# Mathematics, Actuarial Science (BSMath)

## Degree-Bachelor of Science in Mathematics (BSMath)

The Bachelor of Science in Mathematics is designed with a twofold purpose: to offer students a more extensive scientific program that may better prepare them for graduate study or employment, and to recognize students who choose to pursue a more demanding program. Students are given the opportunity to develop greater breadth and depth in their mathematical programs as well as to combine mathematics with a concentration in another scientific discipline.

## Total Hours Required: 120

## Plan of Study

The Plan of Study is a suggested four-year course sequence to support academic planning and serves as a helpful guide. Currently enrolled students should meet with their academic advisor to tailor their course selections and timelines to their individual goals and circumstances.

| Course | Title | Hours |
|---|---|---|
| **Year 1** | | |
| **Semester 1** | | |
| M 408N<br>or M 408C | Differential Calculus for Science<br>or Differential and Integral Calculus | 4 |
| ECO 304K | Introduction to Microeconomics | 3 |
| ACC 310F | Foundations of Accounting | 3 |
| First-Year Signature Course (090) | | 3 |
| Visual and Performing Arts (050) | | 3 |
| | **Hours** | **16** |
| **Semester 2** | | |
| M 408S | Integral Calculus for Science (M X08D) | 4 |
| ECO 304L | Introduction to Macroeconomics | 3 |
| C S 303E | Elements of Computers and Programming | 3 |
| RHE 306 | Rhetoric and Writing | 3 |
| Free Elective | | 2 |
| | **Hours** | **15** |
| **Year 2** | | |
| **Semester 1** | | |
| M 325K | Discrete Mathematics | 3 |
| M 362K | Probability I | 3 |
| Humanities (040) | | 3 |
| Natural Science and Technology, Part I (030) | | 3 |
| Upper-division Coursework | | 3 |
| | **Hours** | **15** |
| **Semester 2** | | |
| M 329F | Theory of Interest | 3 |
| M 341 | Linear Algebra and Matrix Theory | 3 |
| Hours chosen from: Majors-level coursework in Astronomy, Biology, Chemistry, Geological Sciences, or Physics | | 4 |
| Hours chosen from: Majors-level coursework in Astronomy, Biology, Chemistry, Geological Sciences, or Physics | | 4 |
| Free Elective | | 3 |
| | **Hours** | **17** |
| **Year 3** | | |
| **Semester 1** | | |
| M 339D | Introduction to Financial Mathematics for Actuaries | 3 |
| M 358K | Applied Statistics | 3 |
| GOV 310L | American and Texas Government | 3 |
| Upper-division Coursework | | 3 |
| Free Elective | | 3 |
| | **Hours** | **15** |
| **Semester 2** | | |
| M 339J | Probability Models with Actuarial Applications | 3 |
| Hours chosen from: Upper-division Math | | 3 |
| FIN 357 | Business Finance | 3 |
| GOV 312L | Issues and Policies in American Government | 3 |
| | **Hours** | **12** |
| **Year 4** | | |
| **Semester 1** | | |
| M 339U | Actuarial Contingent Payments I (taught in IBL format) | 3 |
| M 349P | Actuarial Statistical Estimates | 3 |
| U.S. History (060) | | 3 |
| Free Elective | | 3 |
| Upper-division coursework (excluding Astronomy, Biology, Chemistry, Geological Sciences, Mathematics, and Physics. Philosophy courses in logic, Computer Science courses in discrete mathematics, Engineering, and Actuarial Foundation courses may not be used to fulfill this requirement) | | 3 |
| | **Hours** | **15** |
| **Semester 2** | | |
| M 339V | Actuarial Contingent Payments II | 3 |
| U.S. History (060) | | 3 |
| Upper-division Coursework | | 3 |
| Upper-division coursework (excluding Astronomy, Biology, Chemistry, Geological Sciences, Mathematics, and Physics. Philosophy courses in logic, Computer Science courses in discrete mathematics, Engineering, and Actuarial Foundation courses may not be used to fulfill this requirement) | | 3 |
| M 339G | Predictive Analytics | 3 |
| | **Hours** | **15** |
| | **Total Hours** | **120** |

## Requirements

All requirements are listed below, starting with the most specialized moving to the most general. Additional requirements may follow the table, so be sure to read the entire page. Some required courses listed below may also satisfy General Education requirements, including Core Curriculum.

| Code | Title | Hours |
|---|---|---|
| **Degree** | | |
| Hours chosen from majors-level coursework in one of the following areas: | | 8 |
| Astronomy | | |
| Biology | | |
| Chemistry | | |
| Geological Sciences | | |
| Physics | | |
| Hours chosen from a single sequence below: | | 8 |
| Sequence 1 | | |
| M 408C | Differential and Integral Calculus | |
| M 408D | Sequences, Series, and Multivariable Calculus | |
| Sequence 2 | | |
| M 408N | Differential Calculus for Science | |
| M 408S | Integral Calculus for Science | |
| Sequence 3 | | |
| M 408K | Differential Calculus | |
| M 408L | Integral Calculus | |
| ECO 304K | Introduction to Microeconomics | 3 |
| ECO 304L | Introduction to Macroeconomics | 3 |
| Hours chosen from: | | 3 |
| ACC 310F | Foundations of Accounting | |

| | | |
|---|---|---|
| ACC X11 & ACC X12 | Fundamentals of Financial Accounting and Fundamentals of Managerial Accounting | |
| FIN 357 | Business Finance | 3 |
| C S 303E | Elements of Computers and Programming | 3 |
| Upper-division coursework (excluding Astronomy, Biology, Chemistry, Geological Sciences, Mathematics, and Physics. Philosophy courses in logic, Computer Science courses in discrete mathematics, Engineering, and Actuarial Foundation courses may not be used to fulfill this requirement) | | 6 |
| *Upper-division (one of the courses must be taught in the Inquiry Based Learning format)* | | |
| M 325K | Discrete Mathematics (Mathematics 328K is recommended for students with substantial experience in writing proofs.) | 3 |
| or M 328K | Introduction to Number Theory | |
| M 341 | Linear Algebra and Matrix Theory (Mathematics 340L may be substituted for Mathematics 341 if the course was completed prior to entry into the mathematics entry-level major.) | 3 |
| M 362K | Probability I | 3 |
| M 358K | Applied Statistics | 3 |
| or M 378K | Introduction to Mathematical Statistics | |
| M 329F | Theory of Interest | 3 |
| M 339D | Introduction to Financial Mathematics for Actuaries | 3 |
| M 339J | Probability Models with Actuarial Applications | 3 |
| M 339U | Actuarial Contingent Payments I | 3 |
| M 339G | Predictive Analytics | 3 |
| Hours chosen from: | | 6 |
| M 339V | Actuarial Contingent Payments II | |
| M 349P | Actuarial Statistical Estimates | |
| M 339C | Actuarial Case Studies | |
| M 349R | Applied Regression and Time Series | |
| *Subtotal* | | *70* |
| Free electives: Additional coursework to reach total hours required. | | 15 |
| *Subtotal* | | *15* |
| **General Education** | | |
| Remaining Core Curriculum (42 hours total) | | 35 |
| Foreign Language other than English, Beginning Proficiency | | |
| *Subtotal* | | *35* |
| College Requirements - Natural Sciences | | |
| General University Requirements | | |
| **Total Hours** | | **120** |

## Degree-Bachelor of Science in Mathematics (BSMath)

At least 42 hours must be upper-division. At least 21 upper-division hours must be completed in residence at the University. At least 18 hours in mathematics must be completed in residence at the University.

Students must earn a grade of at least *C-* in each mathematics and science course required, and a grade point average in these courses of at least 2.00. More information about grades and the grade point average is given in the General Information Catalog.

M 408N and M 408S, or M 408K and M 408L, may substitute for M 408C