencies, and a variety of nonprofit organizations and businesses related to the field of outdoor recreation.

Total Credits Required for Degree	130
Liberal Studies	30-40
Health Promotion	2
HP 200 Physical Well Being	1
HP 239 or HP 239A, B, C, D or E Swimming	1
Required Courses in Major	56.5-57
Major Core	40
RE 110 Introduction to Leisure and Recreation	2
RE 155 Outdoor Living Skills	2
RE 250 Education in Outdoor Settings	3
RE 251 Adventure Activities, Facilitation and Group Behavior	3
RE 261 Leadership and Pedagogy in Leisure Services	3
RE 270 Outdoor Recreation Resources, Behavior and Values	3
RE 356 Wilderness Education Association Wilderness Stewardship	2
RE 362 Program Design in Leisure Services	3
RE 371 Protected Area Management*	3
RE 381 Interpretation I: Foundations and Guided Services*	4
RE 382 Interpretation II: Self-Guided Media*	3
RE 410 Leisure Through the Ages	2
RE 461 Management and Supervision of Leisure Services	4
RE 467 Evaluation/Research in Leisure Services	3
Professional Development Seminars	1-1.5
RE 191 Professional Development Seminar I (.5 cr.)	
RE 291 Professional Development Seminar II (.5 cr.)	
RE 391 Professional Development Seminar III (.5 cr.)	
<i>Students must enroll in one of the above every two semesters until graduation; RE 391 may be repeated.</i>	
Field Work/Internship/Plan of Study	15
RE 294 Field Work	3
RE 494 Internship	12
<i>Or approved program of study; courses can be any prefix but must be 300 level or higher.</i>	
Professional Assessment Seminar	0.5
RE 491 Professional Assessment Seminar	

Other Required Courses	12-13
AIS 101 Introduction to Information Resources	1
MKT 230 Introduction to Marketing	3
PY 305 Psychological Statistics [V] (or equivalent)	4
HL 242 Emergency Health Care (2 cr.) <i>or</i>	2-3
<i>Certification Required</i>	
RE 352 Wilderness First Responder (3 cr.)	
<i>Certification Required</i>	
RE 357 Teaching of Canoeing <i>or</i>	2
RE 358 Teaching of Rock Climbing <i>or</i>	
Two outdoor recreation HP courses.	

**See the "Course Descriptions" section of this bulletin for major and minor course prerequisites, particularly RE 371, RE 381 and RE 382, before selecting liberal studies and world cultures courses.*

Physical Education Major

The primary aim of this program is to prepare majors through the acquisition of knowledge, the development of skills and the development of a positive attitude toward activity and fitness that will enable them to perform effectively in a teaching role. Students will obtain knowledge about human movement, such as the physiology of muscular activity, the neural and kinesiological basis of movement, measurement and evaluation of motor performance and methodology of teaching motor skills; develop personal skills in a variety of activities in addition to teaching skills; and acquire sensitivity to, and understanding of, human relations in the learning environment by participating in a variety of laboratory and field experiences.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	4
HP 200 Physical Well Being	1
Health Promotion Elective	1
Health Promotion Electives	2
<i>Choose from the following:</i>	
HP 206 Backpacking (1 cr.)	
HP 209 Bicycling/Mt. Biking (1 cr.)	
HP 216 Skating-Beginning (1 cr.) <i>or</i>	
HP 216A Skating-Figure (1 cr.) <i>or</i>	
HP 216B Skating-Intermediate Figure (1 cr.)	
HP 217 Fly and Bait Casting (1 cr.)	
HP 222 Hiking (1 cr.)	
HP 228 Power Skating and Hockey (1 cr.)	
HP 230 Rock Climbing (1 cr.)	
HP 231 Skiing-Alpine (1 cr.)	
HP 231A Skiing-Intermediate Alpine (1 cr.)	
HP 231B Skiing-Cross Country (1 cr.)	
HP 233 Snowshoeing (1 cr.)	
HP 238 Winter Camping (1 cr.)	
HP 253 Adventure Based Learning (1 cr.)	

Required Courses in Major	32
Theory Courses	27
PE 110 Introduction to Physical Education	2
PE 217 Motor Development and Elementary School Physical Education	3
PE 230 Fitness Leadership	2
PE 241 Prevention and Care of Injuries	2
PE 310 Measurement and Evaluation in Physical Education	3
PE 315 Physiology of Exercise	4
PE 317 Anatomical Kinesiology	2
PE 318 Motor Learning and Secondary School Physical Education	3
PE 346 Adapted Physical Education	2
PE 411 Organization and Administration of Physical Education and Athletics	2
Physical Education Elective (300 level or above)	2
Activity Courses	5
PE 100 Rhythmic Movement Fundamentals (.5 cr.)	
PE 101 Volleyball (.5 cr.)	
PE 103 Tumbling Activities (.5 cr.)	
PE 199 Team Sports (.5 cr.)	
PE 200 Track and Field (.5 cr.)	
PE 201 Strength Training and Conditioning (.5 cr.)	
PE 205 Tennis (.5 cr.)	
PE 207 Badminton (.5 cr.)	
PE 211 Dance Survey (1 cr.)	
Other Required Courses	16
PY 100S, L, or H, Psychology as a Natural Science [III] <i>or</i> PY 100G Psychology as a Social Science [IV]	4
HL 111 Personal Wellness	4
HL 242 Emergency Health Care	2
HPER Electives	6
<i>Any six credits at the 200 level or above offered in academic majors in the department. And HL 110 and RE 110. Choose in consultation with adviser.</i>	
Minor	20

Secondary Education Health Education Major

Completion of this major's required health courses and the professional education sequence leads to certification as a secondary school teacher in health education. Students learn how to promote the development of health literacy and teach health promotion/health education courses in line with appropriate professional standards.

Total Credits Required for Degree	130
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	32
HL 110 Introduction to Health and Fitness	2
HL 111 Personal Wellness	4
HL 240 Community Health	2
HL 242 Emergency Health Care	2
HL 315 Consumer Health and Quackery	3
HL 340 School Health Program	3

HL 367 Planning and Evaluation for Health Education	4
HL 450 Human Sexuality: Educational Issues	3
HL 485 Drug Use and Abuse	3
HN 210 Nutrition for Humans	4
Health Electives	2
<i>Choose any HL or HN courses with the exception of HL 245 and HL 246.</i>	
Teaching Minor, minimum	24
Professional Education	32
ED 201 Introduction to Education	2
ED 231 Teaching and Learning in the Secondary Classroom	4
ED 301 Dimensions of American Education	2
ED 319 Teaching of Reading for Secondary Teachers	3
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	2
HL 350 Methods and Materials in Teaching Health Education	3
ED 361 Special Education and the General Classroom Teacher	2
ED 483 Educational Media Technology	2
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1

Secondary Education Physical Education Major

Completion of this major's required health and fitness courses and the professional education sequence leads to certification as a secondary school teacher in physical education. Students learn about human movement, such as the physiology of muscular activity, the neural and kinesiological basis of movement, measurement and evaluation of motor performance and methodology of teaching motor skills; how to develop personal skills in a variety of activities in addition to teaching skills; and acquire sensitivity to, and understanding of, human relations in the learning environment by participating in a variety of laboratory and field experiences.

Total Credits Required for Degree	133
Liberal Studies	30-40
Health Promotion	4
HP 200 Physical Well Being	1
Health Promotion Elective	1
Health Promotion Electives	2
<i>Choose from the following:</i>	
HP 206 Backpacking (1 cr.)	
HP 209 Bicycling/Mountain Biking (1 cr.)	
HP 216 Skating-Beginning (1 cr.) <i>or</i> HP 216A Skating-Figure (1 cr.) <i>or</i> HP 216B Skating-Intermediate Figure (1 cr.)	
HP 217 Fly and Bait Casting (1 cr.)	
HP 222 Hiking (1 cr.)	
HP 228 Power Skating and Hockey (1 cr.)	
HP 230 Rock Climbing (1 cr.)	
HP 231 Skiing-Alpine (1 cr.)	
HP 231A Skiing-Intermediate Alpine (1 cr.)	
HP 231B Skiing-Cross Country (1 cr.)	
HP 233 Snowshoeing (1 cr.)	
HP 238 Winter Camping (1 cr.)	
HP 253 Adventure-Based Learning (1 cr.)	

Required Courses in Major

Theory Courses

PE 110 Introduction to Physical Education	27
PE 217 Motor Development and Elementary School Physical Education	2
PE 230 Fitness Leadership	3
HL 242 Emergency Health Care <i>or</i> PE 241 Prevention and Care of Injuries	2
PE 310 Measurement and Evaluation in Physical Education	3
PE 315 Physiology of Exercise	4
PE 317 Anatomical Kinesiology	2
PE 318 Motor Learning and Secondary School Physical Education	3
PE 346 Adapted Physical Education	2
PE 411 Organization and Administration of Physical Education and Athletics	2
Physical Education Electives (300 level or above)	2

Activity Courses

PE 100 Rhythmic Movement Fundamentals	5
PE 101 Volleyball	.5
PE 103 Tumbling Activities	.5
PE 199 Team Sports	.5
PE 200 Track and Field	.5
PE 201 Strength Training and Conditioning	.5
PE 205 Tennis	.5
PE 207 Badminton	.5
PE 211 Dance Survey	1

Practicum

PE 407 Apprentice Teaching	1
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Teaching Minor, minimum

	24
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Professional Education

ED 201 Introduction to Education	32
ED 231 Teaching and Learning in the Secondary Classroom	2
ED 301 Dimensions in American Education	4
ED 319 Teaching of Reading for Secondary Teachers	2
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	3
PE 350 Methods and Materials in Teaching Physical Education	2
ED 361 Special Education and the General Classroom Teacher	3
ED 483 Educational Media and Technology	2
ED 430 Teaching in the Secondary School	2
ED 450 Seminar in Teaching	11
	1

33 Sports Science Major

This is a graduate school preparation program for students who have focused interests in sport and exercise science. The curriculum provides a strong foundation in the basic sciences of human biology, chemistry and physics and introductory-level study in the applied areas of exercise physiology, kinesiology/ biomechanics and sport nutrition. Successful graduates will have completed prerequisites for graduate study in more specific exercise science disciplines.

Total Credits Required for Degree 124

Liberal Studies	30-40
Health Promotion	4

Required Courses in Major 53

PE 111 Introduction to Sports Science	1
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
BI 201 Human Anatomy	3
BI 202 Human Physiology	5
PH 201 College Physics I [III]	5
CIS 110 Principles of Computer Information Systems [V]	4
HL 242 Emergency Health Care	2
HN 210 Nutrition for Humans	4
MA 171 Introduction to Probability and Statistics [V] <i>or</i> PY 305 Psychological Statistics [V]	4
PE 315 Physiology of Exercise	4
PE 317 Anatomical Kinesiology	2
PE 417 Biomechanics	2
PE 421 Physiological Training for Sport	3
PE 422 Sport Biomechanics	2
PE 470 Psychological Aspects of Athletic Performance	2

Sports Science Electives 20

Choose from the following: (or substituted electives approved by a sport science adviser).

BI 206 Human Genetics (3 cr.)	
BI 313 Cell Biology (4 cr.)	
BI 425 Endocrinology (3 cr.)	
BI 426 Human Histology (4 cr.)	
CH 220 Introduction to Organic Chemistry (5 cr.)	
CH 450 Introduction to Biochemistry (4 cr.)	
CH 452 Intermediary Metabolism (4 cr.)	
HL 485 Drug Use and Abuse (3 cr.)	
HN 415 Obesity and Weight Management (4 cr.)	
PE 241 Prevention and Care of Injuries (2 cr.)	
PE 498 Directed Study (1-4 cr.)	
PH 393 Experimental Instrumentation and Analysis (4 cr.)	
PY 204 Physiological Psychology (4 cr.)	

MINOR PROGRAMS

Emergency Medical Services Minor

This minor is designed to give students an opportunity to apply for a license in the State of Michigan as a basic-emergency medical technician. Students in this minor should choose BI 104 Human Anatomy and Physiology as their liberal studies laboratory course.

Total Credits Required for Minor	20
HL 101 Medical Terminology for Health Educators	1
HL 111 Personal Wellness	4
HL 245 Basic-EMT I	4
HL 246 Basic-EMT II	4
ATR 241 Prevention and Care of Athletic Injuries	3
Electives (HL, ATR, or RE 352)	4

Health and Nutrition Minor

Total Credits Required for Minor 20

Only courses with an HL or HN prefix are allowed in the minor. Students should develop their program of minor studies during their sophomore year. After the minor program is developed and approved by a health education adviser, a statement is sent to the Degree Audits Office. Modifications in the program may be made only with the approval of both major and minor advisers. At least six credits must be in courses numbered 300 or above.

Health Education Cluster Minor

For health education and management of health and fitness majors only.

Total Credits Required for Minor 24

Students with departmental approval may select a cluster of cognate courses from two or more departments totaling 24 credit hours. A list of courses comprising the cluster must be submitted to the Degree Audits Office before the second semester of the student's junior year. This option is not available to those in secondary education. At least six credits must be in courses numbered 300 or above.

Interpretation and Outdoor Education Minor

Total Credits Required for Minor	23.5
RE 110 Introduction to Leisure and Recreation	2
RE 155 Outdoor Living Skills	2
RE 191 Professional Development Seminar I	0.5
RE 250 Education in Outdoor Settings	3
RE 261 Leadership and Pedagogy in Leisure Services	3
RE 270 Outdoor Recreation Resources, Behavior and Values	3
RE 371 Protected Area Management*	3
RE 381 Interpretation I: Foundations and Guided Services*	4
RE 382 Interpretation II: Self-Guided Media*	3

*Check course descriptions for prerequisites and consult an ORLM adviser.

Outdoor Leadership Minor

Total Credits Required for Minor	26.5-27.5
RE 110 Introduction to Leisure and Recreation	2
RE 155 Outdoor Living Skills	2
RE 191 Professional Development Seminar I	0.5
RE 250 Education in Outdoor Settings	3
RE 251 Adventure Activities, Facilitation and Group Behavior	3
RE 261 Leadership and Pedagogy in Leisure Services	3
RE 270 Outdoor Recreation Resources, Behavior and Values	3
RE 356 Wilderness Education Association Wilderness Stewardship	2
RE 455 Wilderness Education Association National Standard Program I	2
RE 456 Wilderness Education Association National Standard Program II	2
RE 457 Wilderness Education Association National Standard Program III	2
HL 242 Emergency Health Care (2 cr.)	2-3
<i>Certification Required or</i>	
RE 352 Wilderness First Responder (3 cr.)	
<i>Certification Required</i>	

Outdoor Recreation Minor

Total Credits Required for Minor	20.5
RE 110 Introduction to Leisure and Recreation	2
RE 155 Outdoor Living Skills	2
RE 191 Professional Development Seminar I	0.5
RE 250 Education in Outdoor Settings	3
RE 270 Outdoor Recreation Resources, Behavior and Values	3
Recreation Electives	10
<i>All courses must have an RE prefix. At least one course must be at the 300-400 level.</i>	

Outdoor Recreation Leadership Management Cluster Minor

For outdoor recreation leadership and management majors only.

Total Credits Required for Minor	20-24
<i>Students may elect a cluster of courses from two or more departments, one of which may be the HPER Department, in lieu of a regular minor or electives. Courses must be approved by the department's outdoor recreation division faculty. A list of courses in the cluster must be submitted by the student to the Degree Audits Office before the first semester of the student's senior year. An appropriate representative of any department contributing eight or more credits to the cluster must sign off on the list.</i>	

Physical Education Coaching Emphasis Minor

This minor is open only to non-teaching degree students.

Total Credits Required for Minor	25-26
Health Promotion Electives	2
<i>Choose from the following:</i>	
HP 206 Backpacking (1 cr.)	
HP 209 Bicycling/Mountain Biking (1 cr.)	
HP 216 Skating-Beginning (1 cr.) <i>or</i>	
HP 216A Skating-Figure (1 cr.) <i>or</i>	
HP 216B Skating-Intermediate Figure (1 cr.)	
HP 217 Fly and Bait Casting (1 cr.)	
HP 222 Hiking (1 cr.)	
HP 228 Power Skating and Hockey (1 cr.)	
HP 230 Rock Climbing (1 cr.)	
HP 231 Skiing-Alpine (1 cr.)	
HP 231A Skiing-Intermediate Alpine (1 cr.)	
HP 231B Skiing-Cross Country (1 cr.)	
HP 233 Snowshoeing (1 cr.)	
HP 238 Winter Camping (1 cr.)	
HP 253 Adventure-Based Learning (1 cr.)	
Theory Courses	20-21
PE 110 Introduction to Physical Education	2
PE 241 Prevention and Care of Injuries	2
PE 315 Physiology of Exercise	4
PE 317 Anatomical Kinesiology	2
PE 340 Principles of Coaching	2
PE 411 Organization and Administration of Physical Education and Athletics	2
HL 242 Emergency Health Care	2
PE 322 Theory of Basketball <i>or</i>	2
PE 323 Theory of Football <i>or</i>	
PE 325 Theory of Swimming <i>or</i>	
PE 335 Theory of Volleyball	
PE 230 Fitness Leadership (2 cr.) <i>or</i>	2-3
PE 217 Motor Development and Elementary School Physical Education (3 cr.) <i>or</i>	
PE 310 Measurement and Evaluation in PE (3 cr.) <i>or</i>	
PE 318 Motor Learning and Secondary School PE (3 cr.) <i>or</i>	
PE 321 Athletic-Officiating (2 cr.) <i>or</i>	
PE 346 Adapted Physical Education (2 cr.) <i>or</i>	
PE 470 Psychology Aspects of Athletic Performance (2 cr.) <i>or</i>	
PE 417 Biomechanics (2 cr.)	
Activity Courses	3
<i>Choose from the following:</i>	
PE 101 Volleyball (.5 cr.)	
PE 103 Tumbling Activities (.5 cr.)	
PE 199 Team Sports (.5 cr.)	
PE 200 Track and Field (.5 cr.)	
PE 201 Strength Training and Conditioning (.5 cr.)	
PE 205 Tennis (.5 cr.)	
HP 245 Weight Training and Conditioning (1 cr.)	
HP 245A Weight Training-Intermediate (1 cr.)	
HP 247 Yoga (1 cr.)	
HP 226C Aerobic Dance (1 cr.)	
HP 231 Skiing-Alpine (1 cr.)	
HP 231A Skiing-Intermediate Alpine (1 cr.)	
HP 231B Skiing-Cross Country (1 cr.)	

Note: This is not a coaching minor, but physical education minor with a coaching emphasis. Students who select this minor may count up to 10 credits of HP courses toward graduation.

**Noncredit Practicum Requirement: Students pursuing this minor are required to complete one of the following practicum options:*

1. Assist a head coach in a sport during the student teaching assignment.
2. Participate on a college varsity athletic team for a minimum of two competitive seasons.
3. Assist a Northern Michigan University head coach for a minimum of one competitive season.
4. Perform as a coach in a public/private school or summer camp.

Physical Education Minor Secondary Education Physical Education Minor

This minor is available to students in both secondary education and non-teaching programs.

Total Credits Required for Minor	25-26
Health Promotion Electives	2
<i>Choose from the following:</i>	
HP 206 Backpacking (1 cr.)	
HP 209 Bicycling/Mountain Biking (1 cr.)	
HP 212 Flatwater Canoeing (1 cr.)	
HP 216 Skating-Beginning (1 cr.) <i>or</i>	
HP 216A Skating-Figure (1 cr.) <i>or</i>	
HP 216B Skating-Intermediate Figure (1 cr.)	
HP 217 Fly and Bait Casting (1 cr.)	
HP 222 Hiking (1 cr.)	
HP 228 Power Skating and Hockey (1 cr.)	
HP 230 Rock Climbing (1 cr.)	
HP 231 Skiing-Alpine (1 cr.)	
HP 231A Skiing-Intermediate Alpine (1 cr.)	
HP 231B Skiing-Cross Country (1 cr.)	
HP 233 Snowshoeing (1 cr.)	
HP 238 Winter Camping (1 cr.)	
HP 253 Adventure-Based Learning (1 cr.)	
Theory Courses	12
PE 110 Introduction to Physical Education	2
PE 217 Motor Development and Elementary School Physical Education <i>or</i>	3
PE 318 Motor Learning and Secondary School Physical Education	
PE 310 Measurement and Evaluation in Physical Education	3
PE 315 Physiology of Exercise	4
Health/Physical Education Electives	4-5
<i>Choose from the following:</i>	
HL 242 Emergency Health Care (2 cr.)	
PE 217 Motor Development and Elementary School Physical Education (3 cr.)	
PE 230 Fitness Leadership (2 cr.)	
PE 241 Prevention and Care of Injuries (2 cr.)	
PE 317 Anatomical Kinesiology (2 cr.)	
PE 318 Motor Learning and Secondary School Physical Education (3 cr.)	
PE 346 Adapted Physical Education (2 cr.)	
PE 411 Organization and Administration in Physical Education (2 cr.)	
Physical Education Electives	2
300-400 level	

Activity Courses 5*Choose from the following:*

- PE 101 Volleyball (.5 cr.)
- PE 103 Tumbling Activities (.5 cr.)
- PE 199 Team Sports (.5 cr.)
- PE 200 Track and Field (.5 cr.)
- PE 201 Strength Training and Conditioning (.5 cr.)
- PE 205 Tennis (.5 cr.)
- HP 226C Aerobic Dance (1 cr.)
- HP 231 Skiing-Alpine (1 cr.)
- HP 231A Skiing-Intermediate Alpine (1 cr.)
- HP 231B Skiing-Cross Country (1 cr.)
- HP 245 Weight Training and Conditioning (1 cr.)
- HP 245A Weight Training-Intermediate (1 cr.)
- HP 247 Yoga (1 cr.)

Note: Students who minor in this minor may count up to 10 credits of HP courses toward graduation.

Secondary Education Health Education Minor

This option is available only to students in secondary education.

Total Credits Required for Minor	27
HL 110 Introduction to Health and Fitness Education	2
HL 111 Personal Wellness	4
HL 242 Emergency Health Care	2
HL 315 Consumer Health and Quackery	3
HL 340 School Health Program	3
HL 350 Methods and Materials in Teaching Health Education	3
HL 367 Planning and Evaluation For Health Education	4
HL 450 Human Sexuality	3
HL 485 Drug Use and Abuse	3

HISTORY

DEPARTMENT OFFICE

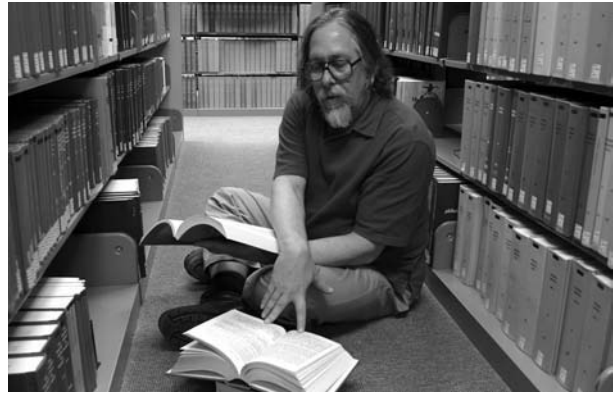
208 Cohodas Administrative Center

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History at NMU

The motto of the NMU History Department is: "We Study the Human Condition—Its Problems and Its Promise." The department's primary objective is to study the experience of human beings during past ages in order to obtain a better understanding of the nature of the human condition. Although it is not possible to predict the future, the faculty believes it essential to be aware of the views, aspirations and struggles of prior human communities to better understand the problems and promises of today. The course offerings reflect the diversity of human history as the department faculty members have come to know it through research and teaching.

The department offers three undergraduate majors and three minors. It also participates in an international studies and a social science major. The international studies major provides students with courses and experiences that enhance their opportunities for work abroad or in international organizations. (See "International Studies" section of this bulletin.)

Student Organizations

- Phi Alpha Theta Honorary Society
- Student Michigan Education Association

Department Facilities

The Lydia Olson Library houses more than 51,000 historical items and more than 100 historically related periodicals and journals. Students also have access to materials held by other libraries and museums in Marquette County. A large collection of audiovisual materials also enriches classroom work.

Department/Program Policies

Students in history are encouraged to complete at least one year of study in a language. Language study could be undertaken to satisfy either the formal studies requirement or, ideally, the four-semester requirement for the bachelor of arts degree.

The department strongly recommends that its students work closely with their academic advisers in order to create the best possible individual programs in their majors and minors and successfully meet all other requirements for graduation.

Grade Point Average Requirements

Students majoring in secondary education history or secondary education social studies, or minoring in history education, must maintain a grade point average of 2.70 or greater with no grade below a "C" in the professional education sequence, the major and/or minors and required cognates combined.

Recommendations for Graduate-Bound Students

Students who are planning graduate work in history choose from the same history courses available to meet the requirements for either the history or secondary education history majors. In addition, the department recommends that they do the following:

1. Take courses in at least one foreign language through the 200 level (two languages if going on to the doctorate). The exception to this recommendation would be if a student were going to a graduate school that allowed another option in place of a language.
2. Review the admissions requirements of prospective school(s). This could include direct contact, either by mail or by a visit, arranged beforehand.
2. Take courses in a variety of areas from several instructors. It is not wise to specialize too much at the bachelor's level. Students should have the opportunity to observe several different teaching styles and areas. Graduate schools may prefer this as a criterion for admission.
3. Confer with the History Department faculty member who is designated to advise graduate-bound students. Currently this is Chet DeFonso.
4. Attend any sessions held by Phi Alpha Theta that orient students about graduate schools.
5. Take HS 410 Seminar in Approaches to History.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

History Major

This major provides the necessary background for professional careers in post-secondary teaching, law, politics, business, the ministry, government service, journalism, publishing, archival work, museum work or historic preservation.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	36
Basic Surveys	4
<i>Choose from the following:</i>	
HS 101 History of Western Civilization to 1600 (4 cr.) [II]	
HS 102 History of Western Civilization Since 1600 (4 cr.) [III]	
<i>Choose from the following:</i>	4
HS 126 The United States to 1865 (4 cr.) [IV]	
HS 127 The United States Since 1865 (4 cr.) [IV]	
<i>Choose from the following:</i>	4
HS 104 Third World in Historical Perspective (4 cr.) [IV]	
HS 234 Indigenous People of Latin America (4 cr.) [II]	
HS 251 Latin American Civilization (4 cr.) [II]	
HS 252 Arab-Islamic History (4 cr.) [II]	
HS 254 Introduction to the History of Africa (4 cr.) [II]	
HS 256 Approaching China (4 cr.) [II]	
HS 258 The Emergence of Modern Japan (4 cr.) [II]	
HS 200 Historical Thinking and Writing	4
HS Electives from 200-400 levels	16
<i>No more than two courses at the 200 level.</i>	
HS 490 Junior/Senior Seminar in History	4
Minor	20

Secondary Education History Major

Completion of this major's required history courses, a teaching minor and the professional education sequence leads to certification as a secondary school teacher in history.

Total Credits Required for Degree	131-135
Liberal Studies	30-40
Health Promotion	2
Required Courses Major	36
<i>Choose from the following:</i>	4
HS 101 History of Western Civilization to 1600 (4 cr.) [II]	
HS 102 History of Western Civilization Since 1600 (4 cr.) [III]	
HS 127 The United States Since 1865 [IV]	4
<i>Choose from the following:</i>	4
HS 104 The Third World in Historical Perspective (4 cr.) [IV]	
HS 234 Indigenous People of Latin America (4 cr.) [II]	
HS 251 Latin American Civilization (4 cr.) [II]	
HS 252 Arab-Islamic History (4 cr.) [II]	
HS 254 Introduction to the History of Africa (4 cr.) [II]	
HS 256 Approaching China (4 cr.) [II]	
HS 258 The Emergence of Modern Japan (4 cr.) [II]	
HS 200 Historical Thinking and Writing	4
HS Electives from 200-400 levels	16
<i>No more than two courses at the 200 level.</i>	
HS 490 Junior/Senior Seminar in History	4
Teaching Minor, minimum	20-24
Professional Education	33
ED 201 Introduction to Education	2
ED 231 Teaching and Learning in the Secondary Classroom	4
ED 301 Dimensions of American Education	2
ED 319 Teaching of Reading for Secondary Teachers	3
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	2
HS 350 Methods and Materials in Teaching Social Studies Education	4
ED 361 Special Education and the General Classroom Teacher	2
ED 483 Educational Media Technology	2
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1

Secondary Education Social Studies Major

Completion of this major's required courses, a teaching minor and the professional education sequence leads to certification as a secondary school teacher in social studies.

Total Credits Required for Degree	131-135
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major*	36
Economics	8
<i>Choose from the following:</i>	
EC 101 The American Economy (4 cr.) [IV]	
EC 201 Microeconomic Principles (4 cr.)	
EC 202 Macroeconomic Principles (4 cr.)	
Geography	8
<i>Choose from the following:</i>	
ENV 101 Introduction to Environmental Science (4 cr.) [III]	
GC 164 Human Geography (4 cr.) [IV]	
History	8
<i>Choose from the following:</i>	
HS 101 History of Western Civilization to 1600 (4 cr.) [II] <i>or</i>	
HS 102 History of Western Civilization Since 1600 (4 cr.) [II]	
HS 127 The United States Since 1865 (4 cr.) [IV]	
Political Science	8
<i>Choose from the following:</i>	
PS 101 Introduction to Political Science (4 cr.) [IV]	
PS 105 American Government (4 cr.) [IV]	
PS 203 Comparative Government and Politics (4 cr.)	
PS 309 State and Local Government (4 cr.)	
EC/GC/HS/PS Electives	4
<i>Must be a 300 level course if PS 309 is not taken above.</i>	
Teaching Minor, minimum	20-24
Professional Education	33
ED 201 Introduction to Education	2
ED 231 Teaching and Learning in the Secondary Classroom	4
ED 301 Dimensions of American Education	2
ED 319 Teaching of Reading for Secondary Teachers	3
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	2
HS 350 Methods and Materials in Teaching Social Studies Education	4
ED 361 Special Education and the General Classroom Teacher	2
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1
ED 483 Educational Media and Technology	2

*Transfer students can complete the major by taking two courses—three semester hours each, minimum—in each of the four required areas. The additional credits comprising the 36 required hours may be accumulated by taking courses in any one or more of the four required areas.

MINOR PROGRAMS

History Minor

Total Credits Required for Minor	20
HS Electives	16
<i>No more than 12 credit hours at the 100 level.</i>	
HS Electives (300 level or above)	4

Public History Minor

Total Credits Required for Minor	24*
HS 200 Historical Thinking and Writing**	4
HS 380 Public History	4
ALS 330 Archival Management	4
HS 491 Internship***	4
Electives	8
<i>Choose from the following:</i>	
HS 335 Michigan History (4 cr.)	
HS 336 History of the Upper Peninsula (4 cr.)	
HS 363 Canadian History (4 cr.)	
AD 200 Native American Art and Architecture of the Great Lakes (4 cr.)	
AD 260 Why America Looks This Way (4 cr.)	
<i>*History majors may have a public history minor; however, courses cannot be double counted.</i>	
<i>**Waived if student is a history major.</i>	
<i>***Enrollment requires faculty and department head approval.</i>	

Secondary Education History Minor

Total Credits Required for Minor	20-24
HS 101 History of Western Civilization to 1600 <i>or</i>	4
HS 102 History of Western Civilization Since 1600	
HS 104 The Third World in Historical Perspective	4
HS 127 The United States Since 1865	4
HS 200 Historical Thinking and Writing	4
HS Elective (200-400 level)	4
HS 350 Methods and Materials in Teaching Social Studies Education*	4
<i>*Not required if major is social studies education, economics education, geography education or political science education.</i>	

INTERNATIONAL STUDIES PROGRAM

ADVISING OFFICE

Modern Languages and Literatures

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Department Head: Timothy G. Compton •

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International Studies at NMU

The departments of Art and Design, Communication and Performance Studies, Economics, English, Modern Languages and Literatures, Geography, History, Philosophy, Political Science and Public Administration, Sociology and Social Work and the College of Business cooperatively sponsor the international studies major. This broad major provides students with a basic understanding of modern world history, international relations, world cultures and world religions. Part of this learning, as well as intensive language instruction, takes place abroad.

As students advance in the international studies major, they deepen their understanding of particular parts of the world and specialized issues of international importance. The study abroad and language requirements of the major ensure that NMU students experience internationalism rather than just learn about it in classrooms.

The capstone course for the international studies major, IP 490 International Studies Seminar, offers students the opportunity to make comparisons and contrasts that integrate their study-abroad experience into their academic program.

Academic direction for the international studies major and minor as well as the Latin American studies minor is provided by the International Studies Academy Advisory Committee, which has members from many departments and is currently chaired by Dr. Timothy Compton, head of the Modern Languages and Literatures Department, e-mail tcompton@nmu.edu.

Student Organization

- All Nations Club

Department/Program Policies

International studies majors must demonstrate proficiency in a language other than English at the 202 level or higher. This can be accomplished by completing a 202 (or 300, 305, or 400) course in a language or by verification through the Modern Languages and Literatures Department (i.e. determined by examination or through some other means of confirming proficiency).

International studies majors must have a study-abroad experience, normally in a non-English speaking country, for at least 12 weeks, including a minimum of nine weeks of study through an approved college-level institution. Please see the Study Abroad section of this bulletin. This must be approved in writing by an international studies academic adviser. Up to 12 credits may be applied to the area and advanced disciplinary studies requirement of the major with prior approval of the academic adviser. International students or resident aliens who wish to major in international studies may petition the international studies academic adviser for exemption from the requirement for study abroad.

A course in economics is required for international studies majors. (An EC course from foundations of social sciences is recommended.)

A program approval for international studies majors and minors must be prepared and approved by an academic adviser from the Modern Languages and Literatures Department and a copy forwarded to the Registrar's Office. The Registrar's Office is not able to perform a degree audit until it receives this form.

BACHELOR DEGREE PROGRAM

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

International Studies Major

This major gives students a broad view of the world with an emphasis on developing regions. The core ensures that students have broad exposure to major world religions, international politics and government, recent global history, and relationships between geography, culture, arts and society. This major is a good point of departure for pursuing an international-related master's degree and/or many careers, including international business, diplomacy and fields related to human development.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	44
Core	24
GC 164 Human Geography [IV]	4
AN 100 Introduction to Socio-Cultural Anthropology [IV] or BC 415 Intercultural Communication	4
HS 104 The Third World [IV]	4
PL 270 World Religions [IV]	4
PS 206 International Relations or PS 203 Comparative Government	4
IP 490 International Studies Seminar	4
Area and Advanced Disciplinary Studies	20
<i>Choose from the following, with no more than 12 credits from one department and a minimum of 8 credits at the 300-400 level. Courses from the minor field of study cannot be used.</i>	
AD 265 Art and Architecture of Japan (4 cr.) [VI]	
AD 300 Japan and the West (4 cr.) [VI]	
AN 210 People, Culture and Nature (4 cr.) [IV]	
AN 320 Native Peoples of North America (4 cr.) [IV]	
BC 325 Communication and Performance in Africa (4 cr.) [VI]	
BC 420 Global Communication (4 cr.)	
CJ 426 Comparative Criminal Justice (4 cr.)	
EC 425 International Economics (4 cr.)	
EN 311 World Literature (4 cr.) [II]	
EN 411Z Topics in World Literature (3-4 cr.) [II]	
FR 310 Introduction to French Civilization and Culture (4 cr.) [III]	
GC 220 Economic Geography (4 cr.)	
GC 300 Regional Studies (4 cr.) [IV]	
GC 400 Political Geography (4 cr.)	
GR 310 Introduction to German Civilization and Culture (4 cr.) [II]	
HS 234 Indigenous People of Latin America (4 cr.) [II]	

HS 251 Latin American Civilization (4 cr.) [II]	
HS 252 Arab Islamic History (4 cr.) [II]	
HS 254 Introduction to the History of Africa (4 cr.) [II]	
HS 256 Approaching China (4 cr.) [II]	
HS 258 The Emergence of Modern Japan (4 cr.)	
HS 312 Revolutionary Russia (4 cr.)	
HS 360 Chinese Revolution, 1800-Present (4 cr.)	
HS 362 Mexico (4 cr.) [II]	
HS 363 Canadian History and Culture (4 cr.)	
IP 285 Study Abroad: Special Topics (1-12 cr.)	
IP 286 Study Abroad: Special Topics (1-12 cr.) (Graded S/U)	
IP 485 Study Abroad: Special Topics (1-12 cr.)	
IP 486 Study Abroad: Special Topics (1-12 cr.) (Graded S/U)	
MKT 466 International Marketing (3 cr.)	
MGT 475 International Business (3 cr.)	
PS 299 Model U.N. (2 cr.)	
<i>May be taken twice as country of study varies.</i>	
PS 312 War and Peace in the 21st Century (4 cr.) [IV]	
PS 404 Politics of East and Southeast Asia (4 cr.)	
SN 310 Introduction to Spanish Civilization and Culture (4 cr.)	
SN 314 Contemporary Latin American Culture (4 cr.) [II]	
SO 351 Social Change (4 cr.) [IV]	

Minor 20

MINOR PROGRAMS

International Studies Minor

International studies minors must demonstrate proficiency in a language other than English at the 102 level or higher. This can be accomplished by completing a 102 (or 201, 202, 300, 305 or 400) course in a language, or by verification through the Modern Languages and Literatures Department (i.e. determined by examination or through some other means of confirming proficiency).

Total Credits Required for Minor	24
Core	16
AN 100 Introduction to Sociocultural Anthropology or GC 164 Human Geography	4
HS 104 The Third World	4
PL 270 World Religions	4
PS 203 Comparative Government or PS 206 International Relations	4
Area and Advanced Disciplinary Studies	8
<i>Choose 8 credit hours from the following: At least one course must be at the 300-400 level. Courses from the major field of study or other minors cannot be used.</i>	
AD 265 Art and Architecture of Japan (4 cr.)	
AD 300 Japan and the West (4 cr.)	
AN 210 People, Culture and Nature (4 cr.)	
AN 320 Native Peoples of North America (4 cr.)	
BC 325 Communication and Performance in Africa (4 cr.)	
BC 415 Intercultural Communication (4 cr.)	

BC 420 Global Communication (4 cr.)
 EC 425 International Economics (4 cr.)
 EN 311 World Literature (4 cr.)
 FR 310 Introduction to French Civilization and Culture (4 cr.)
 GC 220 Economic Geography (4 cr.)
 GC 300 Regional Studies (4 cr.)
 GC 400 Political Geography (4 cr.)
 GR 310 Introduction to German Civilization and Culture (4 cr.)
 HS 251 Latin American Civilization (4 cr.)
 HS 252 Arab Islamic History (4 cr.)
 HS 254 Introduction to the History of Africa (4 cr.)
 HS 256 Approaching China (4 cr.)
 HS 258 The Emergence of Modern Japan (4 cr.)
 HS 312 Revolutionary Russia (4 cr.)
 HS 360 Chinese Revolution, 1800-Present (4 cr.)
 HS 362 Mexico (4 cr.)
 HS 363 Canadian History and Culture (4 cr.)
 IP 285 Study Abroad: Special Topics (1-12 cr.)
 IP 286 Study Abroad: Special Topics (1-12 cr.) (Graded S/U)
 IP 485 Study Abroad: Special Topics (1-12 cr.)
 IP 486 Study Abroad: Special Topics (1-12 cr.) (Graded S/U)
 MKT 466 International Marketing (3 cr.)
 MGT 475 International Business (3 cr.)
 PS 299 Model U.N. (2 cr.)
May be taken twice as country of study varies.
 PS 404 Politics of East and Southeast Asia (4 cr.)
 SN 310 Introduction to Spanish Civilization and Culture (4 cr.)
 SN 314 Contemporary Latin American Culture (4 cr.)
 SO 351 Social Change (4 cr.)

**Native speakers of Spanish must take POR 210, and native speakers of Portuguese must take SN 202. Spanish majors and minors must take the Portuguese component of the core.*

***Any course used in the core cannot be used as an elective.*

Latin American Studies Minor

This interdisciplinary minor allows students to take classes dealing with Latin America from a variety of departments on campus.

Total Credits Required for Minor	24
Core	8
HS 251 Latin American Civilization <i>or</i> SN 314 Modern Latin American Culture	4
SN 202 Intermediate Spanish II <i>or</i> POR 210 Intermediate Portuguese*	4
Electives	16
<i>Electives must come from at least three disciplines/prefixes.</i>	
<i>Choose 16 credit hours from the following:</i>	
EN 311Z World Literature: Latin America (4 cr.)	
EN 411Z World Literature: Latin America (4 cr.)	
GC 300 Regional Studies: Latin America (4 cr.)	
HS 251 Latin American Civilization** (4 cr.)	
HS 361 History of Americas (4 cr.)	
HS 362 Mexico (4 cr.)	
IP 485 Special Topics: Related to Latin America (1-8 cr.)	
IP 486 Study Abroad: Special Topics (1-12 cr.)	
POR 210 Intermediate Portuguese** (4 cr.)	
SN 312 Introduction to Spanish America (4 cr.)	
SN 314 Contemporary Latin American Culture** (4 cr.)	
SN 429 Twentieth Century Literature of Spanish America (4 cr.)	
SN 495 Special Topics: Related to Latin America (1-4 cr.)	

LIBERAL ARTS AND SCIENCES PROGRAM

PROGRAM OFFICE

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Liberal Arts and Sciences Degree Programs at NMU

The university offers a bachelor of arts/bachelor of science degree with a major in liberal arts and sciences. It is designed particularly for nontraditional students and students who are already employed, but who wish to complete an undergraduate degree to enhance their own education and/or professional development.

The university also offers an associate of arts degree with a liberal arts and sciences concentration for students seeking a two-year degree. Designed for both new freshmen and returning students, the program is appropriate for people uncertain about their final degree goals. Combining breadth with flexibility, the program introduces students to the major areas of college study and lets them accumulate credits toward a degree without first committing to a major field of study. This two-year program can serve as the basis for later work toward a four-year baccalaureate program.

Bachelor of Arts Degree/Bachelor of Science Degree

The bachelor's degree is intended to provide an opportunity for students who are willing to accept responsibility for designing their own degree program. The liberal arts and sciences major is for self-motivated students who seek to create sense and order out of a rich and varied liberal studies curriculum.

Potential students should recognize that this program is not appropriate for everyone since it may not be an adequate preparation for admission to certain graduate programs or for careers that require specified course sequences and specialization associated with traditional degree programs. However, when properly planned, this major can serve as an exceptional educational experience for many students.

Associate of Arts Degree

This degree program parallels in content the core curriculum requirements at many colleges and universities. Its requirement of two courses in each of four content areas (foundations of communication, foundations of humanities, foundations of mathematics/sciences and foundations of social sciences) provides students with the basis for later, more specialized work. The program also enables students who are uncertain



about career plans to sample various courses and determine which areas of study appeal to them most. These areas may then be explored further through electives carefully chosen in cooperation with the program director.

Program Policies

Bachelor of Arts/Bachelor of Science

Applicants usually have completed 60 credits of college work, including 40 credit hours of the university's liberal studies requirements, with a minimum grade point average of 2.25. At least 30 credit hours must be completed after the applicant is admitted into the program, regardless of the number of hours already completed.

Associate of Arts

Students may be admitted to the program if they submit records verifying that they have met the standards for admission to baccalaureate programs listed in this bulletin. After admission to the program, students must complete at least 16 more credit hours, regardless of the number of hours already completed. A "C" (2.00) average must be maintained for all program courses.

Note: Courses in both programs must be planned in consultation with the program director.

BACHELOR DEGREE PROGRAM

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Liberal Arts and Sciences Major Option 1

The 60-credit major will include at least 16 credits in three of the following five areas: humanities, social sciences, communication studies, natural sciences/mathematics and fine arts, with at least 28 credits at or above the 300 level.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Major	60

Liberal Arts and Sciences Major Option 2

The 44-credit major will include at least 12 credits in three of the following five areas: humanities, social sciences, communication studies, natural sciences/mathematics and fine arts with at least 28 credits at or above 300.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Major	44
Minor (approved by director)	20

Note: Students in either degree program may not use any course to meet more than one degree requirement. Courses in the program concentration must be approved by the program director, who will submit the approved list to the Degree Audits Office. Any changes in the program must have the approval of the director.

ASSOCIATE DEGREE PROGRAM

Liberal Arts and Sciences Associate of Arts

Total Credits Required for Degree	64
Liberal Studies	32
EN 111 College Composition I	4
EN 211 College Composition II	4
Humanities Electives	8
<i>Must be from more than one discipline.</i>	
Natural Science/Mathematics Electives	8
<i>Must be from more than one discipline; one course must be a laboratory science.</i>	
Social Sciences	8
<i>Must be from more than one discipline.</i>	
Health Promotion	1
HP 200 Physical Well Being	1
Program Electives	31
<i>Note: Students may not use any course to meet more than one degree requirement. Courses in the program concentration must be approved by the program director, who will submit the approved list to the Degree Audits Office. Any changes in the program must have the approval of the director.</i>	

Upper-level Courses Suitable for Bachelor's Degree in Liberal Arts and Sciences

All language courses at the 300 level and above are acceptable. Substitutions can be made with the approval of the director. Lower-level courses (100-200) must be chosen from the approved list of liberal studies courses. Students must satisfy all prerequisites for courses.

Foundations of Humanities

Communication and Performance Studies

SP 402 Communication Criticism
TH 385 Theatre in Perspective: The Stratford Festival Stage

Engineering Technology

TE 351 Humanity and Technology

English

EN 300 Creative Writing: Fiction
EN 301 Creative Writing: Poetry
EN 302 Nonfiction Writing
EN 303 Technical and Professional Writing
EN 310 Literature and the Bible
EN 311 World Literature in English
EN 312 Medieval British Literature
EN 314 Traditional Oral Literatures: Selected Native American Cultures
EN 316 Native American Novels and Poetry
EN 317 Native American Drama
EN 320 Renaissance British Literature
EN 322 Restoration Eighteenth Century British Literature
EN 330 British Romantic Literature

EN 340 Victorian Literature
 EN 360 Modern British Literature
 EN 361 Studies in Genre, Poetry
 EN 362 Studies in Genre, Narrative
 EN 363 Studies in Genre, Drama
 EN 364 Studies in Genre, Film
 EN 370 American Literature I: Columbus to the American Revolution (1492-1800)
 EN 371 American Literature II: Emergent National Voices (1800-1865)
 EN 372 American Literature III: Realism, Naturalism, to WWI (1865-1930)
 EN 373 American Literature IV: Contemporary Vistas (1930-Present)
 EN 375 Diverse Traditions in American Literature
 EN 380 Contemporary Literature
 EN 385 Theatre in Perspective: The Stratford Festival Stage
 EN 381 Contemporary Dramatic Literature
 EN 400 Narrative Writing Seminar
 EN 401 Poetry Writing Seminar
 EN 402 Nonfiction Writing Seminar
 EN 403 Drama and Script Writing Seminar
 EN 404 The English Language
 EN 405 Technical Writing Seminar
 EN 411 Topics in World Literature
 EN 412 Chaucer
 EN 420 Shakespeare
 EN 422 Milton
 EN 430 Major Authors
 EN 440 Topics in Gender in Literature
 EN 490 Seminar
 EN 493 Seminar: Issues in Literature

History

HS 300 Ancient Egypt
 HS 302 Ancient Rome
 HS 304 The Middle Ages
 HS 305 Renaissance-Reformation
 HS 307 Early Modern Europe, 1600-1815: A Thematic Approach
 HS 308 Modern Europe, 1815-Present: A Thematic Approach
 HS 312 Revolutionary Russia
 HS 314 Modern Britain, 1485-Present
 HS 315 Imperialism
 HS 316 The Holocaust
 HS 325 Colonial America in the Atlantic World
 HS 326 America from Revolution to Jackson
 HS 327 Civil War Era in America
 HS 328 America in the Age of Industrialization and Reform
 HS 335 Michigan History
 HS 336 History of the Upper Peninsula
 HS 360 Chinese Revolution, 1800-Present
 HS 361 History of the Americas
 HS 362 History of Mexico
 HS 481 Oral History

Modern Languages and Literatures

FR 310 Introduction to French Civilization and Culture
 GR 310 Introduction to German Civilization and Culture
 SN 314 Contemporary Latin American Culture

Philosophy

PL 310 Social and Political Philosophy
 PL 320 Philosophy of Science
 PL 330 Existentialism
 PL 370 Theory of Knowledge: Classical and Contemporary

Political Science and Public Administration

PS 411 American Political Thought

Foundations of Natural Sciences Mathematics

Biology

BI 305 Ecology of the Northern Forest
 BI 310 Ecology Theory and Methods

Chemistry

CH 321 Organic Chemistry I
 CH 322 Organic Chemistry II
 CH 340 Environmental Chemistry
 CH 435 Gas and Liquid Chromatography
 CH 450 Introductory Biochemistry
 CH 460 Nuclear Chemistry

Geography

GC 365 Historical Geology
 GC 370 Geomorphology
 GC 385 Weather and Climate
 GC 390 Oceanography
 GC 401 Biogeography

Physics

PH 320 Physical Electronics
 PH 322 Modern Physics
 PH 330 Optics
 PH 393 Experimental Instrumentation and Analysis

Psychology

PY 302 Causes and Control of Aggression
 PY 304 Animal Behavior
 PY 305 Psychological Statistics
 PY 320 Psychological Measurement
 PY 355 Abnormal Psychology

Foundations of Social Sciences

Economics

EC 320 Money, Banking, and Monetary Theory
 EC 337 American Economic History
 EC 345 Environmental and Natural Resource Economics
 EC 401 Intermediate Microeconomics
 EC 402 Intermediate Macroeconomics
 EC 405 Public Finance
 EC 410 Managerial Economics
 EC 415 Labor Economics
 EC 420 Capitalism, Socialism and Democracy
 EC 425 International Economics
 EC 435 Law and Economics
 EC 444 Health Care Economics
 EC 460 Economic Development
 EC 490 Seminar in Economics

English

EN 313 Introduction to Linguistic Theory

Geography

GC 300 Regional Studies: World Cultures
 GC 305 Regional Studies
 GC 310 Urban Geography
 GC 316 Geography of Tourism
 GC 320 Environmental Policy and Regulation
 GC 360 Population Geography
 GC 435 Geography of Michigan

Health, Physical Education and Recreation

HL 322 International Health Issues
 HL 450 Human Sexuality: Educational Issues
 HL 485 Drug Use and Abuse

History

HS 337 American Economic History
 HS 352 African American History
 HS 353 The Finnish Immigrant in America
 HS 360 Chinese Revolution, 1800-Present

Political Science and Public Administration

PS 301 Seminar in Public Policy Analysis
 PS 303 Public Opinion and Voting Behavior
 PS 307 Principles of Public Administration
 PS 309 State and Local Government
 PS 312 War and Peace in the 21st Century
 PS 331 Judicial Process
 PS 332 Administrative Law
 PS 340 International Organizations
 PS 341 Social Welfare Policy
 PS 402 Political Economy
 PS 404 Politics of East and Southeast Asia
 PS 406 Legislative Politics
 PS 415 Politics of American Foreign Policy
 PS 430 American Constitutional Law and Politics

Psychology

PY 313 Introduction to Linguistic Theory
 PY 335 Social Psychology
 PY 344 Lifespan Developmental Psychology
 PY 345 Psychology of Exceptional Children
 PY 390 Western Childhood
 PY 400 History and Systems

Sociology and Social Work

AN 320 Native Peoples of North America
 AN 382 Health, Society and Culture
 SO 301 Urban Sociology
 SO 302 Life Cycle and Social Structure
 SO 312 Religion and Society
 SO 322 Social Class, Power, and Mobility
 SO 332 The Study of Population
 SO 343 Sociology of Deviant Behavior
 SO 351 Social Change
 SO 355 Introduction to Social Psychology
 SO 382 Health, Society and Culture
 SO 412 Sociology of Education
 SO 472 Occupational Stress
 SO 473 Juvenile Delinquency

Formal Communication Studies**Communication and Performance Studies**

SP 300 Rhetorical Theory
 SP 310 Communication Theory
 SP 401 Persuasion
 SP 402 Communication Criticism
 SP 404 Communication and the Arts
 SP 410 Advanced Interpersonal Communication
 SP 412 Nonverbal Communication
 SP 421 Organization Communication
 SP 425 Communication Ethics
 SP 432 Environmental Communication

English

EN 404 The English Language

Modern Languages and Literatures

All 300 and 400 Modern Languages and Literatures courses, except those listed in other areas.

Psychology

PY 305 Psychological Statistics
 PY 311 Thinking and Cognition
 PY 351 Psychology of Personality

Foundations of Visual and Performing Arts**Art and Design**

AD 300 Japan and the West: Crosscurrents in Art and Architecture
 AD 355 Twentieth Century Art and Architecture

Students may enroll in any 300 or 400 course, but they must consult with the department head before enrolling.

Communication and Performance Studies

BC 325 Communication and Performance in Africa
 TH 330 Intermediate Acting
 TH 340 Stage Lighting
 TH 341 Stage Properties
 TH 352 Directing Theory
 TH 357 Creative Dramatics
 TH 358 Directing Practicum
 TH 360 History of Theatre
 TH 361 Modern Drama
 TH 404 American Musical Theatre
 TH 432 Audition
 TH 458 Theory of Drama

Health, Physical Education and Recreation

PE 381 History of Dance
 PE 383 Theory of Dance

Music

Students may enroll in any 300 or 400 theory or performance course, but they must consult with the department head before enrolling.

MATHEMATICS AND COMPUTER SCIENCE

DEPARTMENT OFFICE

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Mathematics and Computer Science at NMU

The primary mission of the Mathematics and Computer Science Department is to prepare students for participation in professional careers in mathematics, mathematics education, and computer science, while providing service and liberal studies courses for the broader university community. In addition, the department contributes to the continuing education of K-12 teachers in the region. The department also offers a master's degree in mathematics education.

The study of mathematics develops the critical and analytical skills needed in medicine, law or business, and supports majors such as physics, chemistry, biology, psychology, economics, sociology, or geography. It provides an understanding of the contributions of mathematics to philosophy, the arts, science and technology, and provides an exciting intellectual experience.

Computer science is the study of what is possible through computation. It is also the creative exploration of how to achieve these possibilities. Computers are the ultimate machines because they can be reconfigured (programmed) in an infinite number of ways. A computer science degree provides a deep and thorough understanding of modern computers, from their theoretical limitations to the next great leap in their practical application.

Successful completion of a computer science, mathematics or mathematics education major prepares students for graduate work in mathematics or computer science and for professions in statistics, applied mathematics, computer science and teaching.

Student Organizations

- Mathematics and Computer Science Club
- Student Chapter of the Association for Computing Machinery
- Student Michigan Education Association

Department/Program Policies

To ensure student success, the department does not allow students to enroll in the same course more than two times. If a student must take a course for the third time, he or she must

first take the prerequisite course(s) and obtain a grade of "B-" or better in each.

All non-teaching majors and minors offered by the department require a 2.00 or higher overall grade point average in required courses and a grade of "C" or better in each required course. All students must pass prerequisite courses with a grade of "C-" or higher unless otherwise indicated.

Students majoring in secondary education mathematics or minoring in secondary education mathematics must maintain a grade point average of 2.70 or greater with no grade below a "C" in the professional education sequence, the major and/or minors and required cognates combined.

Mathematics courses with a middle digit of "5" will not count toward the requirements of a non-education major or minor. Students pursuing minors in the department are urged to consult with their advisers in determining an appropriate selection of courses.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Applied Mathematics Major

With an emphasis on the fundamental nature and function of mathematical modeling, this major combines computational techniques with computer-based problem solving in a variety of applications. Graduates of this program are provided with the foundation to either join the professional workforce or continue their studies at the graduate level. A computer science minor is built into this major.

Total Credits Required for Degree	128
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	60
Mathematics Core	35
MA 161 Calculus I [III]	5
MA 163 Calculus II	4
MA 211 Intro. to Matrix Theory and Linear Algebra	3
MA 265 Calculus III	3
MA 312 Abstract Algebra with Applications	3
MA 361 Differential Equations	3
MA 371 Applied Probability and Statistics	3
MA 380 Linear Programming	3
MA 340 Combinatorics (4 cr.) <i>or</i>	3-4
MA 410 Mathematical Modeling (3 cr.)	
MA 473 Numerical Analysis	4
MA 490 Senior Seminar	1
Computer Science Core	15
CS 120 Computer Science I [V] <i>or</i>	4
CS 120A Accelerated Computer Science I (4 cr.) [V]	
CS 122 Computer Science II	4
CS 222 Data Structures	4
CS 326 Software Design and Engineering	3
Mathematics/Computer Science Electives	10
<i>Choose from the following:</i>	
MA 340 Combinatorics (4 cr.)	
MA 381 Integer Programming and Network Flows (3 cr.)	
MA 410 Mathematical Modeling (3 cr.)	
MA 462 Higher Mathematics for the Sciences (3 cr.)	
MA 472 Advanced Applied Statistics (3 cr.)	
MA 475 Intermediate Statistics (4 cr.)	
MA 485 Stochastic Models in Operations Research (3 cr.)	

MA 491 Internship in Applied Mathematics (3-6 cr.)
CS 228 Network Programming (3 cr.)
CS 322 Principles of Programming Languages (4 cr.)
CS 422 Algorithms Design and Analysis (3 cr.)

Minor* **20**

**Computer science may be declared as the minor without further course requirement if at least five credits of the mathematics/computer science electives are in computer science.*

Computer Science Major

This major combines courses in practical programming, computer architecture, networking and algorithm design/analysis with an appropriate background in mathematics and theory of computing. Included are classes covering the latest technologies such as robotics and Internet applications. This major provides the foundation for a rewarding and productive career in industry as well as strong preparation for graduate school.

Total Credits Required for Degree	128
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	60
Computer Science Core	35
CS 120 Computer Science I [V] <i>or</i>	4
CS 120A Accelerated Computer Science I (4 cr.) [V]	
CS 122 Computer Science II	4
CS 201 Programming in C++	3
CS 222 Data Structures	4
CS 228 Network Programming	3
CS 322 Principles of Programming Languages	4
CS 326 Object Oriented Design	3
CS 330 Microcomputer Architecture	4
CS 422 Algorithms Design and Analysis	3
CS 426 Operating Systems	3
Mathematics Core	15
MA 161 Calculus I [III]	5
MA 163 Calculus II	4
MA 211 Introduction to Matrix Theory and Linear Algebra	3
MA 240 Discrete Mathematics	3
Mathematics Elective	3-4
<i>Choose from the following:</i>	
MA 171 Introduction to Probability and Statistics (4 cr.) [V]	
MA 310 Mathematical Models and Problem Solving (4 cr.)	
MA 380 Linear Programming (3 cr.)	
MA 381 Integer Programming and Network Flows (3 cr.)	
MA 410 Mathematical Modeling (3 cr.)	
MA 473 Numerical Analysis (4 cr.)	

Computer Information Systems, Computer Science and Mathematics Electives 6
 Choose from the following:
 CIS 464 Database Management Systems (3 cr.)
 CS courses numbered 300 or higher, excluding those with middle digit 5. (1-6 cr.)
 MA courses numbered 265 or higher except MA 271, MA 331, MA 484 and math courses with middle digit "5." (1-6 cr.)

Minor* 20
 *Mathematics may be declared as a minor if at least five credits of electives are in mathematics courses.

Mathematics Major

Students pursuing this degree will have the opportunity to study traditional core courses in mathematics as well as modern applied mathematics courses covering some major topics related to actuarial science and operations research.

Total Credits Required for Degree 124

Liberal Studies 30-40
Health Promotion 2

Required Courses in Major 34-35

CS 120 Computer Science I [V] or 4
 CS 120A Accelerated Computer Science I (4 cr.) [V]
 MA 161 Calculus I [III] 5
 MA 163 Calculus II 4
 MA 211 Introduction to Matrix Theory and Linear Algebra 3
 MA 265 Calculus III 3
 MA 312 Abstract Algebra with Applications 3
 MA 361 Differential Equations 3

Mathematics Electives 9-10

Choose from the following:
 MA 340 Combinatorics (4 cr.)
 MA 363 Advanced Calculus I (3 cr.)
 MA 366 General Topology (3 cr.)
 MA 371 Applied Probability and Statistics (3 cr.)
 MA 380 Linear Programming (3 cr.)
 MA 412 Abstract Algebra II (3 cr.)
 MA 464 Advanced Calculus II (3 cr.)
 MA 465 Complex Variables (3 cr.)
 MA 472 Advanced Applied Statistics (3 cr.)
 MA 473 Numerical Analysis (4 cr.)
 MA 481 Mathematical Logic (3 cr.)
 MA 482 Foundations of Mathematics (3 cr.)
 MA 483 Introduction to Number Theory (3 cr.)
 MA 484 History of Mathematical Thought (3 cr.)

Minor 20

Network Computing Major

This major is designed to offer students an education in the important world of Internet and Intranet programming. This course of study emphasizes programming skills while concentrating on the latest concepts, architecture and algorithms for network computation. Students will learn the fundamentals of computer science while focusing on aspects important to the world of network computing.

Total Credits Required for Degree 124-125

Liberal Studies 30-40
Health Promotion 2

Required Courses in Major 42-43

Network Computing Core 21
 CS 120 Computer Science I [V] or 4
 CS 120A Accelerated Computer Science I (4 cr.) [V]
 CS 122 Computer Science II 4
 CS 201 Programming in C++ 3
 CS 222 Data Structures 4
 CS 326 Object Oriented Design 3
 CS 480 Senior Project in Computer Science 3

Mathematics Requirement 3
 MA 240 Discrete Mathematics 3

Networking Requirement 3
 CS 228 Network Programming 3

Computer Science Electives 6-7
 Choose from the following:
 CS 442 Advanced Networking (3 cr.)
 CS 444 Parallel and Distributed Processing (4 cr.)
 CS 460 Advanced Web Programming (3 cr.)

Computer Science, Mathematics, Computer Information Systems and Art and Design Electives 9

Choose from the following:
 CS courses numbered 200 or higher, excluding those with a middle digit 5. (1-9 cr.)
 AD 134 Electronic Imaging: Introduction (4 cr.)
 AD 234 Electronic Imaging: Web Design (4 cr.)
 AD 334 Electronic Imaging: 3D (4 cr.)
 AD 434 Electronic Imaging: Seminar (4 cr.)
 CIS 330 Novell Network Operating Systems II (3 cr.)
 CIS 334 Microsoft Network Operating Systems II (3 cr.)
 CIS 440 Management Information Systems (3 cr.)
 CIS 464 Database Management Systems (3 cr.)

Minor 20

Other Required Course 4
 MA 171 Introduction to Probability and Statistics [V] 4

Secondary Education Mathematics Major

Completion of the mathematics courses, a teaching minor as well as the professional education sequence lead to certification as a secondary teacher of mathematics.

Total Credits Required for Degree	133-137
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	33-35
MA 161 Calculus I [III]	5
MA 163 Calculus II	4
MA 211 Introduction to Matrix Theory and Linear Algebra	3
MA 265 Calculus III	3
MA 310 Mathematical Models and Problem Solving	4
MA 312 Abstract Algebra with Applications	3
MA 331 Geometry I	3
MA 484 History of Mathematics	3
MA 171 Introduction to Probability and Statistics (4 cr.) [VI] <i>or</i> MA 371 Applied Probability and Statistics (3 cr.)	3-4
Mathematics Electives	2-3
Select from mathematics courses numbered 300 or above, excluding those with a middle digit "5."	
Other Required Course	4
CS 120 Computer Science I [VI] <i>or</i> CS 120A Accelerated Computer Science I (4 cr.) [V]	4
Teaching Minor, minimum	24
Professional Education	34
ED 201 Introduction to Education	2
ED 231 Teaching and Learning in the Secondary Classroom	4
ED 301 Dimensions of American Education	2
ED 319 Teaching of Reading for Secondary Teachers	3
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	2
MA 350 Methods and Materials in Teaching Senior High School Mathematics Education	3
MA 354 Methods and Materials in Teaching Junior High School Mathematics Education	2
ED 361 Special Education and the General Classroom Teacher	2
ED 483 Educational Media and Technology	2
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1

MINOR PROGRAMS

Computer Science Minor

Total Credits Required for Minor **20**

This minor requires 20 credits in computer science courses numbered 120 or above; up to 8 hours of these may be mathematics courses numbered 115 or above, excluding those with a middle digit of "5."

Mathematics Minor

Total Credits Required for Minor **20**

This minor requires 20 credits in mathematics courses numbered MA 115 or above excluding those with a middle digit "5"; up to 8 hours of these may be computer science courses numbered 120 or above. This option is not available as a teaching minor.

Secondary Education Mathematics Minor

Total Credits Required for Minor **23-25**

MA 171 Introduction to Probability and Statistics (4 cr.) <i>or</i> MA 371 Applied Probability and Statistics (3 cr.)	3-4
MA 161 Calculus I	5
MA 163 Calculus II	4
MA 211 Introduction to Matrix Theory and Linear Algebra	3
MA 312 Abstract Algebra with Applications	3
MA 331 Geometry I	3
MA 350 Methods and Materials in Teaching Senior High School Mathematics Education (3 cr.) <i>or</i> MA 354 Methods and Materials in Teaching Junior High School Mathematics Education (2 cr.)	2-3

MILITARY SCIENCE

DEPARTMENT OFFICE

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Military Science at NMU

The Military Science Department offers a minor in military science and trains and commissions the future leadership of the U.S. Army and the nation. The department's courses teach leadership skills that are highly sought by major corporations.

Participation in the NMU military science program has a profound impact on any student, even through a single class. The program emphasizes modern leadership, team building, teamwork, problem solving, self-confidence development, and ethical behavior. Military science courses or enrollment in the department's military science minor complement any student's major by broadening his or her educational experience and teaching a variety of personal and professional skills.

Students who enroll in military science classes or in the minor program incur no military obligation, nor do they commit themselves to continue taking military science courses (unless they commit to becoming a U.S. Army Officer in the active Army, Army Reserves or Army National Guard). Students may add, drop or withdraw from military science courses as in any other academic program.

Student Organization

- Ranger Club

Leader's Training Course

The Leader's Training Course (LTC) is an obligation-free, five-week course held each summer at Fort Knox, Kentucky. Students who have not completed basic training, JROTC, or the four basic courses, and have junior status or higher (minimum 56 credit hours), may attend LTC. Upon completion of the program, they will be invited to contract into the commissioning program. All basic necessities, transportation and equipment are provided by the U.S. Army.

Commissioning Program

Only those students who volunteer for and meet U.S. Army qualifications may enter the commissioning program. Students contract with the U.S. Army to complete the required program of instruction in return for a stipend and/or scholarship monies and the training required to earn a commission. Veterans may

also compete for U.S. Army ROTC scholarships without affecting their veteran's benefits. Qualified cadets may attend the U.S. Army Airborne, Air Assault, Nurse Summer Training Program or Northern and Mountain Warfare Schools during the summer when openings are available. Overseas and other leadership training is also available on a regular basis.

Cadets are also required to take one history class to satisfy the Professional Military Education requirement. This requirement may be satisfied through several history courses offered at NMU.

The ROTC Scholarship Program

NMU U.S. Army ROTC has scholarships available to qualified students wanting to earn a commission in the U.S. Army. Special incentives exist for nursing students to become army nurses. For information about NMU scholarship opportunities, contact the department. To learn more about U.S. Army ROTC scholarship opportunities and requirements, visit the U.S. Army ROTC scholarship Web site at www.armyrotc.com/scholar.

Leader Development and Assessment Course

All contracted cadets must complete the five-week Leader Development and Assessment Course (LDAC) at Fort Lewis, Washington. This is normally done during the summer between a cadet's junior and senior year, but it is required prior to his or her appointment as a commissioned officer. This training supplements campus instruction by providing practical leadership experience in the form of problem analysis, decision-making and small group leadership experiences. This camp is an intense experience that matures and forges each individual. The U.S. Army provides transportation, food, shelter, clothing and other basic necessities.

Options Upon Commissioning

Army ROTC provides careers in 21 branches and 47 different fields. Candidates compete for an appointment to the active Army for three to four years, or they may serve on active duty for a period and then with an Army Reserve or National Guard unit for the remainder of their obligation (a total of eight years). Service as a Reserve or National Guard officer allows the individual to pursue a civilian career while serving for approximately 38 days per year.

Department/Program Policies

Uniforms, Texts and Special Equipment

Basic course cadets are not required to wear a uniform to their military science classes but must wear a uniform to the leadership lab. Advanced course cadets wear uniforms to their military science classes and to the leadership lab. All cadets must comply with military appearance standards while in uniform. Students who are taking military science classes only for academic credit or to fulfill the military science minor do not wear uniforms to class, nor are they required to comply with military appearance standards. The department furnishes all required military equipment as a temporary loan to students. Textbooks are provided by the department for 100- and 200-level courses. Students must purchase textbooks for MS 339, MS 359, MS 439 and MS 459.

Advanced Course Requirements

Advanced course students seeking commissions are required to participate in the following activities:

1. *Physical Training*—conducted by the department for one hour, three times a week.
2. *Mandatory Training Events*—including leadership laboratories, field training exercises, some extracurricular events and social events.

Advance Placement Credit for Veterans

Students having prior military service may receive advance placement credit equivalent to the basic courses upon the recommendation of the department head.

MINOR PROGRAM

Military Science Minor

This minor is open to students of any major. It is especially appropriate for students intending to enter public service at the local, state or federal levels. The program requires four classes at each level (100-400) for a total of 20 credits. Additional military science courses are offered to broaden the experience and perspective of the students. Refer to the "Course Descriptions" section of this bulletin.

Total Credits Required for Minor	20
<hr/>	
Basic Course	4
MS 139 Leadership and Confidence Building	1
MS 159 Leadership, Confidence Building, and Winter Training	1
MS 239 Leadership at the Unit Level	1
MS 259 Troop Leadership Training	1
Advanced Course	16
MS 339 Advanced Leadership Training	4
MS 359 Applied Leadership Training	4
MS 439 Leadership	4
MS 459 Leadership and Team Development	4

MODERN LANGUAGES AND LITERATURES

DEPARTMENT OFFICE

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Modern Languages and Literatures at NMU

The Modern Languages and Literatures Department offers language courses in Chinese, French, German, Portuguese and Spanish, as well as culture and literature courses in the target languages and in English. The department occasionally offers courses in other languages and helps facilitate university credit for students who study languages abroad. Language and cultural studies provide an excellent liberal education. Knowledge of languages enhances virtually any career and increases employment opportunities. World language, culture and literature studies open students to new and exciting horizons, place them in contact with worldwide artistic and intellectual accomplishments, help them to understand other people, and prepare them for success in an increasingly globalized world.

The department offers programs leading to the bachelor of arts degree with majors in French, Spanish, secondary education French and secondary education Spanish. Minors are offered in French, German, Spanish, French education, German education and Spanish education. Language students are encouraged to participate in language conversation tables.

Student Organizations

- French Club
- German Club
- Portuguese Club
- Spanish Club
- Student Michigan Education Association

Department Facilities

The department has a Language Learning Laboratory located in 203 Jamrich Hall. It includes wireless and wired connection to the Internet and a software library. It also has listening and viewing stations for the center's numerous audio and video-tapes. The laboratory is available for class and individual student use. The department also has a resource room for students, while Northern's Olson Library contains representative works by foreign authors, works of criticism and linguistics, and a fine collection of slides of European history, art and architecture.

Department/Program Policies

Procedures to follow before enrolling in LG 350, Methods and Materials in Teaching Language Education:

1. All students intending to seek teaching certification in one or more languages should contact the faculty member in charge of teaching methods and student supervision as soon as they declare their major and/or minor. They will be monitored throughout the rest of their studies at NMU for satisfactory academic progress and language proficiency.
2. Prior to enrolling in LG 350, students must obtain Evaluation Form 1 and 2 from the Modern Languages and Literatures Department secretary or LG 350 instructor, then complete an oral proficiency interview with a faculty member in each of the languages in which they intend to earn certification. The results of this interview will be entered on Evaluation Form 1 and filed with the Modern Languages and Literatures Department.
3. Students are also required to submit Evaluation Form 2 indicating their potential for becoming successful teachers (maturity, commitment).

Students will be notified of their enrollment status, based on the results of the evaluations. LG 350 is not taught as a directed study.

Use of Courses Taught in English for the French Major/Minor and German Minor

Students majoring in French may apply two NMU courses taught in English (a maximum of eight credits) toward the major. French and German minors may apply one NMU course taught in English (a maximum of four credits) toward the minor. Language majors or minors enrolled in courses taught in English will be expected to complete some assignments in either French or German.

Language Certification Program Policies and Procedures

The Modern Languages and Literatures Department offers a language certification program in which degree-seeking students can validate their language proficiency skills at less than the minor level, but beyond sophomore-level proficiency. Language certification is available in French, German or Spanish.

Language certification applications can be obtained in the Modern Languages and Literatures Department upon completion of the requisite courses. Accomplishment of language certification will be noted on NMU transcripts, and the student will receive a certificate from the department.

Grade Requirements

All non-teaching majors and minors and students seeking language certification must earn a minimum grade of “C” in every language course. Students majoring in secondary education French or secondary education Spanish, or minoring in French education, German education, or Spanish education must maintain a grade point average of 2.70 or greater with no grade below a “C” in the professional education sequence, the major and/or minors and required cognates combined.

Study Abroad Programs

Students who major or minor in French, German or Spanish are encouraged to study abroad for at least a semester to improve their language skills and to become immersed in the target culture. Programs are also open to students in other disciplines who want to pursue their studies abroad. For more information please see the “Study Abroad” section of this bulletin.

Advanced Placement Credit

Students may obtain credit for French, German and Spanish I and II (FR, GR and SN 101 and 102) through the College-Level Examination Program (CLEP).

Students who complete FR/GR/SN 102 or 201 at NMU with a grade of “C” or higher can receive credit for the course that immediately precedes it (101 or 102) in the sequence.

Students with high school language preparation or experience abroad who wish to major in French or Spanish or to minor in French, German, or Spanish may earn up to eight advanced placement credit hours for FR/GR/SN 201 or 202 by taking a departmental test. Students who pass the advanced placement examination (APP, CEEB) with a score of three or higher will receive advanced placement credit in either language or literature depending on the examination that was taken.

Native speakers of French, German, Spanish or other languages may not test out of their native language. They may, however, take a CLEP or departmental test in any other language besides their own.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the “Liberal Studies Program and Graduation Requirements” section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

French Major

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	32
FR 201 Intermediate French [V]	4
FR 202 Intermediate French II [V]	4
FR 300 Reading and Writing	4
FR 400 Advanced French Composition and Grammar	4
French Electives 300 or 400 level	16
LG 499 Graduation Assessment for Language Majors	0
Minor	20

Spanish Major

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	32
SN 300 Reading and Writing	4
Spanish Electives 300 or 400 level (except SN 314)	28
LG 499 Graduation Assessment for Language Majors	0
Minor	20

Secondary Education French Major

Teaching certification is obtained by completing a major in French, a teaching minor and the professional education sequence.

Total Credits Required for Degree	127-131
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	32
FR 201 Intermediate French I [V]	4
FR 202 Intermediate French II [V]	4
FR 300 Reading and Writing	4
FR 305 Conversational French and Phonetics [V] (or equivalent)	4
FR 400 Advanced Composition and Grammar	4
French Electives 300 or 400 level	12
LG 499 Graduation Assessment for Language Majors	0
Teaching Minor, minimum	20-24
Professional Education	33
ED 201 Introduction to Education	2
ED 231 Teaching and Learning in the Secondary Classroom	4
ED 301 Dimensions of American Education	2
ED 319 Teaching of Reading for Secondary Teachers	3
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	2
ED 361 Special Education and the General Classroom Teacher	2
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1
ED 483 Educational Media and Technology	2
LG 350 Methods and Materials in Teaching Language Education	4

Secondary Education Spanish Major

Teaching certification is obtained by completing a major in Spanish, a teaching minor and the professional education sequence.

Total Credits Required for Degree	127-131
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	32
SN 300 Reading and Writing	4
SN 305 Conversational Spanish [V]	4
SN 310 Introduction to Spanish Civilization and Culture	4
SN 312 Introduction to Spanish America [II]	4
SN 400 Advanced Composition and Grammar	4
Spanish Electives 300 and 400 level (except SN 314)	12
LG 499 Graduation Assessment for Language Majors	0
Teaching Minor, minimum	20-24
Professional Education	33
ED 201 Introduction to Education	2
ED 231 Teaching and Learning in the Secondary Classroom	4
ED 301 Dimensions of American Education	2
ED 319 Teaching of Reading for Secondary Teachers	3

ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	2
LG 350 Methods and Materials in Teaching Language Education	4
ED 361 Special Education and the General Classroom Teacher	2
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1
ED 483 Educational Media and Technology	2

MINOR PROGRAMS

French Minor

Total Credits Required for Minor	20
FR 201 Intermediate French I	4
FR 202 Intermediate French II	4
FR 300 Reading and Writing	4
French Electives 300 or 400 level	8
LG 399 Graduation Assessment for Language Minors	0

French Education Minor

Total Credits Required for Minor	20-24
FR 201 Intermediate French I	4
FR 202 Intermediate French II	4
FR 300 Reading and Writing	4
FR 305 Conversational French (or equivalent)	4
FR 400 Advanced Composition and Grammar	4
LG 350 Methods and Materials in Teaching Language Education*	4
LG 399 Graduation Assessment for Language Minors	0

*Not required if major is Spanish education.

German Minor

Total Credits Required for Minor	20
GR 201 Intermediate German I	4
GR 202 Intermediate German II	4
GR 300 Reading and Writing	4
German Electives 300 or 400 level	8
LG 399 Graduation Assessment for Language Minors	0

German Education Minor

Total Credits Required for Minor	20-24
GR 201 Intermediate German I	4
GR 202 Intermediate German II	4
GR 300 Reading and Writing	4
GR 305 Conversational German (or equivalent)	4
GR 400 Advanced Composition and Grammar	4
LG 350 Methods and Materials in Teaching Language Education*	4
LG 399 Graduation Assessment for Language Minors	0

*Not required if major is French education or Spanish education.

Spanish Minor

Total Credits Required for Minor	20
SN 300 Reading and Writing	4
Spanish Electives 300 or 400 level (except SN 314)	16
LG 399 Graduation Assessment for Language Minors	0

Spanish Education Minor

Total Credits Required for Minor	20-24
SN 300 Reading and Writing	4
SN 305 Conversational Spanish	4
SN 310 Introduction to Spanish Civilization and Culture	4
SN 312 Introduction to Spanish America	4
SN 400 Advanced Composition and Grammar	4
LG 350 Methods and Materials in Teaching Language Education*	4
LG 399 Graduation Assessment for Language Minors	0

*Not required if major is French education.

CERTIFICATIONS

French Certification

Total Credits Required for Certification	20
FR 101 Elementary French I	4
FR 102 Elementary French II	4
FR 201 Intermediate French I	4
FR 202 Intermediate French II	4
FR 310 Introduction to French Civilization and Culture	4

German Certification

Total Credits Required for Certification	20
GR 101 Elementary German I	4
GR 102 Elementary German II	4
GR 201 Intermediate German I	4
GR 202 Intermediate German II	4
GR 310 Introduction to German Civilization and Culture	4

Spanish Certification

Total Credits Required for Certification	20
SN 101 Elementary Spanish I	4
SN 102 Elementary Spanish II	4
SN 201 Intermediate Spanish I	4
SN 202 Intermediate Spanish II	4
SN 310 Introduction to Spanish Civilization and Culture <i>or</i>	4
SN 312 Introduction to Spanish America (4 cr.) <i>or</i>	
SN 314 Contemporary Latin American Culture (4 cr.)	

MUSIC

DEPARTMENT OFFICE

102 Thomas Fine Arts

Phone: 906-227-2563

Fax: 906-227-2165

Web Page: www.nmu.edu/music

Department Head: Donald R. Grant • dgrant@nmu.edu

Music at NMU

The Music Department educates students, the university community and the general public in music of many different kinds. The department is a full member of the National Association of Schools of Music; its degree programs are approved by the association.

The department supports a wide variety of ensemble programs that are open to all students. The varied ensembles serve an array of functions including the laboratory experience for music majors. Musical enrichment for the university community is a high priority for the department. The department offers teachers and other community members the opportunity to refine their musicality and increase their musical skill and understanding. Recitals by both faculty and students enhance the area's cultural environment throughout the academic year.

Non-music majors are encouraged to minor in music and take part in any of the department's ensemble programs. When space is available, non-music majors may take private lessons from department faculty.

Student Organizations

- University Orchestra
- Jazz Band
- Pep Band
- Marching Band
- Symphonic Band
- University Choir
- Chamber Groups
- Madrigal Choir
- MENC (Music Educators National Conference) Student Organization
- Friends of Jazz

Department Facilities

The department is housed in the newly remodeled Russell Thomas Fine Arts building, which serves as the instructional and rehearsal facility. There are 28 individual practice rooms, two large rehearsal halls (instrumental and choral), an electronic piano lab, and a music technology lab. Recitals and concerts are performed in the new, 303-seat Reynolds Recital Hall,

which houses a Walker digital organ and two Steinway grand pianos (concert nine-foot Model D, and seven-foot Model B).

Department/Program Policies

Performance Requirements

A classification system defines four performance levels. All entering students, freshmen and transfers who have had no previous university-level performance study are assigned to the 100 performance level. All transfer students with previous university-level performance study are auditioned and assigned the 100 performance level until completing the departmental proficiency exams.

The performance regulations are as follows:

1. Each student in the bachelor of music education program must complete seven credits of performance study and must be promoted to the 300 level before enrolling in MU 490 Senior Recital. Each student in the bachelor of arts or bachelor of science program must complete a minimum of four credits of performance study and must be promoted to the 300 level in order to graduate.
2. For the bachelor of music education, five of the seven credit hours in performance must be on one instrument. For the bachelor of arts/bachelor of science, four credit hours must be on one instrument.
3. Students seeking the bachelor of music education must achieve the 300 level (decision rendered by full faculty) before they are permitted to schedule their senior recital. Students seeking the bachelor of arts or bachelor of science must achieve the 300 level in order to graduate and take MU 491 Senior Project if the project is a performance. All recitalists must pre-audition before area faculty two weeks before their recital.
4. Proficiency assessment from the 100 to 200 level, the 200 to 300 level, and 300 to 400 level is rendered by the full faculty.
5. Any performance level may be repeated for credit any number of times.

Double performance classes in a single instrument or voice may be necessary for transfer students to make up deficiencies or to qualify for requirements. (See the *Music Department Student Handbook*.)

Generally, students study in their major performing area to satisfy the performance requirement. Students electing a double major must meet the requirements of areas they select, including ensemble requirements.

Grade Point Average Requirements

All music curriculum core courses must be passed with a grade of "C" or higher. A student can have no more than five repeats of "failed" courses in the music major or minor. A minimum

grade point average of 2.70 is required for all major degree programs (bachelor of science, bachelor of arts and bachelor of music education). In addition to the aforementioned requirements, bachelor of music education degree candidates are required to satisfy the Teacher Selection and Retention Standards outlined in the "School of Education" section of this bulletin.

Piano Level Requirements

Instrumental majors, including pianists, must complete Piano III (MU 140) with a grade of "C" or higher, or test out of this requirement (equivalent to the final in Piano III). Piano I (MU 103) and Piano II (MU 106) may be taken as electives if the student has no previous experience. Choral majors must pass Piano IV or test out of this requirement. Piano I, II and III may be taken as electives if the student has no previous experience.

Large and Small Ensemble Requirements

Music majors are urged to audition for the ensemble of their choice; however, the faculty reserves the right to assign students to particular ensembles in order to obtain balance within the ensemble or to broaden the student's performance experience. All music majors must participate in a large ensemble from their first semester of enrollment and should continue to participate in consecutive semesters until the ensemble requirement is completed. Normally, two semesters of large ensemble participation will be required to perform the proficiency exam for promotion to the 200 level.

Large ensembles include Marching Band, Symphonic Band, University Choir and University Orchestra.

University Choir is highly recommended as an elective for all entering music majors, both instrumental and vocal. The large ensemble requirement for instrumental wind and percussion majors in the bachelor of music education program is Marching Band in the fall and the Symphonic Band in the winter.

The large ensemble requirement for vocal majors in the bachelor of music education program is the University Choir. The Marquette Choral Society may be substituted only with the written approval of vocal-area faculty.

Instrumental wind, string and percussion non-teaching majors (bachelor of arts, bachelor of science degrees) must complete two credits of large and/or small ensembles. The vocal non-teaching majors must complete four credits of ensemble, of which three semesters must be large ensemble (University Choir) and one semester can be chamber music or University Choir. The amount of credit for all ensembles is .5 credit.

Additional Requirements

Piano majors who elect the choral specialization must take Class Voice (MU 170) or performance lessons for a minimum of one semester.

Music majors must attend a specified number of concerts each semester or the performance grade is lowered. The policies and procedures for lowering of the performance grade is fully described in the *Music Department Student Handbook*.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin (38-44).

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Music Major (B.A./B.S.)

This major provides a general education in music performance, music history and theory.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Music Core Courses	31
MU 101 Music Theory I	2
MU 102 Sight Singing and Ear Training I	2
MU 103 Piano I	2
MU 104 Music Theory II	2
MU 105 Sight Singing and Ear Training II	2
MU 125 Music in Society [VI]	4
MU 201 Music Theory III	2
MU 202 Sight Singing and Ear Training III	2
MU 203 Music History and Literature I	3
MU 204 Music Theory IV	2
MU 205 Form and Analysis	2
MU 206 Music History and Literature II	3
MU 210 Sight Singing and Ear Training IV	2
MU 491 Senior Project	1
Performance classes	4
Ensembles	2
Music Electives	7
<i>Two credits must be upper division performance, theory, or history.</i>	
Minor	20

Bachelor of Music Education Secondary Education Music Major (B.M.E.)

Completion of the music courses as well as the professional education sequence lead to secondary certification, which enables the holder to teach music at the K-12 level.

Total Credits Required for Degree	134
Liberal Studies	30-40
Health Promotion	2
Music Core Courses	29
MU 101 Music Theory I	2
MU 102 Sight Singing and Ear Training I	2
MU 104 Music Theory II	2
MU 105 Sight Singing and Ear Training II	2
MU 125 Music in Society [VI]	4
MU 201 Music Theory III	2
MU 202 Sight Singing and Ear Training II	2
MU 203 Music History and Literature I	3
MU 204 Music Theory IV	2
MU 205 Form and Analysis	2
MU 206 Music History and Literature II	3
MU 210 Sight Singing and Ear Training IV	2
MU 490 Senior Recital	1
Performance Lessons	7
Ensembles	5
<i>See large and small ensemble requirements on the previous page.</i>	
<i>Choral or instrumental. Each course is worth one half credit per semester.</i>	
Choral	
Large Ensembles	3.5
Elective Ensembles	1.5
Instrumental	
Large Ensembles	2.5
Small Ensembles	1.0
Elective Ensemble	1.5
Area of Specialization (Choral or Instrumental)	22
Choral	
MU 142 Piano IV	2
MU 146 Classroom Instruments	1
MU 150 Percussion Class	2
MU 172 Musical Diction in Singing I	2
MU 173 Musical Diction in Singing II	2
MU 208 Conducting I	2
MU 212 Choral Methods	2
MU 230H High Brass or MU 230L Low Brass	1
MU 260U Upper Strings or MU 260L Lower Strings	1
MU 280S Single Reeds	1
MU 349 Methods and Materials in Teaching Music Education I	2
MU 350 Methods and Materials in Teaching Music Education II	2
Music Electives	2

Instrumental	
MU 111 University Choir	.5
MU 140 Piano III	2
MU 150 Percussion Class	2
MU 170 Voice Class <i>or</i>	
MU 171 Vocal Performance	1
MU 208 Conducting I	2
MU 230H High Brass	1
MU 230L Low Brass	1
MU 260U Upper Strings	1
MU 260L Lower Strings	1
MU 280D Double Reeds	1
MU 280F Flute Class	1
MU 280S Single Reeds	1
MU 345A Marching Band Practicum	1
MU 349 Methods and Materials in Teaching Music Education I	2
MU 350 Methods and Materials in Teaching Music Education II	2
Music Electives	2.5
Professional Education	29
ED 201 Introduction to Education	2
ED 231 Teaching and Learning in the Secondary Classroom	4
ED 301 Dimensions of American Education	2
ED 319 Teaching of Reading for Secondary Teachers	3
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	2
ED 361 Special Education and the General Classroom Teacher	2
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1
ED 483 Educational Media and Technology	2

MINOR PROGRAM

Music Minor

Total Credits Required for Minor	20
MU 101 Music Theory I	2
MU 103 Piano I	2
MU 125 Music in Society	4
Music Electives	12

Approval from the Music Department head is required prior to declaring or planning the music minor. The minor in music is non-teaching.

NATIVE AMERICAN STUDIES

PROGRAM OFFICE

Center for Native American Studies

112 Whitman Hall

Phone: 906-227-1397

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Web Page: www.nmu.edu/nativeamericans

Interim Director: April Lindala • alindala@nmu.edu



Native American Studies at NMU

The Center for Native American Studies oversees the Native American Studies minor program. The courses are designed for both Native American and non-Native American students so they can better understand human similarities and differences as well as recognize the contributions that Native Americans have made to the world, thereby widening the multicultural curriculum of Northern Michigan University.

Student Organizations

- *Anishinaabe News* (www.nmu.edu/anishinaabe)
- Native American Student Association

MINOR PROGRAM

Native American Studies Minor

This minor examines the contemporary and historical experiences and ways of life of the indigenous people of North America from their perspective. It is designed to provide a study of Native American issues from a holistic and humanistic viewpoint by focusing on their cultural, historical and contemporary life.

Total Credits Required for Minor **24**

Required Courses **5-8**

NAS 204 The Native American Experience 4

NAS 488 Native American Service Learning Project 1-4

Electives **16-19**

All students must take at least four credits from each category unless an alternative plan is pre-approved by the director of the Center for Native American Studies.

Native American Content Courses in English and Oral Traditions **4**

Choose from the following:

NAS 280 Storytelling by Native American Women (4 cr.)

EN311Z World Literature in English* (4 cr.)

EN 314 Traditional Oral Literatures: Selected Native American Cultures (4 cr.)

EN 316 Native American Novels and Poetry (4 cr.)

EN 317 Native American Drama, Non-fiction, and Short Stories (4 cr.)
EN 430 Major Authors* (3-4 cr.)

Native American Content Courses in Anthropology, History and Sociology **4**

Choose from the following:

AN 320 Native People of North America (4 cr.)

AN 330 Indians of the Western Great Lakes (4 cr.)

HS 233 Native American History (4 cr.)

HS 234 Indigenous People of Latin America (4 cr.)

HS 295 Special Topics in History* (1-4 cr.)

SO 295 Special Topics in Sociology* (1-4 cr.)

Native American Content Courses in Anishinaabe Language, Art and Design and Music **4**

Choose from the following:

NAS 101 Anishinaabe Language, Culture and Community I (4 cr.)

NAS 102 Anishinaabe Language, Culture and Community II (4 cr.)

AD 200 Native American Art and Architecture (4 cr.)

AD 295 Special Topics in Art and Design* (1-4 cr.)

MU 325 World Music* (4 cr.)

Native American Content Courses in Education and Political Science **4**

Choose from the following:

NAS 287 The Legal and Political History of Michigan Indian Education (2 cr.)

NAS 288 Politics of Indian Gaming (4 cr.)

NAS 310 Tribal Law and Government (4 cr.)

NAS 484 Native American Inclusion in the Classroom (2 cr.)

NAS 485 American Indian Education (3 cr.)

PS 295 Special Problems in Political Science* (1-4 cr.)

**Note: EN 311Z, EN 430, HS 295, SO 295, AD 295, MU 325, and PS 295 are courses of variable content. Credit only applies to the minor when these courses deal with Native American subject matter.*

NAS 295 Special Topics in Native American Studies may include course content that is not presently included in these categories. NAS 298 Directed Study in Native American Studies may also be taken for 1-4 credits with approval.

NURSING - BACCALAUREATE

DEPARTMENT OFFICE

School of Nursing

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Web Page: www.nmu.edu/nursing

Department E-mail: bsnnurse@nmu.edu

Associate Dean and Department Head: Kerri D. Schuiling

Nursing at NMU

The School of Nursing offers programs from the certificate level to graduate degree. Program options include: (1) a BSN degree program; (2) a fast track BSN program designed primarily for post-baccalaureate students; (3) an LPN to BSN program (for LPNs desiring to obtain a baccalaureate degree); (4) an RN to BSN degree program (for registered nurses who desire to obtain a baccalaureate degree in nursing); and (5) an MSN degree program with a family nurse practitioner functional track as its specialty. The RN to BSN program is also offered in a Web-based format.

The BSN program prepares students to function as professional nurses in a variety of hospital and community settings. Students acquire the requisite knowledge and skills to practice across a variety of settings with diverse populations within the health care system and to be independently skillful in the promotion and maintenance of health, the prevention of disease, and the management, coordination and supervision of client care.

Northern's bachelor of science in nursing and master of science in nursing programs are accredited by the Commission on Collegiate Nursing Education.

Student Organization

- Student Nurses Association

BSN Program Policies

Pre-Admission Policies

The department strongly recommends that prospective nursing students prepare themselves in high school by taking the following courses: English (four years), mathematics (three or four years, including two years of algebra), social studies (four years) and one unit each of biology, chemistry and physics. Students without the necessary high school preparation in algebra and chemistry may need to take additional preparatory courses in these subjects, which will lengthen their program.

Prospective transfer students from community colleges should take courses equivalent to those listed as requirements for admission to the nursing sequence.

Entering students are assigned an adviser who helps them plan an academic program of pre-nursing courses. When the prerequisites are nearly completed, students may apply for admission to the baccalaureate nursing sequence in consultation with an adviser. For more information, contact the nursing department at bsnnurse@nmu.edu.

Note: Completion of prerequisites does not guarantee admission to the nursing program.

Admission to the Baccalaureate Nursing Sequence

Before applying for admission to the nursing sequence, applicants must:

1. be admitted to Northern Michigan University;
2. have completed or be in the process of completing the following courses: BI 201 Human Anatomy, BI 202 Human Physiology, CH 107 Introductory Chemistry I, CH 108 Introductory Chemistry II, PY 100 Psychology and SO 101 Introductory Sociology or equivalent courses. Prerequisites must be completed with a "C-" or better. In special circumstances, the department may substitute BI 104 Human Anatomy and Physiology for BI 201; and
3. have a 2.75 or greater cumulative NMU grade point average. The transfer grade point average of those courses with a "C-" or above will be used until a student completes 12 credit hours at NMU.

Note: Admission to the BSN program is very competitive. Meeting prerequisites and minimum GPA criteria does not ensure admission.

Admission to the Fast Track Baccalaureate Nursing Sequence

Before applying for admission to the fast track nursing sequence, applicants must:

1. be admitted to Northern Michigan University;
2. have completed or be in the process of completing all non-nursing graduation requirements;
3. have completed or be in the process of completing all the prerequisite courses: BI 201 Human Anatomy, BI 202 Human Physiology, CH 107 Introductory Chemistry I, CH 108 Introductory Chemistry II, SO 101 Introductory Sociology and PY 100 Psychology with a "C-" or better. In special circumstances, the department may substitute BI 104 Human Anatomy and Physiology for BI 201; and
4. have a 3.00 or greater cumulative NMU grade point average. The transfer grade point average of those courses with a C- or above will be used until a student completes 12 credit hours at NMU.

Note: Admission to the fast track BSN program is very competitive. Meeting prerequisites and minimum GPA criteria does not ensure admission.

Application Deadlines

All prospective BSN students must complete and submit an application with a current transcript of grades to the School of Nursing by February 1 for the succeeding fall semester, or by October 1 for the succeeding winter semester.

The School of Nursing admits a limited number of students to the baccalaureate nursing sequence each semester. Records and applications of all students are reviewed promptly, and students are notified of acceptance or rejection no later than the beginning of the pre-registration period. If the number of eligible applicants exceeds the number of placements available, the faculty reserves the right to select the applicants who shall be admitted. The remaining eligible applicants may apply for admission the following semester. Ordinarily, students may expect to complete the entire program in approximately three academic years after being admitted to the nursing sequence, assuming that they complete all of their courses satisfactorily and sequentially.

Admission of Licensed Practical Nurses to the Baccalaureate Program

Students with an LPN license who request admission to the BSN program and have graduated from an LPN program within five years of admission into the BSN program and/or have worked as an LPN within five years of admission into the BSN program, are granted, without testing, advanced placement credit for: NE 201 Introduction to Nursing Concepts: Theory (4 credits), NE 202 Introduction to Nursing Skills I: Lab (1 credit) and NE 204 Introduction to Nursing Concepts II: Clinical (2 credits).

LPN student applicants who have not practiced as an LPN and have graduated more than five years prior to admission will be required to successfully complete challenge exams for advanced placement credit.

All LPN student applicants may take the NLN Pharmacology placement exam for advanced placement credit for NE 212 Pharmacology and Therapeutics (2 credits).

Students must submit a copy of their current Michigan LPN license prior to acceptance into the BSN program.

Preadmission requirements are the same as delineated in "Admission to the Baccalaureate Nursing Sequence."

Admission of Registered Nurses

Credit for a maximum of 39 semester hours of selected previous nursing courses will be granted to those individuals transferring from an NLN accredited program or a community college with whom the School of Nursing has an articulation agreement. RNs who enter the BSN program with a deficit in

nursing credits can make up the deficit with credits from the School of Nursing including nursing electives, NE 399 Advanced Nursing Apprenticeship and/or NE 491 Nursing Practicum/Internship. If the scheduling and/or staffing of nursing courses does not allow the student the opportunity to make up the credit deficit from nursing courses, other courses may be substituted with department approval.

To be admitted to the nursing major, RN to BSN applicants must:

1. be admitted to Northern Michigan University;
2. have graduated from a state-approved diploma or associate degree program in nursing;
3. provide a photocopy of a current unrestricted Michigan RN license (or proof of being in process of obtaining licensure);
4. have a 2.75 or greater cumulative NMU grade point average. The transfer grade point average of those courses with a "C-" or above will be used until a student completes 12 credit hours at NMU; and
5. have completed or concurrently enrolled in the following courses: BI 201 Human Anatomy, BI 202 Human Physiology, BI 203 Medical Microbiology, CH 107 Introduction to Chemistry I (or CH 111), CH 108 Introduction to Chemistry II (or CH 112), HN 301 Nutrition for Health Professions, NE 391 Transitions in Professional Nursing (Theory), NE 392 Transitions in Professional Nursing (Clinic), PY 100 Psychology and SO 101 Introductory Sociology. Non-nursing course prerequisites must be completed with a "C-" or higher. NE 391 Transitions in Professional Nursing (Theory) and NE 392 Transitions in Professional Nursing (Clinic) must be completed with a "C" or higher. In special circumstances the department may substitute BI 104 Human Anatomy and Physiology for BI 201 and waive HN 301 Nutrition for Health Professions if HN 210 Nutrition for Humans or an equivalent course has been successfully completed.

Admission of Registered Nurses to the Online RN to BSN Program

Once per academic year, a cohort of students is admitted to the RN to BSN online program. The requirements for admission and progression are the same as those listed for admission of registered nurses. The admission deadline varies; check for dates by e-mailing msnnurse@nmu.edu. The online program provides all nursing courses in a Web-based format. Students complete their clinical experiences in their own communities via a preceptor.

In addition to the requirements noted for admission of RNs, students in the online program should be proficient in basic computer skills such as e-mail, uploading and downloading documents, and attaching files.

Retention in the Nursing Sequence

To remain in the program, all students:

1. must maintain a minimum 2.25 NMU cumulative grade point average. If the cumulative grade point average falls below 2.25, the student is not eligible to enroll in a nursing course until the cumulative grade point average is raised to 2.25. Since the student is not enrolled in any nursing classes while the grade point average is less than 2.25, the student must reapply to the nursing major when the student's grade point average enables the student to again enroll in a nursing class;
2. must successfully complete a nursing course on the first or second attempt (i.e., students may repeat a nursing course only once);
3. may only fail one nursing course throughout the curriculum. Failure in more than one of the following nursing courses will result in dismissal from the program: NE 200/200L Basic Health Assessment, Interviewing and Communication: Theory and Laboratory; NE 201/202 Introduction to Nursing Concepts: Theory and Laboratory; NE 301/302 Psychiatric/Mental Health Nursing: Theory and Clinic; NE 311/312 Adult Health Nursing: Theory and Clinic; NE 371/372 Maternal-Infant Nursing: Theory and Clinic; NE 381/382 Child and Family Nursing: Theory and Clinic; NE 420/421 Community Health Nursing and Continuity of Care: Theory and Clinic; NE 431/432 Management Concepts in Nursing: Theory and Clinic; and NE 391/NE 392 Transitions in Nursing: Theory and Clinic;
4. must complete all nursing courses with a minimum grade of "C" or "S" when course is graded "S/U";
5. must adhere to the university student code; and
6. must demonstrate a pattern of safe clinical practice commensurate with their educational experiences.

The faculty reserves the right to withdraw any student whose health, conduct, scholastic standing or clinical practice is such that it is inadvisable for the student to remain in the School of Nursing. Each student is responsible for reading the *Northern Michigan University Undergraduate Bulletin* and the *Student Nurse Handbook*, and seeking consultation with the School of Nursing if specific questions arise.

Students who withdraw from the program and wish to re-enter must follow the same application and admission procedure as all pre-nursing students.

Note: Before graduation, students must pass the RN-CAT Exam. Students may take the exam only two times per semester. (This graduation requirement does not apply to RN-BSN program students.) All School of Nursing student policies are clearly described in the *BSN Student Nurse Handbook*, which is available in the school office.

Review Testing Package

All BSN students are required to register and complete selected clinically associated Educational Resources, Inc. (ERI) assessment tests. Students register for these tests each semester. The tests are listed as co-requisite to the appropriate course. The ERI tests carry no credit and grades are either Satisfactory (S) or Unsatisfactory (U). An NCLEX RN Review course is included in the testing package. There is a service charge each semester for the assessment package.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Nursing Major

This program combines the study of humanities and physical and behavioral sciences with professional nursing courses and clinical experience. Students are expected to demonstrate competency in critical thinking, communication and therapeutic nursing interventions when providing care for clients, families and communities. Graduates of the program are qualified to take the National Council for Licensure Exam (NCLEX-RN) and to apply for entrance to graduate programs in nursing. See admission and retention standards for this program outlined above.

Key: T=Theory, C=Clinic, L=Lab

Total Credits Required for Degree	130
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	62
NE 200 Basic Health Assessment, Interviewing and Communication (T)	2
NE 200L Basic Health Assessment, Interviewing and Communication (L)	1
NE 201 Introduction to Nursing Concepts (T)	4
NE 202 Introduction to Nursing Skills I (L)	1
NE 204 Introduction to Nursing Skills II (C)	2
NE 212 Pharmacology and Therapeutics (T)	2
NE 222 Concepts of Altered Health States (T)	3
NE 301 Psychiatric Mental Health Nursing (T)	3
NE 302 Psychiatric Mental Health Nursing (C)	3
NE 311 Adult Health Nursing (T)	4

NE 312 Adult Health Nursing (C)	6
NE 322 Introduction to Nursing Research (T)	2
NE 371 Maternal - Infant Nursing (T)	2
NE 372 Maternal - Infant Nursing (C)	2
NE 381 Child and Family Nursing (T)	4
NE 382 Child and Family Nursing (C)	3
NE 420 Community Health Nursing and Continuity of Care (T)	4
NE 421 Community Health Nursing and Continuity of Care (C)	4
NE 422 Nursing Issues Seminar (T)	2
NE 431 Management Concepts in Nursing (T)	2
NE 432 Management Concepts in Nursing (C)	4
NE 435 Senior Nursing Seminar (T)	2

Other Required Courses	33
BI 201 Human Anatomy	3
BI 202 Human Physiology	5
BI 203 Medical Microbiology	5
CH 107 Introductory Chemistry I* (4 cr.) [III] <i>or</i> CH 111 General Chemistry I* [III] (5 cr.)	4-5
CH 108 Introductory Chemistry II* [III] <i>or</i> CH 112 General Chemistry II (5 cr.) [III]	4
HN 301 Nutrition for Health Professions	4
PY 100L, S or H Psychology as a Laboratory Science [III] <i>or</i> PY 100G Psychology as a Social Science [IV]	4
SO 101 Introductory Sociology [IV]	4

*Transfer Students: Other chemistry courses may be substituted for the Northern Michigan University chemistry course requirement (chemistry: 6 semester credits minimum) at the discretion of the nursing faculty.

The Nursing Department accepts biology courses (anatomy, physiology and microbiology) from other colleges and universities that are at least 3 credit hours. If any course that includes a laboratory component is less than 3 credit hours, the student will take the specific course at NMU or a substitute designated by the department.

NE 312 Adult Health Nursing (C)*	6
NE 322 Introduction to Nursing Research (T)	2
NE 371 Maternal - Infant Nursing (T)*	2
NE 372 Maternal - Infant Nursing (C)*	2
NE 381 Child and Family Nursing (T)*	4
NE 382 Child and Family Nursing (C)*	3
NE 420 Community Health Nursing and Continuity of Care (T)	4
NE 421 Community Health Nursing and Continuity of Care (C)	4
NE 422 Nursing Issues Seminar (T)	2
NE 431 Management Concepts in Nursing (T)	2
NE 432 Management Concepts in Nursing (C)	4
NE 435 Senior Nursing Seminar (T)	2

Other Required Courses	33
BI 201 Human Anatomy	3
BI 202 Human Physiology	5
BI 203 Medical Microbiology	5
CH 107 Introductory Chemistry I** (4 cr.) [III] <i>or</i> CH 111 General Chemistry I** [III] (5 cr.)	4-5
CH 108 Introductory Chemistry II** [III] <i>or</i> CH 112 General Chemistry II (5 cr.) [III]	4
HN 301 Nutrition for Health Professions	4
PY 100L, S or H Psychology as a Laboratory Science [III] <i>or</i> PY 100G Psychology as a Social Science [IV]	4
SO 101 Introductory Sociology [IV]	4

*Courses included in the maximum 39 semester hours of transfer nursing courses.

**Transfer Students: Other chemistry courses may be substituted for the Northern Michigan University chemistry course requirement (chemistry: 6 semester credits minimum) at the discretion of the nursing faculty.

The Nursing Department accepts biology courses (anatomy, physiology and microbiology) from other colleges and universities that are at least 3 credit hours. If any course that includes a laboratory component is less than 3 credit hours, the student will take the specific course at NMU or a substitute designated by the department.

RN to Baccalaureate Nursing Degree Program

This degree is designed for students who already hold a Michigan RN license, but who have not completed a baccalaureate program. See admission and retention standards for this program outlined above.

Key: T=Theory, C=Clinic, L=Lab

Total Credits Required for Degree	130
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	62
NE 391 Transitions in Professional Nursing (T)	2
NE 392 Transitions in Professional Nursing (C)	1
NE 201 Introduction to Nursing Concepts (T)*	4
NE 202 Introduction to Nursing Skills I (L)*	1
NE 204 Introduction to Nursing Skills II (C)*	2
NE 212 Pharmacology and Therapeutics (T)*	2
NE 222 Concepts of Altered Health States (T)*	3
NE 301 Psychiatric Mental Health Nursing (T)*	3
NE 302 Psychiatric Mental Health Nursing (C)*	3
NE 311 Adult Health Nursing (T)*	4

Review Testing Package Educational Resources, Inc. (ERI)

Nursing Course	I.D. for Correlating ERI Exam
NE 200	NE 002 Fundamentals
NE 204	No ERI exam
NE 301	NE 003 Mental Health Nursing
	NE 003 Therapeutic Communication
NE 311	NE 004 Adult Health I
	NE 004 Adult Health II (Med-Surg)
NE 371	NE 009 Childbearing
NE 381	NE 005 Pediatric Nursing
NE 420 (RNs are not exempt)	NE 007 Community Health Review
NE 420 (RNs are exempt)	NE 001 RN-CAT
NE 435 (RNs are exempt)	NE 006 Review Course

NURSING-PRACTICAL

PRACTICAL NURSING OFFICE

3515 West Science

Phone: 906-227-2640

Fax: 906-227-1309

Web Page: www.nmu.edu/nursing/practical

Department E-mail: LPN@nmu.edu

Department Head: Kerri Schuiling

Coordinator: Kristi Robinia



Practical Nursing at NMU

The School of Nursing is committed to providing a quality education for students seeking a one-year certificate in practical nursing.

The practical nursing program prepares graduates to provide nursing care to patients and their families in hospitals, nursing homes, physician offices, home health care agencies and health clinics. The program of study combines nursing theory lectures with planned patient care learning experiences in hospitals, nursing homes and community health care agencies. Graduates are qualified to take the National Council of Licensure Examination (NCLEX-PN).

Accreditation

Northern's practical nursing program is fully accredited by the Michigan Department of Licensing and Regulation, State Board of Nursing.

Student Organization

- Student Practical Nurses Association

Department/Program Policies

Prospective students must have a high school diploma or GED and a 2.00 high school grade point average. Practical nursing students who place lower than MA 100 Intermediate Algebra and EN 111 College Composition I on the Northern Michigan University math and English placement tests may be required to take remedial courses in these areas before being considered for admission.

If required for their program, students are responsible for their own transportation to the clinical facilities, and must buy uniforms, white shoes, name pin, bandage scissors and a stethoscope. Students must have proof of a tuberculosis test or chest X-ray and rubella screening before beginning the clinical experience; completion of a CPR course or current certification is also required. A Hepatitis B vaccination is recommended.

Students in baccalaureate degree programs may apply up to six credits of cosmetology (COS), practical nursing (PN) and surgical technology (ST) courses combined toward graduation unless otherwise prohibited. Students in associate degree programs may apply three credits of these courses combined toward graduation, and those in certificate programs other than cosmetology, practical nursing and surgical technology may apply two credits of these courses combined toward graduation unless otherwise prohibited.

Admission to the Practical Nursing Clinical Program

Admission to the practical nursing clinical sequence of courses is limited. The admissions committee in the School of Nursing's Practical Nursing Department reserves the right to select students to be admitted. Admission into the clinical nursing sequence is based on the student's cumulative grade point average in the prerequisite courses and admission placement test results. Students who have the highest grade point average in the prerequisite courses and the highest admission test scores will be admitted first until the class is filled.

To be considered for admission into the practical nursing clinical program, students must meet the following qualifications:

1. Meet all NMU admission requirements and be in good standing.
2. Take the Pre-Practical Nursing Assessment test, if required.
3. Have a minimum cumulative grade point average of 2.00 (C) in all the prerequisite college courses required in the program with no grade below "C." In addition, students must have a cumulative NMU GPA of 2.00.
4. Have successfully passed all required prerequisite nursing courses after a maximum of two tries. This includes PN 100, AH 102, PN 103 and NE 212 (if taken prior to admission to the program).

Practical nursing students will be notified of acceptance or rejection during the summer semester.

Retention in the Practical Nursing Sequence

For students to remain in the nursing sequence, they need to meet the following conditions:

1. Maintain a minimum overall grade point average of 2.00 in all nursing courses with no course below a "C" and maintain an overall Northern Michigan University grade point average of 2.00.
2. Adhere to the university's Student Code and Practical Nursing Student Policies.
3. Demonstrate a pattern of safe clinical practice commensurate with his or her educational experience to date.
4. Successfully pass all required nursing courses after a maximum of two tries.

Practical Nursing Readmission Criteria

Practical nursing courses are sequential, and there is limited space in some courses. When a student wishes to be readmitted into the nursing sequence of courses after having a withdrawal or failure in a previously enrolled course, the student must apply for readmission to the department coordinator. Readmission for PN 122/126 Medical-Surgical Nursing I must be received before the start of the fall semester. Readmission requests for PN 132/136 Maternal/Child Nursing must be received by November 20 of the year before requested readmission.

The practical nursing student who is seeking readmission will be required to demonstrate proficiency in a series of nursing procedures that are part of the last successfully completed clinical nursing course.

Students who have failed any nursing courses more than once are ineligible for readmission. These courses include NE 212, PN 114, PN 116, PN 122, PN 126, PN 132, PN 136, PN 142 and PN 146.

CERTIFICATE PROGRAM

Practical Nursing Certificate

Required prerequisite courses may be taken on a full or part time basis.

Total Credits Required for Certificate	49
<hr/>	
Health Promotion	1
HP 200 Physical Well Being	1
<hr/>	
Required Prerequisite Courses	14
BI 104 Human Anatomy and Physiology	4
HN 210 Human Nutrition	4
PN 100 Introduction to Practical Nursing	2
AH 102 Growth and Development	3
PN 103 Basic Pharmacology Skills	1

Upon receiving notice of acceptance into the practical nursing program the following sequence of classes will be followed:

Fall Semester	18
PN 114 Fundamentals of Nursing-Lecture	4
PN 116 Fundamentals of Nursing-Clinical	4
PN 122 Medical-Surgical Nursing I-Lecture	4
PN 126 Medical-Surgical Nursing I-Clinical	4
NE 212 Pharmacology	2
Winter Semester	16
PN 132 Maternal/Child Nursing-Lecture	4
PN 136 Maternal/Child Nursing-Clinical	4
PN 142 Medical-Surgical Nursing II-Lecture	4
PN 146 Medical-Surgical Nursing II-Clinical	4

PHILOSOPHY

DEPARTMENT OFFICE

208 Cohodas Administrative Center

Phone: 906-227-2512

Fax: 906-227-2229

Web Page: www.nmu.edu/philosophy

Department Head: Russell M. Magnaghi •
rmagnagh@nmu.edu



Philosophy at NMU

Philosophy courses are designed to make students aware of major philosophical questions, the alternative answers proposed by philosophers and the ways answers are achieved, and to assist students in developing a view of life. In addition, philosophy courses help students achieve the goals common to all liberal arts studies.

The department offers course work leading to baccalaureate degrees in philosophy and minor programs in philosophy, applied ethics and religious studies.

Student Organization

- Student Philosophy Club

Department/Program Policies

Students are strongly recommended to work closely with their academic advisers in order to create the best possible individual programs in their majors and minors and successfully meet all other requirements for graduation.

BACHELOR DEGREE PROGRAM

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Philosophy Major

This major offers useful preparation for any career in which the abilities to comprehend difficult material and to think and write clearly and logically are important. The major serves as an excellent foundation for postgraduate work in law and theology as well as in philosophy itself.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Major	32
PL 200 History of Ancient and Medieval Philosophy** [II]	4
PL 210 History of Modern Philosophy** [II]	4
Philosophy Electives*	24
Minor	20

*16 credit hours of 300-level courses are strongly recommended but not required.

**Recommended but not required.

Note: Students may substitute up to two courses from a different department to meet the major requirement in philosophy as long as they have a heavy philosophical content.

Any substitution must have the written approval of the student's adviser and the head of the department. A copy of the substitution(s) will be sent to the Degree Audits Office by the department.

MINOR PROGRAMS

Applied Ethics Minor

A minor in applied ethics provides students with a strong background in a number of business and medical fields. It is an excellent complement for students majoring in business and nursing, or for students in the pre-medical program.

Total Credit Required for Minor 20

PL 180 Fundamentals of Ethical Theory 4
PL 310 Social and Political Philosophy 4

Philosophy Elective 4

Choose from the following:

PL 100 Introduction to Philosophy (4 cr.)
PL 200 History of Ancient and Medieval (4 cr.)
PL 210 History of Modern Philosophy (4 cr.)
PL 280 Philosophy of Religion (4 cr.)

Ethics Electives 8

Choose from the following:

PL 181 Issues in Business (2 cr.)
PL 182 Issues in Computer Ethics (2 cr.)
PL 183 Issues in the History of Ethics (2 cr.)
PL 184 Issues in Legal Ethics (2 cr.)
PL 185 Issues in Medical Ethics (2 cr.)
PL 186 Topics in Theoretical Ethics (2 cr.)

Note: If needed, the student may include a course from another department that deals with the implementation of theoretical norms for a maximum of four credits. If an elective course from another department is used for the applied ethics minor, it must be chosen in consultation with either Professor David Cooper or Professor James Greene of the Philosophy Department. When approved, the student's adviser will then file the name of the course with the Degree Audits Office.

Philosophy Minor

Total Credits Required for Minor 20

PL 200 History of Ancient and Medieval Philosophy *and/or* 4-8
PL 210 History of Modern Philosophy* (4 cr.)

PL Electives** 12-16

**Recommended but not required.*

***Eight credit hours of 300-level courses are strongly recommended but not required.*

Religious Studies Minor

A minor in religious studies provides students with a strong background in religion and prepares them for graduate school in theology, religious studies and the seminary. It is an excellent complement to majors in history, sociology and English.

Total Credits Required for Minor 20

PL 280 Philosophy of Religion 4
LB 121 Western Values: Greeks and Bible *and/or* 4-8
EN 310 Literature and the Bible* (4 cr.)
SO 312 Religion and Society 4

Other Approved Electives 4-8

**Recommended but not required.*

Note: A list of courses used in the religious studies minor, beyond those that are required, must be developed in consultation with Professor Donald Dreisbach of the Philosophy Department. When approved, he will then file a copy of the list in the Degree Audits Office.

PHYSICS

DEPARTMENT OFFICE

2515 New Science Facility

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Physics at NMU

The Physics Department provides courses and training designed for the preparation of physics majors and minors. It also offers courses that provide the background in physics required in other curricula such as engineering, allied health sciences, biology, chemistry and education. Additionally, the department offers courses appropriate for students to meet the liberal studies foundations of natural sciences/mathematics requirement.

The department offers programs leading to a bachelor of science or bachelor of arts degree in physics and secondary education physics, and minor programs in physics and physics education. The department also participates in offering a secondary education general science major. See the "Interdisciplinary and Individually Created Programs" section of this bulletin.

Students seeking careers in engineering, mathematics, chemistry and other physical sciences should take PH 220 and PH 221, which provide a one-year, calculus-based physics sequence with laboratory. Nonphysical science majors and other preprofessional students should plan on taking PH 201 and PH 202. This is a noncalculus-based sequence (including laboratory), which is also suitable for biology majors.

Student Organizations

- Physics Club
- Pre-Medical/Pre-Dental Club
- Student Michigan Education Association

Department/Program Policies

Physics Breakage Fee

Students enrolled in a physics laboratory must pay the cost of replacement for any broken glassware, broken equipment or lost tools in excess of one dollar. Records are maintained in the Physics Department, and students are notified of any amount due after the last laboratory meeting.

Prerequisite Work

Physics courses that indicate prerequisites may be taken only when the prerequisite work has been completed with a grade of "C" or higher.



Grade Point Average Requirements

A grade of "C" or better must be earned in all physics courses that apply to the non-teaching major or minor in physics.

Students majoring in secondary education physics or minoring in physics education must maintain a grade point average of 2.70 or greater with no grade below a "C" in the professional education sequence, the major and/or minors and required cognates combined.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Physics Major

This major prepares students for technical or research positions in government or private industry, teaching or graduate study. Physics courses explain and describe physical interactions by utilizing conservation laws and the concepts of force and energy.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	35
PH 220 Introductory Physics I [III]	5
PH 221 Introductory Physics II [III]	5
PH 322 Modern Physics	4
PH 375 Analytical Mechanics <i>or</i>	3
PH 380 Intermediate Electricity and Magnetism	
PH 480 Senior Physics Seminar	1

Physics Electives 17
PH 370, PH 375, PH 380, PH 393, and PH 410 are strongly recommended.

Other Required Courses 10
 CH 111 General Chemistry I [III] 5
 CH 112 General Chemistry II [III] 5

Minor 21

Mathematics minor recommended as follows:
 MA 161 Calculus I (5 cr.) [III]
 MA 163 Calculus II (4 cr.) [III]
 MA 211 Introduction to Matrix Theory and Linear Algebra (3 cr.)
 MA 265 Calculus III (3 cr.)
 MA 361 Differential Equations (3 cr.)
 Mathematics Elective (3 cr.)

Secondary Education Physics Major

Completion of the physics courses, a teaching minor and the professional education sequence leads to certification as a secondary teacher of physics. Advising for this major is provided by Carolyn J. Lowe in the School of Education.

Total Credits Required for Degree 150-152

Liberal Studies 30-40
Health Promotion 2

Required Courses in Major 32
 PH 220 Introductory Physics I [III] 5
 PH 221 Introductory Physics II [III] 5
 PH 322 Modern Physics 4

Physics Electives 18

Teaching Minor, minimum 23-25
Mathematics education or chemistry education recommended. If mathematics is not selected, appropriate mathematics courses must be taken as prerequisites for the required physics courses.

Other Required Courses 26
Choose from the following: 8
 AS 103 Observational and Solar System Astronomy (4 cr.) [III] *or*
 GC 255 Physical Geology (4 cr.) [III] *or*
 GC 385 Weather and Climate (4 cr.)
 BI 111 Introductory Biology: Principles [III] 4
 BI 112 Introductory Biology: Diversity [III] 4
 CH 111 General Chemistry I [III] 5
 CH 112 General Chemistry II [III] 5

Professional Education 37
 ED 201 Introduction to Education 2
 ED 231 Teaching and Learning in the Secondary Classroom 4
 ED 301 Dimensions of American Education 2
 ED 319 Teaching of Reading for Secondary Teachers 3
 MSED 340 Fundamental Concepts of Science 4
 ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community 2
 MSED 350 Methods and Materials in Teaching Science Education 4
 ED 361 Special Education and the General Classroom Teacher 2
 ED 483 Educational Media and Technology 2
 ED 430 Teaching in the Secondary School 11
 ED 450 Seminar in Teaching 1

MINOR PROGRAMS

Physics Minor

Total Credits Required for Minor 20

PH 220 Introductory Physics I 5
 PH 221 Introductory Physics II 5
 PH 322 Modern Physics 4
 PH 375 Analytical Mechanics *or* 3
 PH 380 Intermediate Electricity and Magnetism
 Physics Elective 3

Physics Education Minor

Total Credits Required for Minor 20-28

PH 220 Introductory Physics I 5
 PH 221 Introductory Physics II 5
 PH 322 Modern Physics 4
 PH 375 Analytical Mechanics *or* 3
 PH 380 Intermediate Electricity and Magnetism
 Physics Elective 3
 MSED 340 Fundamental Concepts of Science* 4
 MSED 350 Methods and Materials in Teaching* 4

**Not needed if major is biology education, chemistry education, earth science education or integrated science education.*

POLITICAL SCIENCE AND PUBLIC ADMINISTRATION

DEPARTMENT OFFICE

208 Cohodas Administrative Center

Phone: 906-227-2019

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Web Page: www.nmu.edu/politicalscience

Interim Department Head: Brian D. Cherry •

bcherry@nmu.edu

Political Science and Public Administration at NMU

The Political Science and Public Administration Department has three major objectives. First, the department provides students with a traditional liberal arts education. The department's offerings in the university-wide liberal studies program create an awareness and understanding of national and international political processes. Second, the department's professional and preprofessional programs in political science, law, public administration and education facilitate the development of talented and ethical leaders and educators. Third, the department's faculty and students study and assist in the resolution of political and administrative problems in the local community, the Upper Peninsula region and the state.

The department offers majors in political science, public administration and political science/pre-law. Students interested in secondary teaching must apply for admittance to and pursue the professional education emphasis along with a political science major or minor. A political science minor and a public administration minor are available and can be arranged to complement a variety of majors. Interdisciplinary majors in social science and secondary education social studies are offered by the department, along with support courses in the international studies major. See the "Interdisciplinary Programs" and "International Studies" sections of this bulletin.

Internships in public administration and law are secured for qualified juniors and seniors. Internships are available at the local, state and national level. Competitive scholarships for student interns in the nation's capital are provided through NMU's Washington Center Internship Program.

Student Organizations

- College Republicans
- Young Democrats
- Model United Nations Club
- Political Science Film Forum



- Political Science Symposium
- Student Law Forum
- Student Michigan Education Association

Pre-law Advising

Pre-law students enroll in courses, work as legal interns and participate in mock trial competition and other law-related extracurricular activities. All students planning to attend law school should contact the Political Science and Public Administration Department for referral to one of our well-qualified pre-law advisers. A specific political science/pre-law major is available to students, but law schools will accept students with other majors, and our pre-law advisers will work with all students in selecting appropriate course work that prepares them for law school, in fulfilling other prerequisites for law school admission, and on making application to law schools.

Department/Program Policies

Students majoring in political science/pre-law must maintain a grade point average of 2.70 or greater with no grade below a "C" in courses for the major. Students with majors or minors in political science or public administration must not have any grade below a "C" in courses for the major or minor.

Students majoring in secondary education political science or minoring in political science secondary education must maintain a grade point average of 2.70 or greater with no grade below a "C" in the professional education sequence, the major and/or minors and required cognates combined.

Course Subject to Waiver

When courses within a major or minor are listed as subject to waiver, and the adviser has approved the waiver, the political science elective credit hours required in that block is increased by four.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Political Science Major

This major trains students in government, public policy and political theory, communication and analysis, independent thinking, and problem definition and solving.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	38
Politics Core	14
PS 101 Introduction to Political Science <i>or</i> PS 105 American Government	4
PS 203 Comparative Government and Politics <i>or</i> PS 206 International Relations	4
PS 207 History of Political Theory <i>or</i> PS 411 American Political Thought	4
PS 490 Senior Seminar	2
Political Science Electives (16 hours must be taken at the 300 level and above)	24
Minor	20

Political Science/Pre-Law Major

This major prepares students for law schools and legal careers. It emphasizes basic understanding in political science but also includes courses that focus on the law and judicial process.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	38
Politics Core	14
PS 101 Introduction to Political Science <i>or</i> PS 105 American Government	4
PS 203 Comparative Government and Politics <i>or</i> PS 206 International Relations	4
PS 207 History of Political Theory <i>or</i> PS 411 American Political Thought	4
PS 490 Senior Seminar	2

Other required courses	12
PS 215 Introduction to Law	4
PS 331 Judicial Process	4
PS 332 Administrative Law <i>or</i> PS 430 Constitutional Law	4
Political Science Electives	12
Choose from the following:	
PS 297 Mock Trial (2 cr.)	
PS 307 Public Administration (4 cr.)	
PS 309 State and Local Government (4 cr.)	
PS 332 Administrative Law (4 cr.) <i>or</i> PS 430 Constitutional Law (4 cr.)	
PS 411 American Political Thought (4 cr.)	
PS 491 Internship (2-8 cr.)	
PS 495 Special Problems in Political Science (1-4 cr.)	
PS 498 Directed Study (1-4 cr.)	
Minor	20

Public Administration Major

This major prepares students for careers in management in the public sector. Students analyze and discuss operations of all forms and levels of government and learn the basic principles of government, political philosophy, statistical analysis and computer literacy.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	38
Political Science Core	22
Politics Core	14
PS 101 Introduction to Political Science <i>or</i> PS 105 American Government	4
PS 203 Comparative Government and Politics <i>or</i> PS 206 International Relations	4
PS 207 History of Political Theory <i>or</i> PS 411 American Political Thought	4
PS 490 Senior Seminar	2
Other required courses	12
PS 201 Methods of Public Policy Analysis	4
PS 301 Seminar in Public Policy Analysis	4
PS 307 Principles of Public Administration	4
Political Science Electives	12
Choose from the following (8 credits must be at the 300-400 level)	
PS 295 Special Topics in Political Science (1-4 cr.)	
PS 298 Directed Study (1-4 cr.)	
PS 309 State and Local Government (4 cr.)	
PS 332 Administrative Law (4 cr.)	
PS 341 Social Welfare Policy Making (4 cr.)	
PS 402 Political Economy (4 cr.)	
PS 491 Internship (2-8 cr.)	
PS 495 Special Problems in Political Science (1-4 cr.)	
PS 498 Directed Study (1-4 cr.)	
Minor	20

Secondary Education Political Science Major

Completion of the required courses in this major, a teaching minor and the professional education sequence lead to certification as a secondary teacher of political science.

Total Credits Required for Degree	127-131
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	32
Political Science Core	28
PS 101 Introduction to Political Science [IV]	4
PS 105 American Government [IV]	4
PS 203 Comparative Government	4
PS 206 International Relations	4
PS 309 State and Local Government	4
PS 430 American Constitutional Law and Politics	4
PS 303 Public Opinion and Voting Behavior <i>or</i> PS 406 Legislative Politics	4
Political Science Electives	4
Teaching Minor, minimum	20-24
Professional Education	33
ED 201 Introduction to Education	2
ED 231 Teaching and Learning in the Secondary Classroom	4
ED 301 Dimensions of American Education	2
ED 319 Teaching of Reading for Secondary Teachers	3
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	2
PS 350 Methods and Materials in Teaching Social Studies Education	4
ED 361 Special Education and the General Classroom Teacher	2
ED 483 Educational Media and Technology	2
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1

Political Science Education Minor

Total Credits Required for Minor	20-24
PS 101 Introduction to Political Science*	4
PS 105 American Government	4
PS 203 Comparative Government	4
PS 206 International Relations	4
PS 309 State and Local Government	4
PS 350 Methods and Materials in Teaching Social Studies Education**	4

*Subject to waiver with adviser's approval.

**Not required if major is economics education, geography education, history education or social studies education.

Public Administration Minor

Total Credits Required for Minor	20
PS 105 American Government	4
Political Science Electives	16
<i>Choose from the following:</i>	
PS 201 Methods of Public Policy Analysis (4 cr.)	
PS 301 Seminar in Public Policy Analysis (4 cr.)	
PS 307 Principles of Public Administration (4 cr.)	
PS 309 State and Local Government (4 cr.)	
PS 332 Administrative Law (4 cr.)	
PS 402 Political Economy (4 cr.)	

MINOR PROGRAMS

Political Science Minor

Total Credits Required for Minor	20
PS 101 Introduction to Political Science*	4
PS 105 American Government	4
PS 203 Comparative Government	4
Political Science Electives (any level)	8

*Subject to waiver with adviser's approval.

PSYCHOLOGY

DEPARTMENT OFFICE

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Web Page: www.nmu.edu/psychology

Department Head: Sheila L. Burns • sburns@nmu.edu

Psychology at NMU

The Psychology Department promotes the discovery, communication and application of the scientific principles of psychology within the university and the community. The department offers courses and programs suitable for majors and minors interested in psychology, and students majoring in other areas needing or desiring psychological cognates and electives. Courses emphasize the research methodology and data of both human and lower animal behavior as well as its theoretical and applied implications. Students are encouraged to participate in the rigorous search for the how and why of behavior and the identification and potential resolution of significant problems.

The major programs in psychology can lead either to a bachelor of arts or bachelor of science degree. Students desiring a major in psychology choose one of four areas of emphasis: general psychology, graduate school preparation, behavior analysis, or early childhood. The department also offers minor programs in psychology and child care services.

Student Organizations

- Student Psychological Association
- Michigan Association for the Education of Young Children
- Psi Chi Honor Society

Department Facilities

The department maintains human and animal experimental laboratories, student research rooms, laboratory classrooms, computer labs, a small library for majors, and student study areas. Head Start facilities on campus and in the area, as well as private for-profit and non-profit child care facilities, provide laboratory experiences for applied child development and early childhood.

Department/Program Policies

To apply to the general psychology, psychology/ graduate school preparation and psychology/behavior analysis majors, all psychology courses, both transfer and NMU, must be completed with a grade of "C-" or higher. Courses comprising the psychology minor and the human services minor also must be completed with a grade of "C-" or higher.

Students enrolled in the early childhood major, the applied child development associate degree and the child care services minor must earn a minimum of 2.00 ("C") in each of the major/minor courses. Additionally, these programs require a 2.50 grade point average in the major/minor. Advanced placement score of four or higher on the AP-CEEB examination is accepted as credit for PY 100G.

All psychology majors are encouraged to become functional users of mathematics and computers and to sample natural sciences outside of psychology.

Talented freshmen and sophomores may petition the department to take advanced courses at or above the 300 level.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

General Psychology Major

This major can serve as a focal point in a general liberal arts education with an emphasis on psychology or as a second major to support a primary major in another field.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	40
PY 100S, L, or H, Psychology as a Natural Science [III] <i>or</i> PY 100G Psychology as a Social Science [IV]	4
PY 203 Behavior Analysis <i>or</i> PY 211 Learning	4
PY 205 Research Methods in Psychology	4
PY 241 Child Psychology <i>or</i> PY 311 Thinking and Cognition	4
PY 302 Aggression <i>or</i> PY 335 Social Psychology	4
PY 303 Human Neuropsychology	4
PY 351 Psychology of Personality <i>or</i> PY 355 Abnormal Psychology	4
PY 441 Individual Differences	4
Psychology Electives	4
Psychology Electives (300 level or above)	4
Minor	20

Psychology/Graduate School Preparation Major

Graduate school preparation is designed for students who wish to enter advanced degree programs in psychology with the goal of university teaching or research, or becoming involved in human services delivery as clinical or counseling psychologists.

Total Credits Required for Degree	124
Liberal Studies	30-40
<i>Mathematics competence is required. Students must satisfy this requirement either by completing high school calculus, MA 103, MA 104 or MA 105 or equivalent with a grade of "C-" or higher.</i>	
Health Promotion	2
Required Courses in Major	44
PY 100S, L, H, Psychology as a Natural Science [III] or PY 100G Psychology as a Social Science [IV]	4
PY 205 Introduction to Research Methods in Psychology	4
<i>Choose from the following:</i>	20
PY 204 Physiological Psychology (4 cr.)	
PY 211 Learning (4 cr.)	
PY 335 Social Psychology (4 cr.)	
PY 311 Thinking and Cognition (4 cr.)	
PY 241 Child Psychology (4 cr.)	
PY 351 Psychology of Personality (4 cr.)	
 PY 305 Psychological Statistics	4
<i>MA 171 may be taken to meet this requirement, but will not be counted as PY credit hours.</i>	
PY 400 History and Systems	4
 <i>Choose from the following:</i>	8
PY 404 Advanced Physiological Psychology (4 cr.)	
PY 411 Learning Processes (4 cr.)	
PY 435 Advanced Social Psychology (4 cr.)	
Minor	20

Psychology/Behavior Analysis Major

This major is for students who wish either to enter graduate school in behavioral psychology or to improve the probability of gaining employment in areas related to psychologically oriented human services: e.g., as a classroom consultant or a program director in a group home for delinquent adolescents, halfway home for persons with mental illnesses or home for persons who are developmentally disabled. This option particularly stresses applied behavior analysis and behavioral assessment. This major requires two semesters of community placement, which requires instructor and departmental permission and is heavily supervised.

Total Credits Required for Degree	130
Liberal Studies	30-40
Health Promotion	2

Required Courses in Major	44
PY 100S, L, or H Psychology as a Natural Science [III] or PY 100G Psychology as a Social Science [IV]	4
PY 203 Applied Behavior Analysis	4
PY 204 Physiological Psychology [III] or PY 211 Learning	4
PY 241 Child Psychology	4
PY 305 Psychological Statistics [V]	4
<i>MA 171 may be taken to meet this requirement, but will not be counted as PY credit hours.</i>	
PY 320 Psychological Measurement	4
PY 355 Abnormal Psychology	4
PY 403 Behavior Assessment and Evaluation	4
PY 302 Causes and Control of Aggression or PY 436 The Psychology of Organizational Behavior or PY 455 Psychopathology or PY 458 Introduction to Small Group Processes	4
PY 492A Practicum	1-4
PY 492B Advanced Practicum	1-4
Other Required Course*	4
CIS 110 Principles of Computer Information Systems [V] or CS 120 Computer Science I [V]	4

Human Services Group Minor	24
<i>*Computer competence is required. Students satisfy this requirement by completing these courses or equivalent with a grade of "C-" or higher. The requirement can be waived by demonstrating equal levels of competence to the Psychology Department. Adviser must submit waiver in writing to the Degree Audits Office.</i>	

Early Childhood Major

This program prepares students to become child care professionals who understand and meet the needs of children from birth to eight years of age. It also trains students to network with families of young children in a variety of settings. The curriculum combines the study of child psychology with preparation for a career in a variety of early childhood settings. The program has field experiences and a series of supportive courses specializing in developing observational/assessment techniques, child guidance strategies and active learning teaching procedures.

Total Credits Required for Degree	125
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major*	58-59
PY 102 Individual and Family Relationships or SO 232 Marriage and the Family	3-4
PY 156 Developmental Child-Related Services	2
PY 170 Educating the Young Child	2
PY 241 Child Psychology**	4
PY 245 Infant/Toddler Development**	4
PY 247 Infant/Toddler Programming	2
PY 270 Activity Planning I: The Creative Arts	2
PY 272 Activity Planning II: The Sciences	2
PY 285 Developmentally Appropriate Program/ Practice (DAPP)**	4

PY 290 DAPP Field Experience**	4
PY 345 Psychology of Exceptional Children	4
PY 350 Observation/Assessment of Children	2
PY 352 Child Guidance Techniques	4
PY 358 Meaning and Development of Play	4
PY 460 Administration of Preschool Programs	2
PY 491 Practicum/Seminar	4
ED 306 Children's Literature	3
HL 242 Emergency Health Care	2
HM 100 Food Selection and Preparation <i>or</i> HN 210 Nutrition for Humans	4
Other Required Course	4
PY 100S, L or H Psychology as a Natural Science [III] <i>or</i> PY 100G Psychology as a Social Science [IV]	4

Minor 20-24

*2.00 "C" GPA required in each course in the major.

**Departmental advanced placement credit is available for these courses for students who hold the appropriate Child Development Associate (CDA) credential(s). Students need to demonstrate successful completion of the training programs and be enrolled at Northern Michigan University.

ASSOCIATE DEGREE PROGRAM

Applied Child Development *Associate of Applied Science*

This program is designed to establish a foundation of knowledge for the child care provider. Students have a variety of opportunities to examine the elements found in quality child care through class observations and a field experience. Incorporated in this program are significant aspects of the nationally recognized child development associate (CDA) curriculum. These courses "ladder" into the four-year early childhood program.

Total Credits Required for Degree	63
Liberal Studies	16
PY 100S, L or H Psychology as a Natural Science*	4
EN 111 College Composition I	4
Humanities Elective	4
Social Science Elective	4
Health Promotion	1
HP 200 Physical Well Being	1
Required Courses in Major**	35
HM 100 Food Selection and Preparation <i>or</i> HN 210 Human Nutrition	4
PY 102 Individual and Family Relationships	3
PY 156 Developmental Child-Related Services	2
PY 170 Educating the Young Child	2
PY 241 Child Psychology***	4
HL 242 Emergency Health Care	2
PY 245 Infant and Toddler Development***	4
PY 247 Infant/Toddler Programming	2
PY 270 Activity Planning I: The Creative Arts	2
PY 272 Activity Planning II: The Sciences	2
PY 285 Developmentally Appropriate	4

Programs/Practices (DAPP)***	
PY 290 DAPP Field Experience***	4
General Electives	11
<i>*Students who have transfer credit for PY 100G Psychology as a Social Science must select another natural science elective, not PY 100 S, L, or H.</i>	
<i>**2.00 "C" minimum grade is required in each course.</i>	
<i>***Departmental advanced placement credit is available for these courses for students who hold the appropriate CDA credential(s). Students need to demonstrate successful completion of the training programs and be enrolled at Northern Michigan University.</i>	

MINOR PROGRAMS

Child Care Services Minor

Total Credits Required for Minor	20
PY 170 Educating the Young Child	2
PY 241 Child Psychology	4
HL 242 Emergency Health Care	2
PY 270 Activity Planning I: The Creative Arts	2
PY 272 Activity Planning II: The Sciences	2
PY 352 Child Guidance Techniques	4
PY 358 Meaning and Development of Play	4

Human Services Minor

Psychology/Behavior Analysis majors only.

Total Credits Required for Minor	24
<i>Psychology/behavior analysis majors must have a department approved group minor. The minor must be taken from one human service area or combined among several (e.g., criminal justice, social work, education, recreation, or communication disorders). A list of group minor courses must be submitted to the Degree Audits Office before the second semester of the student's junior year.</i>	

Psychology Minor

Total Credits Required for Minor	20
PY 100S, L, or H Psychology as a Natural Science <i>or</i> PY 100G Psychology as a Social Science	4
PY 204 Physiological Psychology <i>or</i> PY 211 Learning	4
Psychology Electives (300 level and above)	8
Psychology Elective	4

SOCIOLOGY AND SOCIAL WORK

DEPARTMENT OFFICE

130 Walter F. Gries Hall

Phone: 906-227-2706

Fax: 906-227-1212

Web Page: www.nmu.edu/departments/sociology

Department Head: Ira W. Hutchison • ihutchis@nmu.edu

Social Work Program Director: Billy P. Blodgett •
bblodget@nmu.edu



Sociology and Social Work at NMU

The Sociology and Social Work Department offers major programs in sociology, sociology in liberal arts and social work. The department offers minor programs in sociology, social welfare and research analysis. The department also participates in an interdisciplinary social science major and the interdisciplinary minors in gerontology and international studies. (See the "Interdisciplinary and Individually Created Programs" and "International Studies" sections of this bulletin.)

The sociology program at Northern increases the understanding of human social behavior. The program emphasizes both theory and methodology, particularly as these may be brought to bear on the study of human interaction, social institutions, or analysis of contemporary social problems. Students have the opportunity to investigate a variety of areas such as crime and deviance, family, minority groups, religion and social change.

The mission of the social work program is to prepare students for entry into beginning social work practice with individuals, families, groups, organizations, and communities. Students completing the social work program are uniquely prepared for generalist practice in the region of the Upper Peninsula of Michigan, and have developed a generalist practice base to continue their professional development through graduate study.

Northern's bachelor of social work program is fully accredited by the Council on Social Work Education (CSWE).

The BSW program has seven primary goals: (1) every BSW graduate shall be prepared for beginning generalist practice. All BSW students will be versed in content about practice with client systems of various sizes and types; (2) students shall be prepared to practice with diverse populations; (3) the program shall provide content about the contexts of social work practice, the changing nature of these contexts, the behavior of organizations and the dynamics of change; (4) the values and ethics that guide professional social work practice shall be infused throughout the curriculum and made evident in the operation of the social work program; (5) students shall be educated with an

awareness of their responsibility to continue their professional growth and development; (6) the program shall provide educational opportunities that reflect regional needs related to substance abuse and gerontology; and (7) the program shall promote an understanding of and application for a knowledge base in social welfare for students in other human service fields.

Student Organization

- Student Social Work/Sociology Organization

Department Facilities and Resources

The sociology and anthropology faculty have expertise in a range of areas within said fields. A full complement of library resources and audiovisual materials is available to students. The department also has microcomputer hardware and software enabling faculty and students to conduct complex applied research projects involving sophisticated data analysis and statistical procedures.

Social work program faculty members are fully qualified professionals with both practice and teaching experience. A wide range of community social work agencies cooperate with the program by serving as field instruction settings.

Department/Program Policies

Sociology

Students must earn at least a C- in any sociology course counted toward the sociology major, the sociology in liberal arts major, or the sociology concentration of the social science major, and achieve at least a 2.50 grade point average in all sociology courses (NMU and transfer) counted toward any of these three majors.

Social Work Transfer Credit

Transfer credit for practice method and field placement courses at the 300 level and above will be granted only for course work completed at other Council on Social Work Education (CSWE) accredited schools. As stipulated by the Council on Social Work Education, our program does not grant social work course credit for life experience or previous work experience.

Social Work Admission Requirements

The social work curriculum culminates in a BSW degree with an inherent “Human Behavior Cluster Minor.” Courses contained in the cluster minor are as follows: SO 101, PY 100, EC 101, BI 104, SO 208 (or other statistic course), SO 282, and PS 215. The first five courses may double-count as liberal studies requirements. All courses in the human behavior cluster must be completed or be in the process of being completed at time of admission into the social work program. A student must have a 2.50 grade point average in the cluster minor.

The social work curriculum contains three “lower-division” courses (SW 100, SW 230, and SW 240) that also must be completed (or be in the process of) prior to being admitted into the practice methods courses. A student must have a 2.50 grade point average in these courses and must maintain this minimum GPA for all social work courses (SW prefix).

Although a student may enroll in a few social work courses (SW 308, SW 331, SW 341) prior to applying for the upper division practice methods courses, the sequencing of courses becomes paramount. Practice methods courses (SW 370 and SW 372) are only offered in the winter semester prior to a student’s senior year. Consequently, application into these two courses only occurs in the fall semester (Oct. 1). Admission is restricted to qualified applicants and limited by faculty and field placement resources. Application forms will be provided through the social work program and may also be downloaded from the program’s Web site at www.nmu.edu/departments/sociology. A minimum grade of “C” must be earned in both practice methods courses. After the completion of these courses, students then enter the senior social work curriculum, where courses are scheduled into a one-day block, allowing ample time to complete the necessary field practicum requirements.

Retention Policy

Students in the bachelor of social work degree program must meet a set criteria for continuous retention in the program. Students must maintain a 2.50 grade point average in all course work applicable to the social work curricula, defined as all courses in the major, required minor(s) and other required courses. Students must provide evidence of compliance with the National Association of Social Workers (NASW) Code of Ethics and show progress toward possession of personal characteristics and competencies that personify the professional social worker.

Field Instruction

While completing the practice methods courses during the winter semester, students will also be required to submit their application for field placement (March 1). Necessary forms may be downloaded from the Social Work Web site at www.nmu.edu/departments/sociology. They may also be obtained from the social work

field coordinator. Students must complete a minimum of 400 clock hours of field instruction in their senior year (SW 480 in the fall and SW 481 in the winter). Schedules should be planned to allow for approximately 16 hours per week at the field site each semester. Students are expected to complete two consecutive semesters of senior field placement and will be admitted to placement in the fall term only.

Program Completion

Students must complete all course work comprising the social work curriculum as defined above with a minimum 2.50 grade point average, show evidence of compliance with the NASW Code of Ethics, be recommended by the BSW faculty and meet all other requirements established by the university for graduation.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the “Liberal Studies Program and Graduation Requirements” section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Sociology Major

This major is for students interested in careers that require an understanding of human social behavior. The program emphasizes both theory and methodology, and the major offers an opportunity to investigate a variety of areas such as crime and deviance, family, minority groups, religion and social change. The major is valuable in a variety of fields, including business, community work, corrections, government services, health services, public relations, research and social services. In addition, students who hold this degree are also well prepared for graduate study.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	40
<i>Minimum of 24 credit hours must be at the 300 level or above.</i>	
SO 101 Introductory Sociology [IV]	4
SO 208 Methods of Social Research I [V]	4
SO 308 Methods of Social Research II	4
SO 407 Sociological Theory	4
SO 408 Survey Research Design and Analysis	4

SO 322 Social Class, Power and Mobility [IV] <i>or</i>	4
SO 351 Social Change [IV] <i>or</i>	
SO 355 Introduction to Social Psychology [IV]	4
SO 312 Religion and Society <i>or</i>	
SO 232 Marriage and the Family [IV] <i>or</i>	
SO 382 Health, Society and Culture <i>or</i>	
SO 412 Sociology of Education <i>or</i>	
SO 432 Seminar in Changing American Family	
Sociology Electives	12
Minor	20

Sociology in Liberal Arts Major

This major is designed for students who wish to get a liberal education but with significant content on sociological perspectives relating to social structure, social institutions and social inequality.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	32
<i>Minimum of 20 credit hours must be at the 300 level or above.</i>	
SO 101 Introductory Sociology [IV]	4
SO 263 Criminology <i>or</i>	4
SO 343 Sociology of Deviant Behavior <i>or</i>	
SO 473 Juvenile Delinquency	
SO 312 Religion and Society <i>or</i>	4
SO 232 Marriage and the Family [IV] <i>or</i>	
SO 382 Health, Society and Culture <i>or</i>	
SO 412 Sociology of Education <i>or</i>	
SO 432 Seminar in Changing American Family	
SO 351 Social Change [IV] <i>or</i>	4
SO 355 Social Psychology [IV] <i>or</i>	
SO 407 Sociological Theory	
SO 362 Women, Men and Social Inequality <i>or</i>	4
SO 322 Social Class, Power and Mobility [IV] <i>or</i>	
SO 372 Minority Groups [IV]	
Sociology Electives	12
Minor	20

Social Work Major

Majors receive the bachelor of social work degree, which is recognized as the entry level credential for social work practice. Graduates are prepared as generalists for careers in mental health, health care, the court system, substance abuse and spouse abuse programs, among others.

Student interested in this major should refer to the program's admission and professional standards, retention policy and field instruction guidelines outlined above.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	50
SW 100 Exploring Social Work	4
SW 230 Human Behavior and Social Environment I	4
SW 240 Social Welfare: Historical Perspectives	2
SW 308 Research Methods II	4
SW 331 Human Behavior and Social Environment II	4
SW 341 Social Welfare Policy Analysis	4
SW 370 Generalist Practice Methods I	4
SW 372 Generalist Practice Methods II	4
SW 440 Social Work and Social Policy	2
SW 461 Practice Evaluation I	2
SW 462 Practice Evaluation II	2
SW 472 Social Work and Diverse Populations	2
SW 473 Integrative Seminar I	2
SW 474 Integrative Seminar II	2
SW 480 Field Instruction I	4
SW 481 Field Instruction II	4
Human Behavior Cluster Minor*	28
SO 101 Introductory Sociology [IV]	4
BI 104 Human Biology [III]	4
PY 100L, S, or H Psychology as a Natural Science [III] <i>or</i>	4
PY 100G Psychology as a Social Science [IV]	
SO 372 Minority Groups [IV]	4
SO 208 Research Methods I [V] <i>or</i>	4
MA 171 Introduction to Probability and Statistics [V] <i>or</i>	
PY 305 Psychological Statistics [V]	
EC 101 American Economy [IV] <i>or</i>	4
EC 337 American Economic History [IV]	
PS 215 Introduction to Law	4

**Transfer courses must be at least two-credit equivalents for each course; electives from any discipline in the cluster may be used to satisfy the 28 credit hour minimum.*

MINOR PROGRAMS

Gerontology Minor

This minor introduces students to the aging process, concerns of older adults and the service delivery system. Students interested in this minor should declare it by the second semester of their junior year, have a plan of study approved by the gerontology program coordinator, and have it forwarded to the Degree Audits Office. For additional information about this minor, contact Patricia Cianciolo at pciancio@nmu.edu.

Total Credits Required for Minor 22

Gerontology Core 5-8

GRN 101 Introduction to Gerontology (4 cr.)
 GRN 490 Gerontology Field Placement* (1-4 cr.)
 GRN 001 Gerontology Internship Completion (0 cr.)

Program Electives 10

Choose from the following:

BI 225 Physiology of Aging (3 cr.) *or*
 HL 211 Health Aspects of Aging (3 cr.)
 SL 460 Aging and Cognition (3 cr.)
 SO 201 Sociology of Aging (4 cr.)
 SW 405 Aging Public Policies and Programs (4 cr.)

Electives 4-7

Choose from the following:

HL 213 Death Education (2 cr.)
 PL 185 Issues in Medical Ethics (2 cr.)
 PY 353 Aging in the Family (4 cr.)
 PY 344 Lifespan Developmental Psychology (4 cr.)
 SO 382 Health, Society and Culture (4 cr.)

**Students in the gerontology minor must take at least 3 hours of field placement involving older adults. One of those hours must be GRN 490. The remaining 2 or more hours may come from a student's major or second minor. One field placement credit hour is equivalent to 50 clock hours, averaging between 3-4 hours in the field setting per week; four field placement credit hours is equivalent to 200 clock hours, averaging between 13-14 hours in the field setting per week.*

Research Analyst Minor

This minor is designed for students in a wide variety of majors who wish to develop significant skills in research, data analysis, interviewing, report presentation and report writing.

Total Credits Required for Minor 20

CIS 110 Principles of Computer Information Systems 4
 SO 208 Methods of Social Research I 4
 SO 308 Methods of Social Research II 4
 SO 408 Survey Research Design and Analysis 4
 SO 491 Internship in Applied Sociology 4

Sociology Minor

Total Credits Required for Minor 20

SO 101 Introductory Sociology 4

Sociology Electives 16

Eight credits must be at the 300 level or above.

Social Welfare Minor

This minor focuses on the institution of social welfare and the service delivery system. It is especially appropriate for students pursuing degrees in other human service curricula.

Note: Field instruction courses and 300-400 level practice method courses may not be included in the social welfare minor.

Total Credits Required for Minor 20

SW 100 Exploring Social Work 4

Program Electives 4-8

Choose from the following:

SW 230 Human Behavior and Social Environment I (4 cr.)
 SW 240 Social Welfare: Historical Perspectives (2 cr.)
 SW 331 Human Behavior and Social Environment II (4 cr.)
 SW 341 Social Welfare Policy Making (4 cr.)
 SW 440 Social Work Policy Analysis (2 cr.)

Program Electives 8-12

Choose from the following:

SW 401 Child Welfare (4 cr.)
 SW 405 Aging Public Policies and Programs (4 cr.)
 SW 411 Social Work in Health Fields (4 cr.)
 SW 412 Domestic Violence (4 cr.)
 SW 415 Addictions, Diagnosis, Treatment and Prevention (4 cr.)
 SW 416 Substance Abuse Counseling (4 cr.)
 SW 417 Social Work in Mental Health (4 cr.)
 SW 421 Family Intervention in Social Work Practice (4 cr.)
 SW 495 Special Topics in Social Work (1-4 cr.)
 SW 498 Directed Study in Social Work (1-4 cr.)

SPEECH, LANGUAGE AND HEARING SCIENCES

DEPARTMENT OFFICE

1513 West Science

Phone: 906-227-2125

Fax: 906-227-2178

Web Page: www.nmu.edu/comm_dis/comdis.htm

Department Head: To be named

Speech, Language and Hearing Sciences at NMU

The Speech, Language and Hearing Sciences Department offers an undergraduate program that emphasizes human communication processes in a multicultural society. Baccalaureate graduates are able to compete and experience success in their chosen careers, professions or graduate studies. The department encourages its majors to be active participants in their classes, in faculty research and other faculty professional development activities.

Professional/Graduate School Preparation

Courses in speech, language and hearing sciences are designed for students who wish to enter a graduate program in speech-language pathology and/or audiology. Preprofessional courses meet the requirements for the Council for Academic Accreditation of the American Speech-Language-and-Hearing Association.

Department Facilities

The department maintains laboratory classrooms, human experimental research laboratories, and a student study area. The Speech, Language and Hearing Clinic on the NMU campus serves the cognitive/communication needs of children and adults from Marquette and the surrounding area. The clinic also provides preprofessional clinical practice experience to students enrolled in the speech, language and hearing sciences major.

Department/Program Policies

In order to be successful in the speech, language and hearing sciences major, students should earn a letter grade of "B" or higher in the English composition courses (EN 111 and EN 211). The department requires a 2.0 grade point average in the major. However, it should be noted that most graduate programs require a minimum of an overall 3.00 grade point average. Therefore, all students are assigned a faculty adviser who will carefully monitor their progress throughout the program.

BACHELOR DEGREE PROGRAM

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Speech, Language and Hearing Sciences Major

This program provides the necessary preparation for graduate programs accredited by the Council for Academic Accreditation of the American Speech-Language-and-Hearing Association.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	52
SL 150 Introduction to Speech, Language and Hearing	4
SL 160 Anatomy of the Speech and Hearing Mechanism	4
SL 200 Phonetics	4
SL 220 Speech and Voice Science	4
SL 351 Introduction to Audiology	4
SL 355 Language Development	4
SL 356 Language Disorders	4
SL 357 Fluency Disorders	4
SL 359 Introduction to Neuogenic Disorders	4
SL 400 Phonological Disorders	4
SL 459 Cognitive Neuroscience	4
SL 460 Cognition and Aging	4
SL 464 Methods of Diagnosis	4
Other Required Courses	15
BI 104 Human Anatomy and Physiology [III] <i>or</i>	4
BI 111 Introductory Biology: Principles [III]	
PH 101 Eureka: Einstein, the Universe and Everything [III] <i>or</i>	3
PH 102 Physics of Sound and Music [III]	
PY 100 S, L [III], H or G [IV] Psychology	4
PY 305 Psychological Statistics [V] <i>or</i>	4
MA 171 Introduction to Probability and Statistics [V]	
Minor	20

MINOR PROGRAM

Speech, Language and Hearing Sciences Minor

Total Credits Required for Minor	24
SL 150 Introduction to Speech, Language and Hearing	4
SL 200 Phonetics	4
SL 220 Speech and Voice Science	4
SL 351 Audiology	4
CD 355 Language Development	4
SL 356 Language Disorders	4

TECHNOLOGY AND OCCUPATIONAL SCIENCES

PROGRAM OFFICE

School of Technology and Applied Sciences

101 D. J. Jacobetti Center

Phone: 906-227-2067

Fax: 906-227-1549

Web Page: www.nmu.edu/technology

Department Head: To be named

Technology and Occupational Sciences at NMU

The School of Technology and Occupational Sciences offers a variety of one-, two- and four-year programs. The one- and two-year programs provide students with the knowledge and training necessary to assume skilled or technician-level positions in a variety of service or technical areas. These technical areas include automotive, aviation, collision repair, construction, cosmetology, electrical line technician, heating-air conditioning, hospitality, and industrial maintenance. In addition to offering technical programs traditionally identified with a community college, the department offers baccalaureate degree programs in construction and hospitality management.

The department's programs are designed to ladder into more advanced programs. Students in two-year certificate and associate degree programs can apply course work completed as part of the one- and two-year programs toward a bachelor's degree in the School of Technology and Applied Sciences.

The aviation maintenance technology associate degree and certificate programs are accredited by the Department of Transportation Federal Aviation Administration Certification.

Department Facilities and Equipment

- Airplanes (8)
- Auto Service Laboratory
- Collision Repair Laboratory
- Heating, Ventilation, Air Conditioning and Refrigeration Laboratory
- Helicopters (2)
- Industrial Maintenance Laboratory
- Professional Cosmetology Laboratory
- Professional Kitchen Laboratories

Hospitality management students operate and manage the white tablecloth restaurant Chez Nous during the winter semester as well as the Culinary Cafe during both the fall and winter semesters. In addition, students deliver several outstanding banquet and catering functions throughout the year.

Student Organizations

- American Culinary Federation Upper Michigan Chapter
- Aviation Maintenance Club
- Aviation Purchasing Co-op
- Culinary Students of NMU
- Hair Razors
- NMU Constructors
- Professional Aviation Maintenance Association

Department/Program Policies

Programs have substantial "hands-on" components; safety is a major responsibility. Students are expected to wear proper foot gear, safety glasses and dress for the lab environment. Tools are required for several programs. Students in AMT, CN, COS, CRT, HM, HV, PT, IM or WD courses are required to provide many of their own hand tools.

Aviation

All students are required to join the Aviation Purchasing Co-op. This co-op purchases the material and supplies students use in the lab section of the program over the standard two-year period. The purchase price is \$50 each semester (\$200 total). Students are required to have a basic tool set. Admission to AMT courses is limited to students majoring in aviation maintenance technology.

Cosmetology

The curriculum followed is set by the State of Michigan. Students must complete 1,500 clock hours for this program; attendance is mandatory. Successful completion of this program and the 1,500 requisite clock hours qualifies graduates to take the state board test for licensure in Michigan.

Students in baccalaureate degree programs may apply up to six credits of cosmetology (COS), practical nursing (PN) and surgical technology (ST) courses combined toward graduation unless otherwise prohibited. Students in associate degree programs may apply three credits of these courses combined toward graduation, and those in certificate programs other than cosmetology, practical nursing and surgical technology may apply two credits of these courses combined toward graduation unless otherwise prohibited.

Cosmetology Instructor

Entrance into this program requires a current Michigan license in cosmetology and two years of experience. The State of Michigan requires 500 hours of additional education for this certification.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Construction Management Major

This major prepares students to be competent in coordinating all phases of building construction including estimating, scheduling, writing contracts, purchasing materials and working with sub-contractors and material suppliers to ensure the job gets done on time and within budget. Graduates may begin as project managers, field engineers, estimators, assistant project managers or superintendents. Students are strongly urged to meet with their adviser to select a minor that will support their career goals.

Total Credits Required for Degree	129
Liberal Studies	30-40
Health Promotion	2
Technical Concentration	43
CN 107 Construction Documents	3
CN 151 Introduction to Construction	3
CN 154 Construction Surveying and Layout	3
CN 156 Construction Systems and Methods	3
CN 158 Concrete	3
WT 161 Wood Processing I	2
CN 251 Construction Field Operations	2
CN 252 Codes and Inspection	3
CN 278 Mechanical Systems	3
CN 283 Construction Estimating	3
CN 353 Soils and Foundations	3
CN 357 Legal Aspects of Construction	3
CN 358 Bidding Strategies	3
CN 450 Project Control	3
CN 459 Construction Management	3
Other Required Courses	40
ACT 230 Principles of Accounting I	3
ACT 240 Principles of Accounting II	3
EN 211D Technical and Report Writing [I]	4
MA 104 College Algebra with Applications in the Sciences and Technologies [III]	4
MA 106 Trigonometry [III]	3
MET 211 Mechanics and Statics	4
MGT 240 Organizational Behavior and Management	3
MKT 230 Introduction to Marketing	3
PH 201 College Physics I [III]	5

CIS 110 Principles of Computer Information Systems [V] or IS 100 Introduction to Windows, E-mail and the Internet [V] and three other IS courses [V]	4
SP 100 Public Address	4

Minor, Contracted Minor or General Electives	20
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Hospitality Management Major

This program provides graduates with the background to assume supervisory or leadership positions in the hospitality industry. The curriculum includes courses that cover both classroom-based learning and hands-on learning experiences.

Total Credits Required for Degree	124
Liberal Studies	30-40
Health Promotion	2
Required Courses in Major	51
HM 111 Food Service Sanitation	2
HM 112 Introduction to the Hospitality Industry	4
HM 115 Professional Cooking I	4
HM 120 Professional Cooking II	4
HM 210 Supervision in the Hospitality Industry	4
HM 214 Cost Control for the Hospitality Industry	4
HM 221 Hospitality Service Management	4
HM 225 Banquets and Catering	4
HM 226 Purchasing for the Hospitality Industry	2
HM 240 Hotel and Lodging Operations	3
HM 310 Menu Analysis and Design	4
HM 330 Beverage and Bar Management	4
HM 450 Hospitality Operations Plan and Design	4
HM 480 Current Issues in the Hospitality Industry	4
Technical Electives	6
<i>Choose from the following:</i>	
HM 100 Food Preparation and Selection (4 cr.)	
HM 315 Multi-Cultural Foods (4 cr.)	
HM 318 Resort Development (4 cr.)	
HM 401 Internship (1-4 cr.)	
HM 495 Special Topics in Hospitality (4 cr.)	
Other Required Courses	18
ACT 201 Practical Accounting Procedures (or higher)	4
HN 210 Nutrition for Humans	4
MA 100 Intermediate Algebra (or higher)	4
MGT 221 Business Law I: Legal Environment of Business	3
MKT 230 Introduction to Marketing	3

ASSOCIATE DEGREE PROGRAMS

Automotive Service Technology

Associate of Technology

Students in this program gain an overall technical foundation of theory and practical applications in engine repair, automatic transmissions, chassis systems, power trains, vehicle electrical systems, fuel and ignition systems and computer control systems. State certification tests are offered at the end of each semester.

Total Credits Required for Degree	62
Liberal Studies	8
EN 111 College Composition I	4
CIS 110 Principles of Computer Information Systems	4
Health Promotion	1
HP 200 Physical Well Being	1
Technical Concentration	40
PT 162 Steering, Suspension and Alignment	4
PT 163 Vehicle Brake Systems	4
PT 164 Major Engine Repair	4
PT 166 Automotive Power Trains	4
PT 170 Basic Automotive Electricity	4
PT 260 Automatic Transmission Repair	4
PT 262 Automotive Fuel and Emission Control Systems	4
PT 264 Engine Performance and Diagnostics	4
PT 268A Automotive Service Repair <i>or</i>	4
PT 268B Automotive Service Repair Internship	
PT 272 Advanced Automotive Electrical and Electronics	4
Other Required Course	4
MA 100 Intermediate Algebra (or higher)	4
General Electives	9

Aviation Maintenance Technology

Associate of Applied Science

This program prepares students to be aviation maintenance technologists. All training takes place in state-of-the-art facilities and is designed to meet airline industry standards. Students work in the following five lab areas: power plant, airframe, non-destructive testing, composite and sheet metal. Students do engine runups, repair, and restoration of the operational status of the aircraft. Students typically take between 16 and 20 credits for five semesters, receiving their degree after 2 1/2 years of study. Ninety-five percent of graduates from this program are employed in the aviation industry.

Total Credits Required for Degree	89
Liberal Studies	12
EN 111 College Composition I	4
EN 211D Technical and Report Writing	4
CIS 110 Principles of Computer Information Systems	4

Health Promotion	1
HP 200 Physical Well Being	1

Technical Concentration	72
AMT 101 Introduction to Aviation Maintenance	6
AMT 102 Aircraft Basic Science	6
AMT 103 Aviation Shop Practices	6
AMT 104 Aircraft Electrical Systems	6
AMT 200 Aircraft Sheet Metal/Non-Metallic Structures	6
AMT 201 Reciprocating Engines and Propellers	6
AMT 202 Aircraft Assembly and Rigging	6
AMT 203 Reciprocating Engine Overhaul	6
AMT 204 Turbine Engine Theory	6
AMT 205 Hydraulics, Pneumatics and Landing Gear	6
AMT 206 Cabin Atmosphere and Information Systems	6
AMT 207 Turbine Engine Maintenance and Inspection	6

Other Required Course	4
MA 100 Intermediate Algebra	4

Building Technology

Associate of Applied Science

This program is designed to provide the student with a technical foundation with specialization in the areas of project design, building materials, construction systems and related documents.

Total Credits Required for Degree	65
Liberal Studies	21
EN 111 College Composition I	4
EN 211D Technical and Report Writing	4
MA 104 College Algebra with Applications in the Sciences and Technologies	4
PH 201 College Physics I	5
CIS 110 Principles of Computer Information Systems <i>or</i>	4
IS 100 Introduction to Windows, E-mail and the Internet (1 cr.) <i>and</i> three other IS courses	

Health Promotion	1
HP 200 Physical Well Being	1

Technical Concentration	28
CN 107 Construction Documents	3
CN 151 Introduction to Construction	3
CN 154 Construction Surveying and Layout	3
CN 156 Construction Systems and Methods	3
CN 158 Concrete	3
WT 161 Wood Processing I	2
CN 251 Construction Field Operation	2
CN 252 Codes and Inspection	3
CN 278 Mechanical Systems	3
CN 283 Construction Estimating	3

Other Required Courses	7
MA 106 Trigonometry	3
SP 100 Public Address	4

General Electives	8
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Climate Control Technology

Associate of Applied Science

Professionals in the heating, ventilation, air condition and refrigeration (HVACR) industry are specialists who create comfortable, healthy and energy-efficient indoor environments for the storage of food and medicine, and for transportation, warehouses, factories and many other essential services. The climate control degree program offers instruction in both technical theory and practical knowledge.

Total Credits Required for Degree 63

Liberal Studies	12
EN 111 College Composition I	4
EN 211D Technical and Report Writing	4
CIS 110 Principles of Computer Information Systems	4

Health Promotion	1
HP 200 Physical Well Being	1

Technical Concentration	40
HV 170 Applied Electricity for Trades	4
HV 171 Basic Heating	4
HV 172 Basic Refrigeration	4
HV 173 Heating Systems I	4
HV 174 ACR Systems I	4
HV 175 Air Delivery Systems	4
HV 270 Heating Systems II	4
HV 271 ACR Systems II	4
HV 273 Comfort Systems Design	4
HV 275 HVACR Technical Problems <i>or</i> HV 291 HVACR Internship	4

Other Required Courses	4
MA 100 Intermediate Algebra (or higher)	4

General Electives 6

Food Service Management

Associate of Technology

This program prepares the student for entry-level management positions in the hospitality industry. According to the National Restaurant Association, 40,000 new entry-level managers will be needed in the near future, making this one of the fastest growing career fields.

Total Credits Required for Degree 62

Liberal Studies	8
EN 111 College Composition I	4
Liberal Studies Elective	4

Health Promotion	1
HP 200 Physical Well Being	1

Technical Concentration	32
HM 111 Food Service Sanitation	2
HM 112 Introduction to the Hospitality Industry	4
HM 115 Professional Cooking I	4

HM 120 Professional Cooking II	4
HM 210 Supervision in the Hospitality Industry	4
HM 214 Cost Control for the Hospitality Industry	4
HM 221 Hospitality Service Management	4
HM 225 Banquets and Catering	4
HM 226 Purchasing for the Hospitality Industry	2

Other Required Courses	12
ACT 201 Practical Accounting Procedures (or higher)	4
HN 210 Nutrition for Humans	4
MA 100 Intermediate Algebra (or higher)	4

General Electives 9

Industrial Maintenance Technology

Associate of Applied Science

Industrial maintenance technicians install, maintain and repair all types of machinery used in an endless array of modern power transmission applications. Mines, paper mills, hospitals and manufacturing companies of all sorts require the services of skilled industrial maintenance technicians to keep their operations running smoothly. Industrial maintenance technicians are often employed in machine repair departments or may be referred to as millwrights.

Total Credits Required for Degree 63

Liberal Studies	8
EN 111 College Composition I	4
EN 211D Technical and Report Writing	4

Health Promotion	1
HP 200 Physical Well Being	1

Technical Concentration	30
HV 170 Applied Electricity for Trades <i>or</i> ET 100 Fundamentals of Electricity (2 cr.) <i>and</i> ET 101 Principles of Electrical Wiring (2 cr.)	4
IM 110 Industrial Measurement and Fabrication	2
IM 214 Alignment, Power Transmissions and Conveyors	4
IM 220 Pumps, Piping and Valves	4
IT 180 Introduction to Fluid Power	3
IT 215 General Industrial Safety	2
IT 265 Total Productive Maintenance	1
WD 140 Introduction to Welding	4
WD 147 Construction Rig and Equipment Installation	2
WD 243 Advanced Arc Welding	3
WD 244 Welding Inspection and Assessment	1

Other Requirements	8
MA 100 Intermediate Algebra (or higher)	4
CIS/IS Electives	4

Technical Electives

Choose from the following:

- CN 154 Construction Survey and Layout (3 cr.)
- CN 156 Construction Systems and Methods (3 cr.)
- HV 175 Air Delivery Systems (4 cr.)
- MET 213 Materials Science I (3 cr.)
- MF 134 Manufacturing Processes (4 cr.)
- PT 160 Basic Automotive Repair (4 cr.)

General Electives **10**

Mining Option

Students considering future employment with Michigan Mining Company-Cliffs Incorporated should make the following course selections in their program: MA 104 College Algebra with Applications in the Sciences and Technologies, in place of MA 100 Intermediate Algebra, PH 201 College Physics I as a general elective and MET 213 Material Science I as a technical elective.

CERTIFICATE PROGRAMS

Automotive Service Certificate

This program develops quality repair and service technicians for the transportation industries. The automotive service certificate prepares students for positions in automotive servicing, parts sales, and service.

Total Credits Required for Certificate **41**

Health Promotion **1**
 HP 200 Physical Well Being **1**

Technical Concentration **40**
 PT 162 Steering, Suspension and Alignment **4**
 PT 163 Vehicle Brake Systems **4**
 PT 164 Major Engine Repair **4**
 PT 166 Automotive Power Trains **4**
 PT 170 Basic Automotive Electricity **4**
 PT 260 Automatic Transmission Repair **4**
 PT 262 Automotive Fuel and Emission Control Systems **4**
 PT 264 Engine Performance and Diagnostics **4**
 PT 268A Automotive Service Repair *or* **4**
 PT 268B Automotive Service Repair Internship (4 cr.)
 PT 272 Advanced Automotive Electrical and Electronics **4**

6 Aviation Maintenance Technology Certificate

Students work in five lab areas: power plant, airframe, nondestructive testing, composite and sheet metal. Certificate students attend class for four semesters (two academic years) and receive all of the necessary preparation to take the FAA exam to become an A & P aviation mechanic.

Total Credits Required for Certificate **73**

Health Promotion **1**
 HP 200 Physical Well Being **1**

Technical Concentration **72**
 AMT 101 Introduction to Aviation Maintenance **6**
 AMT 102 Aircraft Basic Science **6**
 AMT 103 Aviation Shop Practices **6**
 AMT 104 Aircraft Electrical **6**
 AMT 200 Aircraft Sheet Metal/Non-Metallic Structures **6**
 AMT 201 Reciprocating Engine and Propellers **6**
 AMT 202 Aircraft Assembly and Rigging **6**
 AMT 203 Reciprocating Engine Overhaul **6**
 AMT 204 Turbine Engine Theory **6**
 AMT 205 Hydraulics, Pneumatics and Landing Gear **6**
 AMT 206 Cabin Atmosphere and Information Systems **6**
 AMT 207 Turbine Engine Maintenance and Inspection **6**

Carpentry Certificate

The carpentry certificate is temporarily suspended. New students will not be accepted into the program during the 2006-2007 academic year.

Cosmetology Certificate

This program combines the theory and practical application needed to prepare graduates for entry-level positions in the cosmetology profession. Scientific principles are applied through grooming of patrons. Cosmetologists perform such services as shaping and tinting eyebrows and lashes, applying makeup, permanent waving, coloring and straightening hair, manicuring and giving scalp and facial treatments. Graduates may find employment in independent shops and salons, in hair styling departments of large firms and hotels, or with manufacturers of cosmetic or hair products. Some graduates open their own shops.

Total Credits Required for Certificate **65**

Health Promotion **1**
 HP 200 Physical Well Being **1**

Technical Concentration **64**
 COS 111 Fundamentals of Cosmetology I **4**
 COS 112 Fundamentals of Cosmetology II **4**
 COS 113 Fundamental Application of Physical Services **8**
 COS 121 Intermediate Cosmetology I **4**
 COS 122 Intermediate Cosmetology II **4**
 COS 123 Intermediate Application of Physical Services **8**

COS 131 Advanced Cosmetology I	4
COS 132 Advanced Cosmetology II	4
COS 133 Advanced Application of Physical Services	8
COS 141 Master Level of Cosmetology I	4
COS 142 Master Level of Cosmetology II	4
COS 143 Master Level Application of Physical Services	8

Heating, Ventilation, Air Conditioning and Refrigeration Certificate

This program teaches students to master the skills needed to install, troubleshoot, and repair heating, ventilating, air conditioning and refrigeration (HVACR) systems.

Total Credits Required for Certificate	45
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Health Promotion	1
HP 200 Physical Well Being	1
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Technical Concentration	36
HV 170 Applied Electricity for Trades	4
HV 171 Basic Heating	4
HV 172 Basic Refrigeration	4
HV 173 Heating Systems I	4
HV 174 ACR Systems I	4
HV 175 Air Delivery Systems	4
HV 270 Heating Systems II	4
HV 271 ACR Systems II	4
HV 275 HVACR Technical Problems <i>or</i>	4
HV 291 HVACR Internship	
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Other Required Courses	4
EN 090 Basic Composition (or higher)	4
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General Electives	4

MINOR PROGRAMS

Automotive Service Technology Minor

Total Credits Required for Minor	24
PT 162 Steering Suspension and Alignment	4
PT 164 Major Engine Repair	4
PT 166 Auto Power Train	4
PT 170 Basic Automotive Electricity	4
PT 262 Auto Fuel and Emission Control Systems	4
PT 264 Engine Performance and Diagnostics	4

Construction Systems Minor

Total Credits Required for Minor	20
CN 107 Construction Documents	3
CN 154 Construction Surveying and Layout	3
CN 156 Construction Systems and Methods	3
CN 158 Concrete	3
CN 251 Construction Field Operations	2
CN 252 Codes and Inspections	3
CN 283 Construction Estimating	3

Hospitality Service Management Minor

Total Credits Required for Minor	20
HM 112 Introduction to the Hospitality Industry	4
HM 111 Food Service Sanitation	2
HM 226 Purchasing for the Hospitality Industry	2
HM 214 Cost Control for the Hospitality Industry	4
HM 240 Hotel and Lodging Operations	3
Hospitality Management Electives 300 or above	5

HVACR Minor

Total Credits Required for Minor	20
HV 170 Applied Electricity for Trades	4
HV 171 Basic Heating	4
HV 172 Basic Refrigeration	4
HV 175 Air Delivery Systems	4
HV 273 Comfort Systems Design	4

Industrial Maintenance Minor

Total Credits Required for Minor	20
IM 110 Industrial Measurement and Fabrication	2
IM 214 Alignment, Power Transmission and Conveyors	4
IM 220 Pumps, Piping and Valves	4
WD 140 Introduction to Welding	4
WD 147 Construction Rigging and Equipment Installation	2
WD 243 Advanced Arc Welding	3
WD 244 Welding Inspection and Assessment	1

DIPLOMA PROGRAMS

Advanced Law Enforcement Diploma

This program is intended for certified law enforcement officers. The curriculum includes course work and hands-on experiences to enhance the officers' training. In-service training is offered through the Public Safety Institute, Northern Michigan University.

Total Credits Required for Diploma	16
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Technical Concentration	16

The advanced law enforcement diploma may be earned through the satisfactory completion of any 16 credit hours of unduplicated PSLE prefix courses. However, PSLE 010 Legal Update Training may be counted for a maximum of two of the 16 required credits hours.

Collision Repair Technology Diploma

This program prepares graduates for employment in the field of collision repair. The curriculum includes coursework and hands-on experiences in the areas of component repair and replacement, along with work in areas of paint-prep and refinishing. Students are exposed to contemporary skills and current industry practices.

Total Credits Required for Diploma	36
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Technical Concentration	24
CRT 011 Fundamentals of Collision Repair	4
CRT 012 Component Analysis and Replacement	4
CRT 021 Intermediate Collision Repair	4
CRT 022 Automotive Paint-prep and Application	4
CRT 031 Advanced Collision Repair	4
CRT 032 Advanced Refinishing	4
Technical Electives	12
<i>Choose any courses from AMT, IM, PT and WD</i>	<i>12</i>

Electrical Line Technician Diploma

This program prepares graduates for employment as line technicians employed by public utilities, electrical transmission contractors and related employers.

Total Credit Required for Diploma	31
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Technical Concentration	31
EL 010 Line Electrician Field Practicum I	6
EL 011 Fundamentals of Electricity	2
EL 012 Introduction to Line Electrician Safety	2
EL 013 Electrical Formulas	4
EL 014 Computer Skills for Electrical Trades	2
EL 020 Line Electrician Field Practicum II	6
EL 021 Applied Electricity for Linepersons	3
EL 022 Advanced Line Electrician Safety	2
EL 023 Line Electrician Career Seminar	2
EL 024 Construction Standards for Line Electricians	2

Local Corrections Diploma

This program is intended for persons employed as local corrections officers. The curriculum includes course work and hands-on experiences to update the officers in the required areas of the corrections field. In-service training is offered through the Public Safety Institute, Northern Michigan University.

Total Credits Required for Diploma	16
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Technical Concentration	16
<i>The local corrections diploma may be earned through the satisfactory completion of any 16 credit hours of unduplicated PSCR prefix courses. However, PSCR 011 Legal Update Training may be counted for a maximum of two of the 16 required credits hours.</i>	

CERTIFICATION PROGRAMS

Cosmetology Instructor Certification

This program trains the professional in Michigan law, teaching techniques, record keeping, and administration of a school of cosmetology.

Total Credits Required for Certification	18
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Technical Concentration	18
HR 060 Theory of Cosmetology Fundamentals	4
HR 061 Theory of Cosmetology Supervision	4
HR 062 Theory of Cosmetology Administration	2
HR 063 Practice of Cosmetology Fundamentals	4
HR 064 Practice of Cosmetology Supervision	4

INTERDISCIPLINARY AND INDIVIDUALLY CREATED PROGRAMS

Interdisciplinary and Individually Created Programs at NMU

Interdisciplinary programs are those that are co-sponsored by two or more departments. Generally a student chooses an adviser from one of the sponsoring departments. Individually created programs are developed by a student and a faculty member to meet an individual need or interest not offered in a formalized program.

Northern offers three interdisciplinary baccalaureate degree programs: secondary education integrated science, social science and technical communications.

Also within the interdisciplinary area are a two-year associate degree in general university studies, two minor programs in gender studies and labor studies, and a one-year certificate in labor leadership.

Northern offers students two opportunities to individually create programs: a baccalaureate degree and a certificate.

BACHELOR DEGREE PROGRAMS

Liberal Studies: Complete information on the liberal studies requirements and additional graduation requirements, including the health promotion requirement, is in the "Liberal Studies Program and Graduation Requirements" section of this bulletin.

Courses within each major that can be used to satisfy liberal studies requirements are listed with the Roman numeral (in brackets) that coincides with the liberal studies division the course falls under.

Secondary Education Integrated Science Major

The Biology, Chemistry, Education, Geography and Physics departments cooperatively offer this program to students interested in certification to teach science at the secondary-school level from an integrated science perspective. Students with this major must minor in either biology education, chemistry education, earth science education or physics education. The major prepares students to be endorsed both in integrated science and in the specific discipline of the major.

Advising for this major is provided by Dr. Mitchell D. Klett (earth science and chemistry) and Dr. Carolyn J. Lowe (biology, physics) in the School of Education.

Students in this program must maintain a minimum grade

point average of 2.70 with no grade below a "C" in the professional education sequence, the major and/or minor and required cognates combined.

Secondary Education Integrated Science Major

Total Credits Required for Degree	127-133
Liberal Studies	30-40
Health Promotion	2
General Science Major/Minor <i>(See options I-IV below)</i>	56-62
Professional Education	37
ED 201 Introduction to Education	2
ED 231 Teaching and Learning in the Secondary Classroom	4
ED 301 Dimensions of American Education	2
ED 319 Teaching of Reading for Secondary Teachers	3
ED 349 Teaching for Diversity, Equity and Social Justice in the Secondary School Community	2
ED 361 Special Education and the General Classroom Teacher	2
ED 483 Educational Media Technology	2
ED 430 Teaching in the Secondary School	11
ED 450 Seminar in Teaching	1
MSED 340 Fundamental Concepts in Science	4
MSED 350 Methods and Materials in Teaching Science Education	4
<i>MA 104 College Algebra with Applications or MA 105 College Algebra for Calculus Preparation is required for many of the courses in this program.</i>	

Depending upon the minor chosen, students complete their 56-62 credits of general science curriculum as follows:

Option I: Integrated Science Major with Biology Minor

Total Credits Required for Major	56
Biology Education Minor	20
Chemistry Electives	
CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
CH 215 Chemistry of the Elements	4
Earth Science Electives	
AS 103 Observational and Solar System Astronomy [III]	4
GC 255 Physical Geology [III]	4
GC 385 Weather and Climate	4
Physics Electives	
PH 201 College Physics I [III]	5
PH 202 College Physics II [III]	5

Option II: Integrated Science Major with Chemistry Minor

Total Credits Required for Major **60**

Chemistry Education Minor **22**

Biology Electives

BI 111 Introductory Biology: Principles [III]	4
BI 112 Introductory Biology: Diversity [III]	4
BI 210 Principles of Ecology	4
BI 312 Genetics	4

Physics Electives

PH 201 College Physics I (or PH 220) [III]	5
PH 202 College Physics II (or PH 221) [III]	5

Earth Science Electives

AS 103 Observational and Solar System Astronomy [III]	4
GC 255 Physical Geology [III]	4
GC 385 Weather and Climate	4

Option III: Integrated Science Major with Earth Science Minor

Total Credits Required for Major **62**

Earth Science Education Minor **22**

Biology Electives

BI 111 Introductory Biology: Principles [III]	4
BI 112 Introductory Biology: Diversity [III]	4
BI 210 Principles of Ecology	4
BI 312 Genetics	4

Chemistry Electives

CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
CH 215 Chemistry of the Elements	4

Physics Electives

PH 201 College Physics I [III]	5
PH 202 College Physics II [III]	5

Option IV: Integrated Science Major with Physics Minor

Total Credits Required for Major **62**

Physics Education Minor **20**

Biology Electives

BI 111 Introductory Biology: Principles [III]	4
BI 112 Introductory Biology: Diversity [III]	4
BI 210 Principles of Ecology	4
BI 312 Genetics	4

Chemistry Electives

CH 111 General Chemistry I [III]	5
CH 112 General Chemistry II [III]	5
CH 215 Chemistry of the Elements	4

Earth Science Electives

AS 103 Observational and Solar System Astronomy [III]	4
GC 255 Physical Geology [III]	4
GC 385 Weather and Climate	4

Social Science Major

The Economics, Geography, History, Political Science and Public Administration, and Sociology and Social Work departments cooperate to offer this major. Areas of concentration correspond with each cooperating department. Advisement is provided to students by the department selected as the concentration.

Total Credits Required for Degree **124**

Liberal Studies **30-40**

Health Promotion **2**

Major

Choose one of the following concentrations:

Economics Concentration 36

EC 201 Microeconomic Principles	4
EC 202 Macroeconomic Principles	4
Economics Electives	12
Electives	16

Choose 8 credits from two of the following four areas: geography*, history, political science or sociology

Geography Concentration 36

GC 164 Human Geography [IV]	4
GC 200 North America	4
GC 220 Economic Geography	4
Choose from the following:	8

GC 300 Regional Studies: World Cultures [IV]	
GC 310 Urban Geography	
GC 360 Population Geography [IV]	
GC 435 Geography of Michigan	

Electives **16**

Choose 8 credits from two of the following four areas: economics, history, political science or sociology.

History Concentration 36

HS 200 Historical Thinking and Writing	4
History Electives from 100 or 200 level	8
History Electives from 300 or 400 level	8
Electives	16

Choose 8 credits from two of the following four areas: economics, geography*, political science, or sociology.

Political Science Concentration 36

PS 101 Introduction to Political Science [IV]	4
PS 105 American Government [IV]	4
PS 203 Comparative Government and Politics	4
PS 206 International Relations	4
PS 207 History of Political Theory	4
Electives	16

Choose 8 credits from two of the following four areas: economics, geography*, history, or sociology.

Sociology Concentration **	36
SO 101 Introductory Sociology [IV]	4
Sociology Electives (including 8 credits at 300-400 level)	16
Electives	16

Choose 8 credits from two of the following four areas: economics, geography, history or political science.*

Minor 20

**Note: Geography electives for economics, history, political science and sociology concentrations must be selected from courses listed in the geography concentration above.*

*** Students selecting the sociology concentration must receive at least a "C-" in each sociology course and achieve at least a 2.50 grade point average in all sociology courses. (NMU and transfer).*

Technical Communications Major

This program is tailored to meet the needs of contemporary technical communicators. It emphasizes both the practical ends of the major, such as graphic arts, writing and desktop publishing and theoretical considerations implicit in an ever-evolving, technological workplace, such as global communications, message design and argumentation. In consultation with an adviser, students may select a minor that best suits individual needs, but a minor is not required. The Art and Design, Communication and Performance Studies and the English departments provide student advisement.

Total Credits Required for Degree 128

Liberal Studies	30-40
Health Promotion	2

Required Courses in Major 59

AD 118 Introduction to Graphic Communication	4
AD 134 Electronic Imaging: Introduction	4
AD 175 Visual Structures and Concepts	4
AD 218 Graphic Communication: Studio Practices	4
BC 165 Introduction to Mass Media	4
EN 303 Technical and Professional Writing	4
EN 306 Journalism Editing and Design	4
EN 405 Technical Writing Seminar	4
IS 100 Introduction to Windows, E-mail and the Internet [V]	1
IS 105 Presentation/Multimedia Software [V]	1
IS 107 Beginning Desktop Publishing [V]	1
IS 207 Intermediate Desktop Publishing [V]	1
IS 208 Web Page Development [V]	1
MGT 344 Managerial Communications	3
OIS 450 Advanced Desktop Publishing	3
PR 250 Research in Public Relations	4
PR 330 Public Relations Message Design	4
SP 200 Argumentation	4
SP 300 Rhetorical Theory	4

Other Required Courses 8

EN 211D Technical and Report Writing [I]	4
TE 351 Humanity and Technology [II]	4

ASSOCIATE DEGREE PROGRAM

**General University Studies
Associate of Applied Science**

This program provides a point of access into the university for individuals seeking a post-secondary education at the two-year level. It also provides maximum flexibility for students who are either undecided about their career plans or who wish to create a program that suits their unique interests. The degree also provides an opportunity for individuals wishing to build their academic skills in preparation for admittance into a restricted program.

Total Credits Required for Degree 62

Liberal Studies 18	
EN 111 College Composition	4
Natural Science Elective	4
Humanities Elective	4
Social Science Elective	4
CIS/IS Electives	2

Health Promotion 1	
HP 200 Physical Well Being	1

Concentration or Contracted Minor* 20

Other Required Courses 4
MA 100 Intermediate Algebra (or higher or placement test above MA 100)

Electives 19

**Concentration must be one of the approved minors listed below.*

List of Approved Minors for Concentrations in the AAS in General University Studies

- Applied Ethics
- Art and Design
- Art History
- Auto Service Technology
- Biology
- Business Administration
- Chemistry
- Clinical Lab Techniques
- Construction Systems
- Contracted Minor
- Criminal Justice
- Industrial Electrical Technology
- Electronic Journalism
- Electronics
- Emergency Medical Services
- Engineering Design
- Environmental Conservation
- Gender Studies
- Health and Nutrition
- History
- Hospitality Service Management
- Human Biology
- Human Geography
- HVACR

Industrial Maintenance Technology
 International Studies
 Manufacturing
 Media Production and New Technology
 Music
 Office Services
 Physical Geography
 Planning
 Political Science
 Psychology
 Social Welfare
 Sociology
 Speech Communication

MINOR PROGRAMS

Gender Studies Minor

This minor explores the meaning and significance of gender in human experience, including the roles, status and accomplishments of women and men within a number of academic fields. Courses bring new scholarship on gender studies and related feminist theory into the university curriculum and offer students an opportunity to integrate the perspective of several disciplines into their program.

A list of courses used in this minor must be developed in consultation with Maya Sen of the Psychology Department, director of the minor. When approved, a copy of the list will be filed in the Registrar's Office. Students may not take more than eight credits from any one department.

Total Credits Required for Minor	24
UN 200 Introduction to Gender Studies*	4
Electives	20
<i>Choose from the following:</i>	
EN 250 Images of Women (4 cr.)	
EN 440 Topics in Gender in Literature (4 cr.)	
HS 283 The American Woman (4 cr.)	
PY 235 Psychology of Gender (4 cr.)	
PY 255 Sexual Behavior: Psychological Perspectives (4 cr.)	
SO 362 Women, Men and Social Inequality (4 cr.)	
AN, EN, HS, NE, PY or SO 498 Directed Study** (1-4 cr.)	1-4

Note: Students may substitute one of the following four credit courses for one of the courses listed above.

AN 100 Introduction to Socio-Cultural Anthropology
 HS 293 Minorities in American History
 SO 232 Marriage and the Family
 SO 372 Minority Groups

**Students are encouraged to take UN 200 as early as possible.*

***If chosen, the directed study course should be taken as the final course in the program. Students may count only one directed study course toward the minor.*

Labor Studies Minor

This minor provides students with the knowledge of labor organizations, their functions, their roles in society and their future prospects. The program focuses on the areas of collective bargaining, grievance processing, contract administration, arbitration, labor history, social inequality, labor law, and leadership skills. Students completing the core courses are also awarded the certification in labor leadership. Advisement is provided by Dr. Russ Magnaghi in the History Department.

Total Credits Required for Minor	20-21
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Core Courses	17
LSP 101 Introduction to Labor Studies <i>or</i>	4
LSP 101A Introduction to Labor Studies (2 cr.) <i>and</i>	
LSP 101B Introduction to Labor Studies (2 cr.)	
HS 244 The American Labor Movement	2
SO 322 Social Class, Power, and Mobility	4
HS 444 Research in Labor History	2
MGT 424 Collective Bargaining	3
LSP 490 Seminar in Labor Leadership	2
Electives	3-4
<i>Choose from the following:</i>	
EC 101 The American Economy (4 cr.)	
EC/HS 337 American Economic History (4 cr.)	
EC 415 Labor Economics (4 cr.)	
EC 420 Capitalism, Socialism, and Democracy (4 cr.)	
MGT 240 Organizational Behavior and Management (3 cr.)	
MGT 343 Human Resource Management (3 cr.)	
MGT 412 Compensation Administration (3 cr.)	
MGT 421 Labor Law (3 cr.)	
PS 309 State and Local Government (4 cr.)	
PS 341 Social Welfare Policy (4 cr.)	
PS 402 Political Economy (4 cr.)	
PY 436 The Psychology of Organization Behavior (4 cr.)	
SO 372 Minority Groups (4 cr.)	
SO 472 Occupational Stress (4 cr.)	
SP 421 Organizational Communication (4 cr.)	
LSP 295 Special Topics in Labor Studies (1-4 cr.)	
LSP 495 Special Topics in Labor Studies (1-4 cr.)	
HS/PS/SO 491 Internship (1-12 cr.)	
HS/PS/SO 498 Directed Study (1-4 cr.)	

CERTIFICATION PROGRAM

Labor Leadership Certification

This certificate program is intended for union members and officers, potential union members and aspiring union leaders who are interested in developing their knowledge, leadership skills and perspective of unions and the labor movement. An advisory committee made up of labor leaders in cooperation with NMU faculty members and administrators determine the nature of this program.

Total Credits Required for Certification	17
LSP 101 Introduction to Labor Studies <i>or</i>	4
LSP 101A Introduction to Labor Studies (2 cr.) <i>and</i>	
LSP 101B Introduction to Labor Studies (2 cr.)	
HS 244 The American Labor Movement	2
SO 322 Social Class, Power, and Mobility	4
HS 444 Research in Labor History	2
MGT 424 Collective Bargaining	3
LSP 490 Seminar in Labor Leadership	2

INDIVIDUALLY CREATED PROGRAMS (ICP)

ICP Baccalaureate Degree

Students with clearly defined educational goals that do not correspond with existing programs at NMU can choose this bachelor of arts or bachelor of science degree with the phrase "Individualized Studies" appearing in place of the major on the transcript. In consultation with their advisers, students develop a program of individualized concentration which is then submitted to the Committee for Undergraduate Programs. Students can select their own advisers or obtain advice in the Registrar's Office about which advisers might be most suitable.

Once the program is drawn up and approved by the Committee for Undergraduate Programs, the approved outline is filed with the Registrar's Office as an official contract. Any changes in the contract are submitted to the Committee for Undergraduate Programs and filed. The committee may withdraw approval on the recommendation of the adviser in cases where the student's academic capacities clearly fall short of the stated goals.

Total Credits Required for Degree	124
Liberal Studies*	40
Health Promotion	2
Concentration	52
General Electives	30

**This program does not permit double counting between liberal studies, the concentrations and electives.*

The following guidelines apply to the degree:

1. Students must obtain a "C" (2.00) or better in all courses in the concentration.
2. Students must complete 40 credits after the program is approved.
3. The program must include 40 credits at the upper-division (300-400) level.
4. Liberal studies: Students must complete a minimum of 40 credits for all degrees.
5. The program may not include courses that would comprise more than 80 percent of any approved departmental major.
6. Students interested in an individually created program within the College of Business will coordinate with a College of Business adviser. If it is determined that more than 25 percent of the individually created program is appropriate in business, the adviser will make certain that the courses chosen meet the common body of knowledge requirements of The American Assembly of Collegiate Schools of Business.
7. Students with a concentration outside of the College of Business may not take more than 25 percent of their program from courses taught by the College of Business.
8. Admission into an individually created program begins the semester following approval of the committee.

CERTIFICATE PROGRAM

Special Studies Certificate

This is a one-year program leading to a certificate for those students whose immediate goal is not an associate or baccalaureate degree. If they wish, students can later use this program as a basis for meeting the requirements of a degree program. Students develop a course of study in conjunction with an adviser using a form provided by the Registrar's Office. The area of concentration emphasizes a specific area of interest or professional development. The student, with the approval of the adviser, chooses courses from either a single discipline or a combination of disciplines. The student uses courses from one or more disciplines as cognates to support the area of concentration. Students must obtain a grade of "C" (2.00) or better in the area of concentration in order to graduate.

Total Credits Required for Certificate	33
Liberal Studies	8
Natural Science/mathematics elective	4
Humanities or social science elective	4
Health Promotion	1
HP 200 Physical Well Being	1
Area of Concentration	12
Cognates	8
Other Required Course	4
EN 090 Basic Composition <i>or</i>	4
EN 111 College Composition I	

PREPROFESSIONAL PROGRAMS

Pre-Professional Programs at NMU

Northern Michigan University provides non-degree, pre-professional programs of study. These programs have been developed to prepare students with specific professional goals to meet the admission qualifications of other colleges and universities. Some professional schools require students to complete a baccalaureate degree prior to admission. In some cases students may elect to enter one of NMU's degree programs while still receiving advising toward one of the pre-professional programs. Information about each of the pre-professional programs can be obtained from the department listed below as the administrative and advising department.

<u>Program</u>	<u>Department</u>
Pre-Architecture	Art and Design
Pre-Dentistry	Physics
Pre-Engineering	Physics
Pre-Law	Political Science and Public Administration
Pre-Medical	Physics
Pre-Optometry	Biology
Pre-Pharmacy	Chemistry
Pre-Veterinary Medicine	Biology

The university has a Pre-dental Advisory Board as well as a Pre-medical Advisory Board, which oversee the pre-dental and pre-medical programs. The boards are made up of practicing dentists, physicians and professors. Board members provide information to pre-dental and pre-medical students regarding application procedures, the profession of dentistry or medicine, and the Dental Admission Test (DAT) or the Medical College Admission Test (MCAT).

When students apply to their professional schools, the appropriate board may write a letter of evaluation that assesses the suitability of a student for the profession. This letter is written if a student has been granted a board interview, based on the student's grade point average and Dental Admission Test (DAT) or Medical College Admission Test (MCAT) scores. In writing the letter the board considers such information as DAT or MCAT scores, grade point average, letters of reference and responses to questions during the personal interview.

PRE-PROFESSIONAL PROGRAMS

Pre-Architecture

Students intending to enter an architectural program at another institution may select an academic foundation at Northern Michigan University by completing the following courses.

EN 111 College Composition I	4
EN 211D Technical and Report Writing	4
CS 120 Computer Science I	4
EC 202 Macroeconomic Principles	4
MA 115 Pre-Calculus	4
MA 161 Calculus I	5
PH 220 Introductory Physics I	5
PH 221 Introductory Physics II	5
PY 100L Psychology as a Natural Science w/ Lab	4
<i>Choose two courses from the following:</i>	8
AD 116 Sculpture	
AD 111 Human Centered Design: Shelters	
AD 211 Human Centered Design: Social Goods	
<i>Choose two courses from the following:</i>	8
AD 260 Why America Looks This Way	
AD 265 Art and Architecture of Japan	
AD 355 Twentieth Century Art and Architecture	

Beyond the course and distribution requirements specified above, students may freely select other courses to earn a total of 60 minimum (64 recommended) credit hours. Since the emphasis in pre-professional studies is on liberal arts, no more than 7 credits in nonacademic or technical areas can be applied toward the 60-credit requirement.

Pre-Dental Program

Students pursuing this program are assigned to the pre-dental adviser who assists students in selecting the courses required or recommended for admission into dental school. Students must declare a major sometime during their freshman year. Although the choice of major is not restricted and students should choose a major that will interest them and provide a possible career for them, most pre-dental students graduate with a bachelor's degree in biology, biochemistry or chemistry. Such majors not only provide the necessary prerequisites for dental school but also ensure the student has a strong science background. A pre-dental handbook is available from the pre-dental adviser and is also located on the pre-medical/pre-dental Web page which is accessible via www.nmu.edu.

EN 111 College Composition I	4
EN 211D Technical and Report Writing	4
Humanities Electives	8
Social Science Electives	8
BI 111 Introductory Biology: Principles*	4
BI 112 Introductory Biology: Diversity*	4
BI 312 Genetics	4

BI 313 Cell Biology <i>or</i>	
BI 202 Human Physiology (5 cr.) <i>or</i>	
BI 222 Animal Physiology <i>or</i>	
BI 431 Plant Physiology	
BI 303 General Microbiology	5
CH 111 General Chemistry I*	5
CH 112 General Chemistry II*	5
CH 321 Organic Chemistry I*	4
CH 322 Organic Chemistry II*	4
CH 450 Introductory Biochemistry	4
PH 201 College Physics I* <i>and</i>	5
PH 202 College Physics II* <i>or</i>	5
PH 220 Introductory Physics I* <i>and</i>	
PH 221 Introductory Physics II*	

*These courses are to be completed in addition to those required for any particular major. Students majoring in biology/physiology, chemistry or biochemistry will be taking most of these courses in their major. The remaining courses listed are recommended.

Pre-Engineering Program

Students interested in engineering who plan to transfer to an engineering school should contact the Physics Department to get program details and be assigned an academic adviser. NMU offers courses in several departments that provide the program needs of engineering students, exclusive of professional engineering courses, which comprise the first two years of engineering programs.

EN 111 College Composition I	4
EN 211D Technical and Report Writing	4
Humanities Electives	8
Social Science Electives	8
CH 111 General Chemistry I	5
CH 112 General Chemistry II	5
CS 120 Computer Science I	4
MA 161 Calculus I	5
MA 163 Calculus II	4
MA 265 Calculus III	3
MA 211 Introduction to Matrix Theory and Linear Algebra	3
MA 361 Differential Equations	3
PH 220 Introductory Physics I	5
PH 221 Introductory Physics II	5

Pre-Law Program

Students interested in a career in the legal profession should contact the Political Science and Public Administration Department for referral to one of the pre-law advisers who have significant experience assisting students who wish to prepare for law school. There is a specific political science/pre-law major available to students, but law schools will accept students with other majors. Pre-law advisers help students select appropriate course work to prepare them for law school, fulfill other prerequisites for law school admission and assist students in applying to law schools.

4-5 Pre-Medical Program

Students pursuing the premedical program are assigned to the premedical adviser who assists students in selecting the courses required or recommended for admission into medical school. Students must declare a major sometime during their freshman year. Although the choice of major is not restricted and students should choose a major that will interest them and provide a possible career for them, most premedical students graduate with a bachelor's degree in biology, biochemistry or chemistry. Such majors not only provide the necessary prerequisites for medical school but also ensure the student has a strong science background. The recommended courses for students interested in medical careers are the same as the courses recommended for students interested in dental careers (see above).

Pre-Optometry Program

Pre-optometry students who are residents of Michigan normally plan an academic program of three or more years to meet requirements for admission to the College of Optometry at Ferris State University. Those requirements can be completed at Northern Michigan University, specifically courses in biology, chemistry, mathematics, physics, psychology, behavioral science, English and humanities. Preprofessional course requirements for the other American optometry schools can also be completed at NMU.

Students are encouraged to complete a bachelor's degree at Northern by pursuing a regular major in fields related to optometry, such as biochemistry, biology, mathematics, physics, chemistry or psychology. Students interested in the pre-optometry program should contact an adviser in the Biology Department.

EN 111 College Composition I	4
EN 211 College Composition II	4
EN 303 Technical and Professional Writing	4
Humanities Electives	5
SP 110 Interpersonal Communication	4
BI 111 Introductory Biology: Principles	4
BI 112 Introductory Biology: Diversity	4
BI 201 Human Anatomy	3
BI 202 Human Physiology	5
BI 203 Medical Microbiology	5
CH 111 General Chemistry I	5
CH 112 General Chemistry II	5
CH 321 Organic Chemistry I	4
CH 322 Organic Chemistry II	4
CH 450 Introductory Biochemistry	4
MA 105 College Algebra for Calculus Preparation	4
MA 106 Trigonometry	3
MA 115 Pre-Calculus	4
MA 161 Calculus I	5
MA 171 Introduction to Probability and Statistics	4

PH 201 College Physics I and	5
PH 202 College Physics II or	5
PH 220 Introductory Physics I and	
PH 221 Introductory Physics II	
PY 100 S/L Psychology as a Natural Science	4
Behavioral Science Electives	5
<i>An introductory management course (MGT 240 Organizational Behavior and Management, 3 cr.) or accounting course (ACT 201 Practical Accounting Procedures, 4 cr., or ACT 230 Principles of Accounting 3 cr.) is highly recommended but not required. The recommended courses are solely designed for completion of the pre-optometry requirements of the Michigan College of Optometry at Ferris State University. Course application to other programs may vary.</i>	

Pre-Pharmacy Program

Students wishing to pursue a career in pharmacy must fulfill a six-year doctor of pharmacy program. The first two years' requirements may be met by majoring in the chemistry program at Northern Michigan University; the latter four years' requirements must be fulfilled at one of the nation's pharmacy schools. Within Michigan, the doctor of pharmacy degree (Pharm.D.) is available from Ferris State University, the University of Michigan and Wayne State University. Another option, the Ph.D. in pharmacy, is also available from the University of Michigan and Wayne State University, but these usually require earning the bachelor's degree in chemistry or pharmacy first.

The pre-pharmacy program at Northern Michigan University is composed of a tightly structured two-year sequence, or a slower paced three-year schedule that includes four courses in chemistry, three in biology and additional course work that is dependent upon the intended pharmacy school.

Specific requirements, substitutions and pharmacy school admission procedures can be explained in detail by an adviser from the Chemistry Department.

EN 111 College Composition I	4
BI 111 Introductory Biology: Principles	4
BI 112 Introductory Biology: Diversity	4
BI 203 Medical Microbiology	5
CH 111 General Chemistry I	5
CH 112 General Chemistry II	5
CH 321 Organic Chemistry I	4
CH 322 Organic Chemistry II	4
MA 161 Calculus I	5

Additional course work* 29

*Additional course work is dependent upon the intended pharmacy school.

Pre-Veterinary Medicine Program

Pre-veterinary students who are residents of Michigan normally plan an academic program to meet requirements for admission to the College of Veterinary Medicine at Michigan State University. Those requirements can be met at Northern Michigan University, where students take specified courses in biology, chemistry, mathematics, physics, college composition, social science and humanities. Students are encouraged to earn a bachelor's degree at Northern Michigan University by completing a regular major and minor in such fields as biology, biochemistry, chemistry, mathematics or psychology.

Specific advisement information is found in the *Pre-veterinary Medicine Handbook*, available from the Biology Department.

Factors considered in acceptance of students into the College of Veterinary Medicine at Michigan State University include legal residency, grade point average in all college course work, grade point average in required pre-veterinary science courses, results of the Medical College Admissions Test (MCAT) or Graduate Record Examination (GRE), total college course credits completed, average course load per semester, a personal interview, essay, veterinary experience and animal exposure, and extracurricular activities. Students interested in the pre-veterinary program should contact an adviser in the Biology Department.

EN 111 College Composition I	4
EN 211 College Composition II	4
Humanities Electives	8
Social Science Electives	8
BI 111 Introductory Biology: Principles	4
BI 112 Introductory Biology: Diversity	4
CH 111 General Chemistry I	5
CH 112 General Chemistry II	5
CH 321 Organic Chemistry I	4
CH 322 Organic Chemistry II	4
CH 450 Introductory Biochemistry	4
MA 105 College Algebra	4
<i>Choose one course from the following:</i>	3-4
MA 106 Trigonometry (3 cr.)	
MA 115 Pre-Calculus (4 cr.)	
MA 161 Calculus I	5
PH 201 College Physics I and	5
PH 202 College Physics II or	5
PH 220 Introductory Physics I and	
PH 221 Introductory Physics II	