

2009-2010



Northern

Bachelor of Science
Applied Mathematics

Admission requirements: 1) Completion of the General Education Common Core, plus an additional 13 credit hours which must include Calculus I and 2) a cumulative GPA of at least 2.50.

GENERAL EDUCATION REQUIREMENTS (35 CRS) COMPLETED Planned Timeline (By Semester)

Area I: Communications (9 crs)

ENG 111 English Composition I (3)
Pre-requisites: ENG 109 or adequate score on the Course Placement Evaluation
SPCH 130 Public Speaking (3)
Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation

Choose one of the following two courses:

ENG 112 English Composition II (3)
Pre-requisite: ENG 111
ENG 116 Technical Writing (3)
Pre-requisite: ENG 111

Area II: Mathematics (3 crs)

Choose one course from the following list.

MATH 145 Introduction to Probability & Statistics (3)
Pre-requisite: MATH 130
MATH 150 College Algebra (3)
Pre-requisite: MATH 130 or adequate score on the Course Placement Evaluation
MATH 151 Conceptual Mathematics\*
MATH 155 Trigonometry (3)
Pre-requisite: MATH 150 or adequate score on the Course Placement Evaluation
MATH 162 Calculus I (4)
Pre-requisite: MATH 155 or MATH 160
MATH 163 Calculus II (4)
Pre-requisite: MATH 162 or adequate score on the Course Placement Evaluation
MATH 264 Calculus III (4)
Pre-requisite: MATH 163 or adequate score on the Course Placement Evaluation

\* Conceptual mathematics will satisfy the mathematics requirement for all AA/BA/BBA/BM degrees

Area III: Laboratory Sciences (8 crs)\*

Choose two courses (with their labs) from the following list:

ASTR 110/L Introduction to Astronomy w/Lab (4)
Pre-requisites: ENG 109 and MATH 100
BIOL 110/L Current Topics in Biology w/Lab(4)
CHEM 110/L Introduction to Chemistry w/Lab (4)
Pre-requisite: MATH 102
ES 112/L. Environmental Science w/Lab (4) (Fall)
GEOL 101/L Physical Geology w/Lab (4)
GEOL 102/L Historical Geology w/Lab (4)
Pre-requisite: GEOL 101
PHYS 110/L Introduction to Physics w/Lab (4)

\*This area can also include courses designed for students pursuing science majors: e.g. BIOL 210/L, CHEM 121/L.

Area IV: Social/Behavioral Sciences (6-9 crs)\*

Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation

PSY 105 General Psychology (3)
SOC 101 Introduction to Sociology (3)
Elective (3-6)

You must select courses from one other discipline area from the following:

ANTH 101/L Physical Anthropology w/Lab (4)  
 ANTH 102 Intro to Social & Cultural Anthropology (3) (Fall)  
 ANTH 111 Language and Culture (3)  
 ANTH 207 Cultures of New Mexico (3)  
 ANTH 110 Indian Culture of the Southwest  
 ECON 200 Macroeconomics (3)  
 ECON 201 Microeconomics (3)  
 GEOG 111 World Geography (3)  
 PSCI 110 The Political World (3)  
 PSCI 120 Contemporary Political Issues (3)  
 PSCI 200 American Politics (3)  
 PSCI 210 State and Local Government (3)  
 PSCI 212 The American Presidency (3)  
 PSY 210 Theories of Personality (3)  
 PSY 229 Adolescent Psychology (3)  
 PSY 230 Psychology of Adjustment (3)  
 PSY 232 Abnormal Behavior (3)  
 PSY 270 Social Psychology (3)  
 PSY 290 Developmental Psychology (3)  
 SOC 213 Deviant Behavior (3)  
 SOC 216 Ethnic and Intercultural Relations (3)  
 SOC 220 Social Problems (3)  
 SOC 225 Marriage and the Family (3)

\* Plus, topic courses with student advisor's approval

#### **Area V: Humanities and Fine Arts (6-9 crs)\***

***Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation***

**You must select courses from at least two different discipline areas from the following list:**

ART 105 Introduction to Art (3)  
 ART 107 History of Art I (3)  
 ART 208 History of NM Art & Architecture (3)  
 ART 211 History of Art II (3)  
 DANC 240 Dance Appreciation (3)  
 ENG 270 Children's Literature (3)  
   *Pre-requisite ENG 111*  
 ENG 262 Literature of the Southwest (3)  
   *Pre-requisite ENG 112*  
 ENG 265 Native American Literature 1 (3)  
   *Pre-requisite ENG 111*  
 ENG 266 Native American Literature II (3)  
   *Pre-requisite: ENG 111*  
 ENG 280 Readings in Literature (3)  
   *Pre-requisite ENG 111*  
 ENG 290 Study of Literature  
   *Pre-requisite ENG 111*  
 ENG 294 Mythology (3)  
   *Pre-requisite ENG 111*  
 HIST 101 Western Civilization I (3)  
 HIST 102 Western Civilization II (3)  
 HIST 161 History of the U.S. to 1877 (3)  
 HIST 162 History of the U.S. from 1877 (3)  
 HIST 200 History of the World Religions (3)  
 HIST 220 Southwestern Women's History (3)  
 HIST 230 Chicano Experience in the US (3)  
 HIST 250 American Indian History (3)  
 HIST 260 History of New Mexico (3)  
 HUM 105 Humanities of the Southwest (3)  
 HUM 311 Why the Social Sciences Matter \*\* (3)  
 HUM 414 Humanity and Creativity \*\* (3)  
 HUM 421 History, Literature, Art & Philosophy \*\* (3)  
 MUS 103 Music History & Literature I (3)  
 MUS 105 Music Appreciation (3)  
 MUS 218 Music History & Literature II (3)  
 PHIL 110 Intro to Philosophical Problems (3)



**Choose one of the following (3):**

Math 402 Advanced Calculus II (3)

*Pre-requisite: MATH 401*

Math 441 Probability (3)

*Pre-requisite: MATH 264*

Math 464 Applied Matrix Theory (3)

*Pre-requisite: MATH 314*

_____	_____
_____	_____
_____	_____

Along with your major, you may complete a minor if you wish. For the BS in Mathematics, we suggest one of the following four minors. Should you choose not to pursue a minor, you must complete an additional 11 crs of approved upper-division courses in order to fulfill our requirement of at least 42 crs of upper-division coursework

**General Engineering (21 crs)**

CE 202 Engineering Statics (3)

*Pre-requisite: MATH 162*

CE 302 Mechanics of Materials (3)

*Pre-requisites: PHYPS 216/L and MATH 163*

EE 203L Circuit Analysis I (3)

*Pre-requisites: CS141, MATH 163 Co-requisites: PHY 161, MATH 316*

ME 160L Mechanical Engineering Design I (3)

*Co-requisite: MATH 162*

ME 301 Thermodynamics (3)

*Pre-requisites: CE 202*

ME 306 Dynamics (3)

*Pre-requisites: ME 202 and MATH 163*

ME 317 Fluid Mechanics (3)

*Pre-requisites: ME 301 and 302*

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**Minor in Information Technology (23 crs)**

IT 150 Unix OS and Scripting (4)

*Pre-requisite: IT 110; Co-requisite: IT 130*

IT 210 Information Technology (3)

*Pre-requisites: CS 132, ENG 111, IT 101 and MATH 145*

IT 220 Network and Server Software (4)

*Pre-requisites: IT 150, 160, 210 and MATH 160*

IT 330 Networking (3)

*Pre-requisites: ENG 116, IT 150 and 220*

IT 341 Distributed systems (3)

*Pre-requisite: IT 330*

IT 342 Wireless and Mobile Computing (3)

*Pre-requisites: IT 330 and 350*

IT 350 Database Management (3)

*Pre-requisite: CS 210*

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**Minor in Chemistry (20 crs)**

CHEM 121/L General Chemistry I with Lab (4 credits)\*

*Pre-requisite: MATH 130, high school chemistry, or an ACT score of 19 or higher in Natural Science*

CHEM 122/L General Chemistry II with Lab (4 credits)\*

*CHEM 121/L*

CHEM 301/L Organic Chemistry I with Lab (4)

*Pre-requisite: CHE M122/L*

CHEM 302/L Organic Chemistry II (4 credits)

*Pre-requisite: CHEM 301/L*

CHEM 311/L Physical Chemistry (4 credits)

*Pre-requisites: CHEM122/L, MATH 163 and PHYS 122/L*

**No course (\*) can count more than once toward a degree at Northern. If you pursue this minor, you will not have taken CHEM 121/L and 122/L as part of the "supporting courses" (above).**

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**Minor in Physics (20 crs)**

PHYS 215/L Engineering Physics (4 credits)

*Pre-requisite: MATH 162*

PHYS 262/L General Physics (4 credits)

*Pre-requisites: PHYS 122/L or PHYS 216/L*

PHYS 331 Thermodynamics and Statistical Mechanics (3)

*Pre-requisites: MATH 311 and 314*

PHYS 302 Optics (3 credits)

*Pre-requisite: PHYS 262/L*

_____	_____
_____	_____
_____	_____
_____	_____

PHYS 330 Introduction to Modern Physics (3 credits)

*Pre-requisite: PHYS 262/L; Co-requisite: PHYS 330L*

\_\_\_\_\_

\_\_\_\_\_

PHYS 405 Electricity and Magnetism (3 credits)

*Pre-requisite: MATH 311 and 312*

\_\_\_\_\_

\_\_\_\_\_

11 crs of approved upper-division courses for non-minors

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

In order to fulfill the graduation requirement of 128 credit hours for the program, you will have to enroll in an additional 15-18 credits of approved electives.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**TOTAL CREDITS 128**