Mathematics, BS

Degree Requirements

Requirements for Students Matriculating in or before Academic Year 2020-2021. Learn more about University Academic Regulation 3.1 (http://catalog.okstate.edu/university-academic-regulations/#matriculation).

Minimum Overall Grade Point Average: 2.00
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>Select one of the following:</td>
<td></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>
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</tbody>
</table>

American History & Government

HIST 1103 | Survey of American History | 3 |
| or HIST 1483 | American History to 1865 (H) | |
| or HIST 1493 | American History Since 1865 (DH) | |

Analytical & Quantitative Thought (A)

MATH 2144 | Calculus I (A) | 1 |

or MATH 2153 | Calculus II (A) | 3 |

Select one of the following:

- MATH 3583 | Introduction to Mathematical Modeling | 3 |
- MATH 3933 | Research Methods | |
- MATH 4423 | Geometry and Algorithms in Three-Dimensional Modeling | |

Arts & Humanities

See note 2.a.

Select one track (p. 2) | | 24 |

Hours Subtotal | 13 |

Major Requirements

A minimum grade of “C” or “P” required in each course. Minimum 2.0 GPA in all MATH courses.

Major Foundation

MATH 2163 | Calculus III | 3 |
MATH 2233 | Differential Equations | 3 |
MATH 3013 | Linear Algebra (A) | 3 |
MATH 3613 | Introduction to Abstract Algebra | 3 |

Select one of the following:

- MATH 3583 | Introduction to Mathematical Modeling | 3 |
- MATH 3933 | Research Methods | |
- MATH 4423 | Geometry and Algorithms in Three-Dimensional Modeling | |

Select one of the following:

- STAT 4013 | Statistical Methods I (A) | |
- STAT 4033 | Engineering Statistics | |
- STAT 4053 | Statistical Methods I for the Social Sciences (A) | |

Tracks

Select one track (p. 2) | | 24 |

Hours Subtotal | 42 |

Electives

Select 25 hours | | 25 |

May need to include 6 hours of a foreign language. (see note 3.)

May need to include 6 hours upper-division general education outside major department (see note 2.c.) and 4 additional upper division hours

MATH 1513 and MATH 1813 required for students who do not place directly into MATH 2144.

Hours Subtotal | 25 |

Total Hours | 120 |

1 College and Departmental Requirements that may be used to meet Gen Ed Requirements.

2 With departmental approval, up to 30 hours from an accredited doctoral law or health program may be substituted for these areas.
## Tracks

### General Track

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>MATH 4023</td>
<td>Introduction to Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 12 hours of the following: 12

- MATH 4013  Calculus of Several Variables
- MATH 4063  Advanced Linear Algebra
- MATH 4083  Intermediate Analysis
- MATH 4143  Advanced Calculus I
- MATH 4153  Advanced Calculus II
- MATH 4233  Intermediate Differential Equations
- MATH 4263  Introduction to Partial Differential Equations
- MATH 4283  Complex Variables
- MATH 4343  Introduction to Topology
- MATH 4403  Geometry
- MATH 4423  Geometry and Algorithms in Three-Dimensional Modeling
- MATH 4453  Mathematical Interest Theory
- MATH 4513  Numerical Analysis
- MATH 4553  Introduction to Optimization
- MATH 4603  Intermediate Abstract Algebra
- MATH 4613  Abstract Algebra I
- MATH 4623  Abstract Algebra II
- MATH 4663  Combinatorics
- MATH 4713  Number Theory
- MATH 4753  Introduction to Cryptography
- MATH 4813  Groups and Representations
- MATH 5213  Fourier Analysis and Wavelets

Select 3 hours of 4000-level courses in MATH or STAT or upper-division CS or PHYS: 3

Select 6 hours of upper-division courses in any field: 6

with departmental approval, up to 30 hours from an accredited doctoral law or health program may be substituted for these areas.

### Applications Track

<table>
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<tr>
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<tbody>
<tr>
<td>MATH 4233</td>
<td>Intermediate Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 4263</td>
<td>Introduction to Partial Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>MATH 4513</td>
<td>Numerical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 4553</td>
<td>Introduction to Optimization</td>
<td></td>
</tr>
</tbody>
</table>

Select 9 hours of the following: 9

- 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 4263  Introduction to Partial Differential Equations
- MATH 4283  Complex Variables
- MATH 4343  Introduction to Topology
- MATH 4423  Geometry and Algorithms in Three-Dimensional Modeling
- MATH 4453  Mathematical Interest Theory
- MATH 4663  Combinatorics
- MATH 4713  Number Theory
- MATH 4753  Introduction to Cryptography
- MATH 4813  Groups and Representations
- MATH 5213  Fourier Analysis and Wavelets

Select 3 hours of 4000-level courses in MATH or STAT or upper-division courses in CS, PHYS, or engineering: 3

Select 6 hours of upper-division AGEC, BIOL, CHEM, CS, ECON, FIN, GEOG, GEOL, MICR, PBIO, PHYS, or engineering: 6

### Preparation for Graduate Study Track

<table>
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<tr>
<td>MATH 4023</td>
<td>Introduction to Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MATH 4063</td>
<td>Advanced Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 4283</td>
<td>Complex Variables</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 9 hours of the following, with at least 3 hours from each group: 9

- **Algebra and Discrete Math**
  - MATH 4603  Intermediate Abstract Algebra
  - MATH 4613  Abstract Algebra I
  - MATH 4623  Abstract Algebra II
  - MATH 4663  Combinatorics
  - MATH 4713  Number Theory
  - MATH 4813  Groups and Representations

- **Analysis**
  - MATH 4013  Calculus of Several Variables
  - MATH 4023  Introduction to Analysis
  - MATH 4083  Intermediate Analysis
  - MATH 4143  Advanced Calculus I
  - MATH 4263  Introduction to Partial Differential Equations

Select one of the following: 3

- **Geometry or Topology**
  - MATH 4343  Introduction to Topology
  - MATH 4403  Geometry
  - MATH 5413  Differential Geometry

- **Applied Math**
  - MATH 4233  Intermediate Differential Equations
  - MATH 4263  Introduction to Partial Differential Equations
  - MATH 4513  Numerical Analysis
  - MATH 4553  Introduction to Optimization

Select 3 hours of 4000-level courses in MATH or STAT: 3

Recommended as preparation for doctoral study.

### Other Requirements

- See the College of Arts and Sciences Requirements.
- **Upper-Division Credit**: Total hours must include at least 40 hours in courses numbered 3000 or above.
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.

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 2026.