# NDSU | NORTH DAKOTA STATE UNIVERSITY

## COLLEGE OF SCIENCE & MATHEMATICS
## MAJOR: MATHEMATICS
## ACADEMIC YEAR: 2013-2014
## DEGREE TYPE: B.A. or B.S.
## REQUIRED DEGREE CREDITS TO GRADUATE: 122

### GENERAL EDUCATION REQUIREMENTS – 40 CREDITS
**Lower Division Requirements – 37 Credits**

First Year Experience (F) - 1 Credit

| | | | |
|---|---|---|---|
| UNIV | 189 | Skills for Academic Success | 1 cr |

Students transferring in 24 or more credits do not need to take UNIV 189.

Communication (C) - 9 Credits

| | | | |
|---|---|---|---|
| ENGL | 110 | College Composition I | 3 cr |
| ENGL | 120 | College Composition II | 3 cr |
| COMM | 110 | Fund of Public Speaking | 3 cr |

Quantitative Reasoning (R) - 3 Credits

| | | | |
|---|---|---|---|
| MATH | 165 | Calculus I | 4 cr |

Science & Technology (S) - 10 Credits

A one-credit lab must be taken as a co-requisite with a general education science/technology course unless the course includes an embedded lab experience equivalent to a one-credit course. Select from current general education courses www.ndsu.edu/registrar/gened/

Humanities & Fine Arts (A) - 6 Credits

Select from current general education courses www.ndsu.edu/registrar/gened/

Social & Behavioral Sciences (B) - 6 Credits

Select from current general education courses www.ndsu.edu/registrar/gened/

Wellness (W) - 2 Credits

Select from current general education courses www.ndsu.edu/registrar/gened/

Cultural Diversity (D)

Select from current general education courses www.ndsu.edu/registrar/gened/

Global Perspectives (G)

Select from current general education courses www.ndsu.edu/registrar/gened/

**Upper Division Requirements - Writing – 3 Credits**

Select from current general education courses www.ndsu.edu/registrar/gened/

### MATHEMATICS MAJOR REQUIREMENTS – 42 CREDITS (includes MATH 165)

- A grade of 'C' or better is required in all MATH prefix courses.

| | | | |
|---|---|---|---|
| MATH | 166 | Calculus II | 4 cr |
| MATH | 265 | Calculus III | 4 cr |
| MATH | 266 | Intro to Differential Equations | 3 cr |
| MATH | 270 | Intro to Abstract Mathematics | 3 cr |
| MATH | 420 | Abstract Algebra I | 3 cr |
| MATH | 421 or | Abstract Algebra II | 3 cr |
| | 451 | Real Analysis II | |

### MATHEMATICS MAJOR REQUIREMENTS CONTINUED

| | | | |
|---|---|---|---|
| MATH | 429 | Linear Algebra | 3 cr |
| MATH | 450 | Real Analysis I | 3 cr |
| MATH | 491 | Capstone Seminar | 2 cr |

**Electives – 10 Credits**

Must choose one from List A & one from List B and must include one of the pairs of courses listed here: 430/436, 445/446, 480/483, 452/481, 488/489, and (420/421 or 450/451: whichever you didn't choose above)

**List A**

| | | | |
|---|---|---|---|
| MATH | 374 | Special Problems in Math | 1 cr |
| MATH | 430 | Graph Theory | 3 cr |
| MATH | 436 | Combinatorics | 3 cr |
| MATH | 440 | Axiomatic Geometry | 3 cr |
| MATH | 445 | Differential Geometry | 3 cr |
| MATH | 446 | Intro to Topology | 3 cr |
| MATH | 452 | Complex Analysis | 3 cr |
| MATH | 472 | Number Theory | 3 cr |

**List B**

| | | | |
|---|---|---|---|
| MATH | 473 | Cryptology | 3 cr |
| MATH | 480 | Applied Differential Equations | 3 cr |
| MATH | 481 | Fourier Analysis | 3 cr |
| MATH | 483 | Partial Differential Equations | 3 cr |
| MATH | 488 | Numerical Analysis I | 3 cr |
| MATH | 489 | Numerical Analysis II | 3 cr |
| STAT | 467 | Probability & Mathematical Statistics | 3 cr |
| CSCI | 453 | Linear Programming & Network Flows | 3 cr |

### RELATED REQUIRED COURSES- 12-14 CREDITS

Not counted as part of major credits. CSCI 160 required plus one lab sequence chosen from below.

| | | | |
|---|---|---|---|
| CSCI | 160 | Computer Science I | 4 cr |

**Lab Science Sequence- 8-10 Credits**

Choose 1 sequence **OR** the CSCI 161 & 2 CSCI electives.

| | | | |
|---|---|---|---|
| BIOL | 150/L | General Biology I/Lab | 3/1 cr |
| | 151/L | General Biology II/Lab | 3/1 cr |
| BIOL | 220/L | Human Anat & Phys I/Lab* | 3/1 cr |
| | 221/L | Human Anat & Phys II/Lab | 3/1 cr |
| CHEM | 121/L | General Chemistry I/Lab* | 3/1 cr |
| | 122/L | General Chemistry II/Lab* | 3/1 cr |
| CHEM | 150/160 | Principles of Chemistry I/Lab* | 3/1 cr |
| | 151/161 | Principles of Chemistry II/Lab* | 3/1 cr |
| MICR | 350/L | General Microbiology I/Lab | 3/1 cr |
| | 352/L | General Microbiology II/Lab | 3/1 cr |
| PHYS | 251/L | University Physics I/Lab* | 4/1 cr |
| | 252/L | University Physics II/Lab* | 4/1 cr |

**OR**

| | | | |
|---|---|---|---|
| CSCI | 161 | Computer Science II | 4 cr |

**AND** choose 2 of the following:

| | | | |
|---|---|---|---|
| CSCI | 345 | Topics on Personal Computers | 3 cr |
| CSCI | 372 | Comparative Programming Lang. | 3 cr |
| CSCI | 373 | Assembly Programming | 3 cr |
| CSCI | 458 | Microcomputer Graphics | 3 cr |

*Science and Technology General Education.

### DEGREE REQUIREMENTS – UP TO 33 CREDITS TO REACH 122

**DEPARTMENT AND COLLEGE REQUIREMENTS:**

- Except for courses offered only as pass/fail grading, no course may be taken Pass/Fail.

**Bachelor of Science (BS) Degree –** An additional 6 credits in Humanities or Social Sciences*

**Bachelor of Arts (BA) Degree –** An additional 12 credits Humanities and Social Sciences* and proficiency at the second year level in a modern foreign language.

*Humanities and Social Sciences may be fulfilled by any course having the following prefix: ADHM, ANTH, ARCH, ART, CJ, CLAS, COMM, ECON, ENGL, FREN, GEOG, GERM, HDFS, HIST, LA, LANG, MUSC, PHIL, POLS, PSYC, RELS, SOC, SPAN, THEA, WGS, or any course from the approved list of general education courses in humanities and social sciences (general education categories A and B). These credits must come from outside the department of the student's major.