



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)

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

SPCH 130 Public Speaking (3)

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*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)

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*Pre-requisite: ENG 111*

ENG 116 Technical Writing (3)

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*Pre-requisite: ENG 111***Area II: Mathematics (3 crs)****Choose one course from the following list.**

MATH 145 Introduction to Probability &amp; Statistics (3)

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*Pre-requisite: MATH 130*

MATH 150 College Algebra (3)

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*Pre-requisite: MATH 130 or adequate score on the Course Placement Evaluation*

MATH 151 Conceptual Mathematics\*

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MATH 155 Trigonometry (3)

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*Pre-requisite: MATH 150 or adequate score on the Course Placement Evaluation*

MATH 162 Calculus I (4)

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*Pre-requisite: MATH 155 or MATH 160*

MATH 163 Calculus II (4)

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*Pre-requisite: MATH 162 or adequate score on the Course Placement Evaluation*

MATH 264 Calculus III (4)

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*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)

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*Pre-requisites: ENG 109 and MATH 100*

BIOL 110/L Current Topics in Biology w/Lab(4)

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CHEM 110/L Introduction to Chemistry w/Lab (4)

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*Pre-requisite: MATH 102*

ES 112/L. Environmental Science w/Lab (4) (Fall)

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GEOL 101/L Physical Geology w/Lab (4)

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GEOL 102/L Historical Geology w/Lab (4)

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*Pre-requisite: GEOL 101*

PHYS 110/L Introduction to Physics w/Lab (4)

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\*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)

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SOC 101 Introduction to Sociology (3)

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Elective (3-6)

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

ANTH 101/L Physical Anthropology w/Lab (4)

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ANTH 102 Intro to Social &amp; Cultural Anthropology (3) (Fall)

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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)
<i>Pre-requisite ENG 111</i>	
ENG 262	Literature of the Southwest (3)
<i>Pre-requisite ENG 112</i>	
ENG 265	Native American Literature 1 (3)
<i>Pre-requisite ENG 111</i>	
ENG 266	Native American Literature II (3)
<i>Pre-requisite: ENG 111</i>	
ENG 280	Readings in Literature (3)
<i>Pre-requisite ENG 111</i>	
ENG 290	Study of Literature
<i>Pre-requisite ENG 111</i>	
ENG 294	Mythology (3)
<i>Pre-requisite ENG 111</i>	
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)
PHIL 111	History of Philosophy (3)
PHIL 150	Critical Thinking (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

**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

**Chemistry (19 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 Physical Chemistry (3 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 DHEM 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 301 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*

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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.

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**TOTAL CREDITS 128**