MATHEMATICS: APPLIED MATHEMATICS, BS

Degree Requirements

Requirements for Students Matriculating in or before Academic Year 2025-2026. 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

Code	Title	Hours
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
Quantitative Thought & Logical Reasoning (Q)		
MATH 2144	Calculus I (Q) [1]	4
Understanding Humanities-Human Heritage & Cultures (H)		
Courses designated (H)		6
Reasoning in the Natural Sciences (N)		
Must include one Laboratory-Based Inquiry (L) course		
PHYS 1114	College Physics I (LN) [1]	4
or PHYS 2014	University Physics I (LN)	
PHYS 1214	College Physics II (LN) [1]	4
or PHYS 2114	University Physics II (LN)	
Exploring Society & Human Behavior (S)		
Courses designated (S)		3
Diversity (D)		
Courses designated (D)		3
Global Cultural Competency (G)		
Courses designated (G)		3
Additional General Education		
Additional general education credit hours (at least 1 hour) are required to meet the total 40-hour minimum. If courses carry more than one general education designation and can be used to meet multiple minimum general education designation hours above, more than 1 hour of additional general education will be required here to meet the 40-hour minimum.		
Courses designated (Q), (H), (N), (S), (D), (G), or (F).		1
Hours Subtotal		**40**
College/Departmental Requirements		
UNIV 1111	First Year Seminar (or other approved first-year seminar course)	1
Arts & Humanities		
See note 2.a.		3
Natural & Mathematical Sciences		
CS 1113	Computer Science I (Q)	3
MATH 2153	Calculus II (Q)	3
MATH 2163	Calculus III	3
Foreign Language		
See note 3		
0-6 hours		
Upper-Division General Education		
Select 6 hours outside major department		
See note 2.c.		
Hours Subtotal		**13**
Major Requirements		
Minimum GPA 2.50 with a minimum grade of "C" or "P" in each course in Major Requirements.		
Mathematics Core (33 hours)		
MATH 2233	Differential Equations	3
MATH 3013	Linear Algebra (Q)	3
MATH 3613	Introduction to Abstract Algebra	3
Select 3 hours from the following:		3
STAT 4013	Statistical Methods I (Q)	
STAT 4033	Engineering Statistics	
STAT 4053	Statistical Methods I for the Social Sciences (Q)	
MATH 3583	Introduction to Mathematical Modeling	3
MATH 4513	Introduction to Numerical Analysis	3
or MATH 4553	Introduction to Optimization	
MATH 4233	Intermediate Differential Equations	3
or MATH 4263	Introduction to Partial Differential Equations	
Select 9 hours from 4000-level MATH or STAT 4203 or CS 3653, excluding 0-ending or Thesis courses. At most 3 hours may be outside MATH.		9
Select 3 hours from 4000-level MATH or STAT or upper-division CS or PHYS or CHEM 3433 or ENSC 3233		3
Applications of Mathematics (18 hours)		
ECON 2103	Introduction to Microeconomics (S)	3
or ECON 2003	Microeconomic Principles for Business	
Select 3 hours from the following:		3
CS 1103	Computer Programming (Q)	
CS 2133	Computer Science II	
CS 2433	C/C++ Programming	
ENGR 1412	Introductory Engineering Computer Programming	
STAT 4091	Sas Programming	
STAT 4191	R Programming	
STAT 4193	SAS and R Programming	
Select 9 hours from one Area of Application (p. 2) [2]		9
Select 3 hours from the following:		3
4000-level MATH or STAT		

Upper-division CS or PHYS	
Upper-division course from the Area of Application	
Hours Subtotal	**51**
Electives	
Select 16 hours	16
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 1 additional upper-division hour	
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.

2

An alternative 9-hour plan with at least 6 upper-division hours may be used with Departmental approval.

3

If Bioinformatics is selected, additional required courses BIOL 1114, CHEM 1314, and MICR 2132 may be used to meet Additional General Education, Natural and Mathematical Sciences, or Elective requirements.

Area of Application

Agricultural Economics

Code	Title	Hours
AGEC 3213	Quantitative Methods in Agricultural Economics	3
AGEC 3333	Agricultural Marketing and Price Analysis	3
AGEC 4213	Advanced Quantitative Methods in Agricultural Economics	3
or AGEC 4333	Commodity Futures Markets	

Bioinformatics

Code	Title	Hours
MICR 2123	Introduction to Microbiology [3]	3
MICR 3033	Cell and Molecular Biology	3
MICR 4203	Bioinformatics	3

Cognitive Sciences

Code	Title	Hours
CS 4793	Artificial Intelligence I	3
Select one of the following:		3
PHIL 4003	Mathematical Logic and Computability	
PHIL 4313	Philosophy of Mind (H)	
PHIL 4543	Philosophy of Language	
PSYC 3173	Introduction to Cognitive Science (N)	3

Economics

Code	Title	Hours
ECON 2203	Introduction to Macroeconomics	3
ECON 3113	Intermediate Microeconomics	3
or ECON 3123	Intermediate Macroeconomics	
Select 3 hours of upper division ECON		3

Energy Finance

Code	Title	Hours
ACCT 2003	Survey of Accounting	3
FIN 3113	Principles of Finance	3
Select 3 hours from the following:		3
ECON 4113	Energy Economics: Traditional and Renewable Energy Markets	
FIN 4003	Introduction to Energy Business	
FIN 4363	Energy Finance	

Finance

Code	Title	Hours
ACCT 2003	Survey of Accounting	3
FIN 3113	Principles of Finance	3
Select 3 hours of the following:		3
FIN 4223	Investments	
FIN 4333	Financial Modeling	
FIN 4763	Financial Futures and Options Markets	
FIN 4843	Risk Management	

Geographic Information Science

Code	Title	Hours
GEOG 4203	Fundamentals of Geographic Information Systems	3
GEOG 4343	Geographic Information Systems: Resource Management Applications	3
or GEOG 4353	Geographic Information Systems: Socioeconomic Applications	
Select 3 hours of the following:		3
GEOG 3333	Spatial Analysis (Q)	
GEOG 4333	Remote Sensing	
GEOG 4383	Geospatial Programming with Python and AI Tools	

Geophysical Analysis

Code	Title	Hours
ENSC 2113	Statics	3
ENSC 3233	Fluid Mechanics	3
GEOL 4103	Introduction to Geophysical Exploration	3

Operations Research

Code	Title	Hours
IEM 3103	Probability and Statistics for Engineers I	3
IEM 3703	Probability and Statistics for Engineers II	3
IEM 4013	Operations Research	3

Physics

Code	Title	Hours
PHYS 2203	University Physics III	3
Select 6 hours of upper-division PHYS		6

Other Requirements

- See the College of Arts and Sciences Requirements.
- Minimum grade of "C" or "P" in all required MATH courses.
- **Upper-Division Credit:** Total hours must include at least 40 hours in courses numbered 3000 or above.

College of Arts and Sciences Requirements

1. **Hours in One Department:** For B.A. and B.S. degrees, no more than 54 hours in one department may be required to meet degree requirements. 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 required from one department.
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 (Q), PHIL 3003 Symbolic Logic (Q) 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, PBIO, PHYS, and STAT; or courses from other departments that carry an (A) or (N) general education designation.
   c. Six upper-division hours are required from General Education or any CAS courses outside the student's major department (http://catalog.okstate.edu/college-arts-sciences-major-departments/). 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 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**. 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 and 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 2031.