# Mathematics: Actuarial and Financial Mathematics, BS

## Degree Requirements

Requirements for Students Matriculating in or before Academic Year 2021-2022. Learn more about University Academic Regulation 3.1 (http://catalog.okstate.edu/university-academic-regulations/#matriculation).

Minimum Overall Grade Point Average: **2.50**  
**Total Hours:** 120

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 1113</td>
<td>Composition I</td>
<td>3</td>
</tr>
<tr>
<td>or ENGL 1313</td>
<td>Critical Analysis and Writing I</td>
<td></td>
</tr>
<tr>
<td>ENGL 1213</td>
<td>Composition II</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 1413</td>
<td>Critical Analysis and Writing II</td>
<td></td>
</tr>
<tr>
<td>ENGL 3323</td>
<td>Technical Writing</td>
<td></td>
</tr>
<tr>
<td>HIST 1103</td>
<td>Survey of American History</td>
<td>3</td>
</tr>
<tr>
<td>or HIST 1483</td>
<td>American History to 1865 (H)</td>
<td></td>
</tr>
<tr>
<td>or HIST 1493</td>
<td>American History Since 1865 (DH)</td>
<td></td>
</tr>
<tr>
<td>POLS 1113</td>
<td>American Government</td>
<td>3</td>
</tr>
<tr>
<td>MATH 2144</td>
<td>Calculus I (A)</td>
<td>4</td>
</tr>
<tr>
<td>or CS 1113</td>
<td>Computer Programming (A)</td>
<td>3</td>
</tr>
<tr>
<td>CS 1113</td>
<td>Computer Science I (A)</td>
<td></td>
</tr>
<tr>
<td>Courses designated (H)</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Must include one Laboratory Science (L) course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 1114</td>
<td>College Physics I (LN)</td>
<td>4</td>
</tr>
<tr>
<td>or PHYS 2014</td>
<td>University Physics I (LN)</td>
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</tr>
<tr>
<td>Course designated (N)</td>
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<td>2</td>
</tr>
<tr>
<td>ECON 2103</td>
<td>Introduction to Microeconomics (S)</td>
<td>3</td>
</tr>
<tr>
<td>Additional General Education</td>
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<td></td>
</tr>
<tr>
<td>Courses designated (A), (H), (N), or (S)</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

**Hours Subtotal: 40**

### Diversity (D) & International Dimension (I)

May be completed in any part of the degree plan  
Select at least one Diversity (D) course  
Select at least one International Dimension (I) course

### College/Departmental Requirements

**First Year Seminar**

### Mathematics Core

Minimum GPA 2.50 and minimum grade of "C" or "P" in each course in Major Requirements.

#### Arts & Humanities

- **ECON 4213** Econometric Methods
- **ECON 4223** Business and Economic Forecasting
- **STAT 4043** Applied Regression Analysis

**Total Subtotal: 13**

### Major Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 2144</td>
<td>Calculus I (A)</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 1412</td>
<td>Introductory Engineering Computer Programming</td>
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<tr>
<td>STAT 4091</td>
<td>Sas Programming</td>
<td>3</td>
</tr>
<tr>
<td>STAT 4191</td>
<td>R Programming</td>
<td>3</td>
</tr>
<tr>
<td>STAT 4193</td>
<td>SAS and R Programming</td>
<td>3</td>
</tr>
<tr>
<td>MATH 2233</td>
<td>Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>MATH 3013</td>
<td>Linear Algebra (A)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 3613</td>
<td>Introduction to Abstract Algebra</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 4023</td>
<td>Introduction to Analysis</td>
<td></td>
</tr>
<tr>
<td>MATH 3583</td>
<td>Introduction to Mathematical Modeling</td>
<td>3</td>
</tr>
<tr>
<td>MATH 4453</td>
<td>Mathematical Interest Theory</td>
<td>3</td>
</tr>
<tr>
<td>STAT 4203</td>
<td>Mathematical Statistics I</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 9 hours of the following:

- **MATH 4013** Calculus of Several Variables
- **MATH 4023** Introduction to Analysis
- **MATH 4063** Advanced Linear Algebra
- **MATH 4083** Intermediate Analysis
- **MATH 4143** Advanced Calculus I
- **MATH 4233** Intermediate Differential Equations
- **MATH 4263** Introduction to Partial Differential Equations
- **MATH 4283** Complex Variables
- **MATH 4513** Numerical Analysis
- **MATH 4553** Introduction to Optimization
- **MATH 4663** Combinatorics
- **MATH 4753** Introduction to Cryptography
- **MATH 5473** Financial Calculus
- **STAT 4213** Mathematical Statistics II

Select 3 hours of the following:

- **ECON 4213** Econometric Methods
- **ECON 4223** Business and Economic Forecasting
- **STAT 4043** Applied Regression Analysis

### Natural & Mathematical Sciences

- **MATH 2153** Calculus II (A)  
- **MATH 2163** Calculus III
- **STAT 4013** Statistical Methods I (A)  
 or **STAT 4053** Statistical Methods I for the Social Sciences (A)

### Foreign Language

- **See note 3**

**0-6 hours**

### Upper-Division General Education

Select 6 hours outside major department  
**See note 2.c.**
Other Requirements

- See the College of Arts and Sciences Requirements.
- Minimum grade of "C" or "P" in all MATH courses.
- **Upper-Division Credit**: Total hours must include at least 40 hours in courses numbered 3000 or above.
- **Hours in One Department**: For B.A. and B.S. degrees, no more than 54 hours in one department may be applied to degree requirements.

### College of Arts and Sciences Requirements

1. **General Education Requirements**
   
   No more than two courses (or eight hours) from the major department (http://catalog.okstate.edu/college-arts-sciences-major-departments/) may be used to meet General Education and College and Departmental Requirements. The General Education required English Composition, required U.S. History, required American Government, one required MATH or STAT course, and required foreign language for B.A. degrees do not count against the two-course maximum.

2. **A&S College/Departmental Requirements**
   
   a. Arts and Humanities are defined as any course carrying an (H) designation or courses from AMST, ART, DANC, ENGL (except ENGL 3323 Technical Writing) HIST, MUSI, PHIL (except PHIL 1313 Logic and Critical Thinking (A), PHIL 3003 Symbolic Logic (A) and PHIL 4003 Mathematical Logic and Computability), REL, TH, and foreign languages.
   
   b. Natural and Mathematical Sciences are defined as any course from the following prefixes: ASTR, BIOL, CHEM, CS (except CS 4883 Social Issues in Computing), GEOL, MATH, MICR, PBIO, PHYS, and STAT; or courses from other departments that carry an (A) or (N) general education designation.
   
   c. The required six hours of upper-division General Education may not include courses from the student's major department. This requirement may be satisfied by courses also used to satisfy any part of a student’s degree program (i.e., in General Education, College Departmental Requirements, Major Requirements or Electives).
   
   d. Non-Western Studies Requirement for B.A. and B.F.A.; One 3-hour course in Non-Western Studies (N.W.). This requirement may be satisfied by courses also used to satisfy any part of a student’s degree program (i.e., in General Education, College Departmental Requirements, Major Requirements or Electives).
   
   e. The College of Arts & Sciences requires a minimum 2.0 GPA in all major requirements and a minimum 2.0 GPA in all major-prefix courses applied to the degree.

3. **Foreign Language Proficiency**
   
   a. The foreign language requirement for the B.A. may be satisfied by 9 hours college credit in the same language, which must include 3 hours at the 2000-level, or equivalent proficiency (e.g., passing an advanced standing examination; TOEFL exam; presenting a high school transcript which demonstrates the high school was primarily conducted in a language other than English; etc.). Computer Science courses may not be used to satisfy this requirement. Currently Arabic and Mvskoke are not offered at the 2000-level at OSU.
   
   b. The foreign language requirement for the B.S., B.M. and B.F.A. may be satisfied by presenting a high school transcript which demonstrates two years of study of a single foreign language (passing grades at second-year level of study). It may also be satisfied by 6 hours college credit in the same language, which must include language courses 1713 and 1813, or equivalent proficiency (e.g., passing an advanced standing examination; TOEFL exam; presenting a high school transcript which demonstrates the high school was primarily conducted in a language other than English; etc.). Computer Science courses may not be used to satisfy this requirement.
c. In addition to a. and b., students pursuing teacher certification
must meet novice-high foreign language proficiency by
presenting a high school transcript which demonstrates two
years of study of a single foreign language with no grade below
B. Or, students may complete 3 hours college credit in a single
language with no grade below C (or pass an advanced standing
examination, College Level Examination Program (CLEP) exam,
or Oral Proficiency Interview developed by the American Council
on the Teaching of Foreign Languages, equivalent to 3 hours of
college credit.) Or, students may meet the requirement by transfer
of documentation of meeting the foreign language competency
from one of the teacher education programs in the State of
Oklahoma approved by the Oklahoma State Regents for Higher
Education.

4. Exclusions
   a. Courses used to satisfy the General Education English
      Composition, U.S. History, American Government, and
      Mathematics or Statistics requirements will not count toward the
      54-hour maximum allowed from one department.
   b. Courses with ATHL or LEIS prefixes and leisure activity courses
      may not be used for degree credit.

5. Teacher Certification
   Students can satisfy the requirements for secondary schools
teaching certification while earning a B.A. or B.S. in the College of
Arts & Sciences. Those interested should see their Arts and Sciences
advisor and the OSU Professional Education Unit in room 325 Willard.

Additional State/OSU Requirements
   • At least: 60 hours at a four-year institution; 30 hours completed at
     OSU; 15 of the final 30 or 50% of the upper-division hours in the major
     field completed at OSU.
   • Limit of: one-half of major course requirements as transfer work; one-
     fourth of hours earned by correspondence; 8 transfer correspondence
     hours.
   • Students will be held responsible for degree requirements in effect at
     the time of matriculation and any changes that are made, so long as
     these changes do not result in semester credit hours being added or
do not delay graduation.
   • Degrees that follow this plan must be completed by the end of
     Summer 2027.