# MATHEMATICS COMPREHENSIVE, BACHELOR OF SCIENCE

Offered by Department of Mathematics and Statistics (http://catalog.unk.edu/undergraduate/departments-programs/mathematics-statistics/)

## Emphases offered in Actuarial Science, Applied Mathematics, Computer Science, and General Mathematics

| Code | Title | Credit Hours |
|---|---|---|
| **General Education** | | |
| *Foundational Requirements (LOPERs 1-4)* | | *14* |
| LOPER 2: Writing Skills | | |
| ENG 101 | Introduction to Academic Writing | |
| LOPER 4: Mathematics, Statistics and Quantitative Reasoning | | |
| MATH 115 | Calculus I with Analytic Geometry [1] | |
| *Broad Knowledge Requirements (LOPERs 5-8)* | | *9* |
| Take any one course in LOPER 5, LOPER 6, LOPER 7, or LOPER 8 that satisfies a Dispositional Requirement (LOPER 9 or LOPER 10) and a Broad Knowledge Requirement. The courses that meet these criteria are listed at https://catalog.unk.edu/undergraduate/general-studies/courses-satisfy-broad-knowledge-dispositional (https://catalog.unk.edu/undergraduate/general-studies/courses-satisfy-broad-knowledge-dispositional/)/. See advisor for assistance. | | |
| *Dispositional Requirements (LOPERs 9-10)* [2] | | *6* |
| *Wellness (LOPER 11) Optional* | | *0* |
| **BS Science-related course requirements** | | |
| Complete all required courses | | 5 |
| PHYS 275 & 275L | General Physics I (Calculus) and General Physics I (Calculus) Laboratory | |
| **Program-Specific Requirements** | | **6** |
| ENG 102 | Special Topics in Academic Writing and Research | |
| CYBR 101 | Computer Science I: Python for Analytics [3] | |
| or CYBR 102 | Computer Science I: C for Security | |
| **Major Option** | | |
| Complete all required courses | | 52-59 |
| **Unrestricted electives** | | |
| Needed to reach 120 credit hour minimum | | 21-28 |
| Total Credit Hours | | 120 |

**Must be completed with no grade below a "C".**

## Major Option

| Code | Title | Credit Hours |
|---|---|---|
| **Math Comprehensive Core Requirements** | | |
| MATH 150 | School Math from an Advanced Standpoint [1] | 3 |
| MATH 202 | Calculus II with Analytic Geometry | 5 |
| MATH 250 | Foundations of Math | 3 |
| MATH 260 | Calculus III | 5 |
| MATH 280 | Linear Algebra | 3 |
| MATH 305 | Differential Equations | 3 |
| MATH 350 | Abstract Algebra | 3 |
| MATH 460 | Advanced Calculus I | 3 |
| **MATH/STAT Elective Hours** | | |
| Select 12 Credit hours from 300-499 MATH/STAT Courses [4] | | 12 |
| **Emphasis area** | | |
| Select one of the following: | | 12-19 |
| Applied Mathematics Emphasis (p. 1) | | |
| Computer Science Emphasis (p. 1) | | |
| Actuarial Science Emphasis (p. 2) | | |
| General Emphasis (p. 2) | | |
| Total Credit Hours | | 52-59 |

### Applied Mathematics Emphasis

| Code | Title | Credit Hours |
|---|---|---|
| Select at least 12 credit hours of the following: | | 12 |
| CYBR 150 | Computer Science II: Object Oriented Programming | |
| CYBR 180 | Discrete Structures | |
| PHYS 276 | General Physics II (Calculus) | |
| PHYS 276L | General Physics II (Calculus) Laboratory | |
| PHYS 410 | Mathematical Techniques in Physics I | |
| PHYS 411 | Mathematical Techniques in Physics II | |
| STAT 345 | Applied Statistics I | |
| STAT 442 | Mathematical Statistics | |
| Total Credit Hours | | 12 |

### Computer Science Emphasis

| Code | Title | Credit Hours |
|---|---|---|
| CYBR 150 | Computer Science II: Object Oriented Programming | 3 |
| CYBR 180 | Discrete Structures | 3 |
| CYBR 300 | Operating Systems | 3 |
| CYBR 301 | Computer Organization | 3 |
| CYBR 330 | Algorithms and Data Structures | 3 |
| CYBR 408 | Principles of Programming Languages & Automata | 3 |
| Total Credit Hours | | 18 |

## Actuarial Science Emphasis

| Code | Title | Credit Hours |
|---|---|---|
| ACCT 250 | Principles of Accounting I | 3 |
| ACCT 251 | Principles of Accounting II | 3 |
| ECON 270 | Principles of Economics, Macroeconomics | 3 |
| ECON 271 | Principles of Economics, Microeconomics | 3 |
| FIN 308 | Principles of Finance | 3 |
| BSAD 295 | Business Communications | 3 |
| MATH 445 | Actuarial Science Seminar | 1 |
| Total Credit Hours | | 19 |

## General Emphasis

| Code | Title | Credit Hours |
|---|---|---|
| Select a combination of 12 credit hours of CYBR, MATH, PHYS, STAT | | 12 |
| Total Credit Hours | | 12 |

**1**

Students without sufficient preparation will also need to take the following courses, increasing the total credit hours needed:

- MATH 102
- MATH 103

**2**

Designated courses with the appropriate content may be approved to satisfy one of the Broad Knowledge requirements plus LOPER 9 or Broad Knowledge plus LOPER 10. Courses may be approved to satisfy LOPER 9 or LOPER 10 alone. (Courses satisfying LOPER 9 or LOPER 10 alone must be 3 credit hours.) Students applying this option will need to take additional hours in other categories to meet the required General Education hours.

**3**

Students wishing to complete the Applied Mathematics or Computer Science Emphasis should take CYBR 101 for this option as it is a prerequisite for CYBR 150 and CYBR 180 which are required for these Emphases.

**4**

For these elective hours, students may take any 300+ level MATH or STAT course except MATH 330, MATH 430,MATH 465, MATH 470, or MATH 471

This document represents a sample 4-year plan for degree completion with this major. Actual course selection and sequence may vary and should be discussed individually with your academic advisor. Advisors can also help you plan other experiences to enrich your undergraduate education such as internships, education abroad, undergraduate research, learning communities, and service learning and community-based learning.

| Code | Title | Credit Hours |
|---|---|---|
| **Semester 1** | | |
| MATH 115 | Calculus I with Analytic Geometry | 5 |
| LOPER 1: First-year Seminar | | 3 |
| ENG 101 | Introduction to Academic Writing | 3 |
| LOPER 3: Oral Communication Skills | | 3 |
| Total Credit Hours | | 14 |

| Code | Title | Credit Hours |
|---|---|---|
| **Semester 2** | | |
| MATH 202 | Calculus II with Analytic Geometry | 5 |
| MATH 150 | School Math from an Advanced Standpoint | 3 |
| LOPER 5: Visual or Performing Arts [1] | | 3 |
| ENG 102 | Special Topics in Academic Writing and Research | 3 |
| Total Credit Hours | | 14 |

| Code | Title | Credit Hours |
|---|---|---|
| **Semester 3** | | |
| MATH 260 | Calculus III | 5 |
| MATH 250 | Foundations of Math | 3 |
| CYBR 101<br>or CYBR 102 | Computer Science I: Python for Analytics<br>Computer Science I: C for Security | 3 |
| LOPER 6: Humanities [1] | | 3 |
| Total Credit Hours | | 14 |

| Code | Title | Credit Hours |
|---|---|---|
| **Semester 4** | | |
| MATH 305 | Differential Equations | 3 |
| MATH 280 | Linear Algebra | 3 |
| LOPER 9: Civic Competency and Engagement [1] | | 3 |
| PHYS 275 & 275L | General Physics I (Calculus) and General Physics I (Calculus) Laboratory (LOPER 8) | 5 |
| Emphasis Area | | 3 |
| Total Credit Hours | | 17 |

| Code | Title | Credit Hours |
|---|---|---|
| **Semester 5** | | |
| Major Elective | | 3 |
| LOPER 7: Social Science [1] | | |
| Emphasis Area | | 3 |
| Emphasis Area | | 3 |
| Unrestricted Elective | | 3 |
| Unrestricted Elective | | 3 |
| Unrestricted Elective | | 1 |
| Total Credit Hours | | 16 |

| Code | Title | Credit Hours |
|---|---|---|
| **Semester 6** | | |
| MATH 350 | Abstract Algebra | 3 |
| Emphasis Area | | 3 |
| Emphasis Area | | 3 |
| Unrestricted Elective | | 3 |

| | | |
|---|---|---|
| Unrestricted Elective | | 3 |
| Total Credit Hours | | 15 |

| Code | Title | Credit Hours |
|---|---|---|
| **Semester 7** | | |
| MATH 460 | Advanced Calculus I | 3 |
| Emphasis Area | | 3 |
| Unrestricted Elective | | 3 |
| Unrestricted Elective | | 3 |
| Unrestricted Elective | | 3 |
| Total Credit Hours | | 15 |

| Code | Title | Credit Hours |
|---|---|---|
| **Semester 8** | | |
| Major Elective | | 3 |
| Major Elective | | 3 |
| Major Elective | | 3 |
| Unrestricted Elective | | 3 |
| LOPER 10: Respect for Human Diversity [1] | | 2 |
| Unrestricted Elective | | 1 |
| Total Credit Hours | | 15 |

1

Choose a course that satisfies two LOPER requirements: LOPER 5, 6, or 7 AND LOPER 9 or LOPER 10