



## Bachelor of Science 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 (35 CRS) SEE PAGES 24–27**

#### **Area I: Communications (9)**

#### **Area II: Mathematics (3)**

#### **Area III: Laboratory Science (8)**

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

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 Area IV courses shown on pages 25-26.

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

\* You must complete at least 15 crs between areas IV and V, maintaining at least two disciplines in each area.

#### **Health, Physical Education & Recreation (1 cr)**

Elective (1)

### **PROGRAM REQUIREMENTS (30 CRS)**

#### **Required Supporting Courses in Physics and Chemistry (8)**

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

and

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

or

PHYS 121/L Applied Physics I with Lab (4)

and

PHYS 122/L Applied Physics II with Lab (4)

or

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

and

PHYS 121/L Applied Physics I with Lab (4)

#### **Required supporting course in Computer Science (3)**

CS 142 Computer Science I (3)

### **CORE CURRICULUM (19)**

MATH 162 Calculus I (4)

MATH 163 Calculus II (4)

MATH 264 Calculus III (4)

MATH 314 Linear Algebra with Applications (3)

MATH 401 Advanced Calculus I (4)

## **MAJOR (27 CRS)**

### **Applied Mathematics (24)**

- MATH 311 Vector Analysis (3)
- MATH 312 Partial Differential Equations for Engineering (3)
- MATH 313 Complex Variables for Engineering (3)
- MATH 316 Applied Ordinary Differential Equations (3)
- MATH 327 Discrete Structures (3)
- MATH 345 Elements of Applied Statistics and Probability Theory (3)
- MATH 375 Introduction to Numerical Computing (3)
- MATH 466 Mathematical Methods in Science and Engineering (3)
- Choose one of the following (3):*
- MATH 402 Advanced Calculus II (3)
- MATH 441 Probability (3)
- MATH 464 Applied Matrix Theory (3)

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)
- CE 302 Mechanics of Materials (3)
- EE 203L Circuit Analysis (3)
- ME 160L Mechanical Engineering Design I (3)
- ME 301 Thermodynamics (3)
- ME 306 Dynamics (3)
- ME 317 Fluid Mechanics (3)

### **Information Technology (23 crs)**

- IT 150 Unix OS and Scripting (4)
- IT 210 Information Technology (3)
- IT 220 Network and Server Software (4)
- IT 330 Networking (3)
- IT 341 Distributed Systems (3)
- IT 342 Wireless and Mobil Computing (3)
- IT 350 Database Management (3)

### **Chemistry (19 crs)**

- CHEM 121/L General Chemistry I with Lab (4) \*
- CHEM 122/L General Chemistry II with Lab (4) \*
- CHEM 301/L Organic Chemistry I with Lab (4)
- CHEM 302/L Organic Chemistry II with Lab (4)
- CHEM 311 Physical Chemistry (3)

\*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" on page 98.

### **Physics (20 crs)**

- PHYS 215/L Engineering Physics with Lab (4)
- PHYS 262/L General Physics with Lab (4)
- PHYS 30 Thermodynamics and Statistical Methods (3)
- PHYS 302 Optics (3)
- PHYS 330 Introduction to Modern Physics (3)
- PHYS 405 Electricity and Magnetism (3)

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

**TOTAL CREDITS 128**