

NORTHERN



AMENDED 2015-16 Catalog (Revised 1/2/16)

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
- 2) A cumulative GPA of at least 2.50.

GENERAL EDUCATION (38 CR) SEE PAGES 26-29.

Area I. Communications (9 cr)

Area II. Mathematics (3 cr)

Area III. Laboratory Sciences (8 cr)

Area IV. Social/Behavioral Sciences (6-9 cr)

Area V. Humanities and Fine Arts (6-9 cr)

Second Language (3)

Area VI. First Year Experience (3 cr)

FYE 101 First Year Experience (3)

PROGRAM REQUIREMENTS (37 CR)

Required Supporting Courses in Physics and Chemistry (8 cr)

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 (4 cr)

EECE 152L Computer Programming (4)

CORE CURRICULUM (25 CR)

MATH 162 Calculus I (4)

MATH 163 Calculus II (4)

MATH 264 Calculus III (4)

MATH 375 Numerical Computing (3) (WIC)

or
MATH 275 Intro to Numerical Computing (3)

MATH 314 Linear Algebra with Applications (3)
or
MATH 294 Intro to Linear Algebra with Applications (3)

MATH 316 Applied Ordinary Differential Equations (3)
or
MATH 296 Intro to Applied Ordinary Differential Equations (3)

MATH 401 Advanced Calculus I (4)

MAJOR (24 CR)

Applied Mathematics (21 cr)

MATH 311 Vector Analysis (3)
MATH 312 Partial Differential Equations for Engineering (3)
MATH 313 Complex Variables for Engineering (3)
MATH 327 Discrete Structures (3)
MATH 345 Elements of Applied Statistics and Probability Theory (3)
MATH 395 Practicum in Mathematics (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)

CONCENTRATIONS

Along with your major, you may complete a concentration if you wish. For the BS in Mathematics, we suggest one of the following four concentrations.

General Engineering (20 cr)

ENGR 110 Introduction to Engineering (2)
ME 160L Mechanical Engineering Design (3)
ME 202 Engineering Statics (3)
EECE 203L Circuit Analysis I (3)
ME 301 Thermodynamics (3)
ME 306 Dynamics (3)
ME 317 Fluid Mechanics (3)

Information Technology (18 cr)

EECE 132 Computer Networks I (3)
EECE 231 Intermediate Programming (3)
IT 250 Introduction to Databases (3)
EECE 330 Computer Networks II (3)
EECE 342 Wireless and Mobil Computing (3)
EECE 440 Advanced Computer Networks (3)

Chemistry (19 cr)

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 concentration, you will not have taken CHEM 121/L and 122/L as part of the "supporting courses" on page 114.

Physics (20 cr)

PHYS 215/L Engineering Physics with Lab (4)

PHYS 262/L General Physics with Lab (4)

PHYS 331 Thermodynamics and Statistical Methods (3)

PHYS 302 Optics (3)

PHYS 330 Introduction to Modern Physics (3)

PHYS 405 Electricity and Magnetism (3)

Should you choose not to pursue a concentration, you must complete enough approved upper-division (300 or above) math, chemistry, engineering, or physics courses in order to fulfill our requirement of at least 40 credits of upper-division coursework.

In order to fulfill the graduation requirement of 120 credits for the program, you will have to enroll in an additional 1-3 credits of approved electives depending on the concentration area that is chosen and 21 credits of electives if a concentration is not chosen.
