MATHEMATICS, BA

Degree Requirements

Requirements for Students Matriculating in or before Academic Year 2022-2023. 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></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

General Education Requirements

English Composition

See Academic Regulation 3.5 (http://catalog.okstate.edu/university-academic-regulations/#english-composition)

ENGL 1113 Composition I 3
or ENGL 1313 Critical Analysis and Writing I

Select one of the following: 3

- ENGL 1213 Composition II
- ENGL 1413 Critical Analysis and Writing II
- ENGL 3323 Technical Writing

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)
POLS 1113 American Government 3

Analytical & Quantitative Thought (A)

MATH 2144 Calculus I (A) 1 4

CS 1103 Computer Programming (A) 1 3
or CS 1113 Computer Science I (A)

Humanities (H)

Courses designated (H) 6

Natural Sciences (N)

Must include one Laboratory Science (L) course

PHYS 1114 College Physics I (LN) 1 4
or PHYS 2014 University Physics I (LN)

Course designated (N) 2

Social & Behavioral Sciences (S)

Course designated (S) 3

Additional General Education

Courses designated (A), (H), (N), or (S) 6

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

(Transfer students with 15 hours exempt) 1

Arts & Humanities

See note 2.a. 9

Natural & Mathematical Sciences

MATH 2153 Calculus II (A) 3

Foreign Language

See note 3 9

Non-Western Studies

At least one course

See note 2.d.

Upper-Division General Education

Select 6 hours outside major department

See note 2.c.

Hours Subtotal 22

Major Requirements

Minimum grade of "C" or "P" required in each course

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 3 hours of the following: 3

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

Select 3 hours of the following: 3

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

Tracks

Select one track (p. 1) 24

Hours Subtotal 42

Electives

Select 16 hours 16

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 16

Total Hours 120

1

College and Departmental requirements that may be used to meet General Education requirements.

Tracks

General Track

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Select 6 hours of the following: 6

- MATH 4023 Introduction to Analysis
- MATH 4063 Advanced Linear Algebra
- MATH 4083 Intermediate Analysis
- MATH 4143 Advanced Calculus I
- MATH 4153 Advanced Calculus II
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.

### Preparation for Graduate Study Track

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<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>
<tr>
<td></td>
<td><strong>Select 9 hours of the following, with at least 3 hours from each group:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Algebra and Discrete Math</strong></td>
<td></td>
</tr>
<tr>
<td>MATH 4603</td>
<td>Intermediate Abstract Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 4613</td>
<td>Abstract Algebra I</td>
<td>2</td>
</tr>
<tr>
<td>MATH 4623</td>
<td>Abstract Algebra II</td>
<td></td>
</tr>
<tr>
<td>MATH 4663</td>
<td>Combinatorics</td>
<td></td>
</tr>
<tr>
<td>MATH 4713</td>
<td>Number Theory</td>
<td></td>
</tr>
<tr>
<td>MATH 4753</td>
<td>Introduction to Cryptography</td>
<td></td>
</tr>
<tr>
<td>MATH 4813</td>
<td>Groups and Representations</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Analysis</strong></td>
<td></td>
</tr>
<tr>
<td>MATH 4013</td>
<td>Calculus of Several Variables</td>
<td></td>
</tr>
<tr>
<td>MATH 4033</td>
<td>Intermediate Analysis</td>
<td></td>
</tr>
<tr>
<td>MATH 4143</td>
<td>Advanced Calculus I</td>
<td>2</td>
</tr>
<tr>
<td>MATH 4153</td>
<td>Advanced Calculus II</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Select 3 hours from one of the following groups:</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Geometry or Topology</strong></td>
<td></td>
</tr>
<tr>
<td>MATH 4343</td>
<td>Introduction to Topology</td>
<td></td>
</tr>
<tr>
<td>MATH 4403</td>
<td>Geometry</td>
<td></td>
</tr>
<tr>
<td>MATH 5413</td>
<td>Differential Geometry</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Applied Math</strong></td>
<td></td>
</tr>
<tr>
<td>MATH 4233</td>
<td>Intermediate Differential Equations</td>
<td></td>
</tr>
<tr>
<td>MATH 4263</td>
<td>Introduction to Partial Differential Equations</td>
<td></td>
</tr>
<tr>
<td>MATH 4513</td>
<td>Introduction to Numerical Analysis</td>
<td></td>
</tr>
<tr>
<td>MATH 4553</td>
<td>Introduction to Optimization</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Select 3 hours of 4000-level courses in MATH or STAT</strong></td>
<td>3</td>
</tr>
</tbody>
</table>

**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 may be used to meet General Education and College Departmental Requirements. The General Education required courses also satisfy a student's major department. (A) or (N) general education designation.

   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, BIOC, BIOL, CHEM, CS (except CS 4883 Social Issues in Computing), GEOL, MATH, MICR, PBIOL, 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.

2. **A&S College/Departmental Requirements**
   a. The foreign language requirement for the B.A. may be satisfied by 6 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.).

   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...
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.

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 2028.