

SECONDARY EDUCATION: SCIENCE, BS

Degree Requirements

Requirements for Students Matriculating in or before Academic Year 2026-2027. Learn more about University Academic Regulation 3.1 (<https://catalog.okstate.edu/university-academic-regulations/#matriculation>).

Minimum Overall Grade Point Average: 2.50

Total Hours: 120

Code	Title	Hours
General Education Requirements		
<i>English Composition</i>		
See Academic Regulation 3.5 (https://catalog.okstate.edu/university-academic-regulations/#english-composition)		
ENGL 1113 or ENGL 1313	Composition I ¹ Critical Analysis and Writing I	3
Select one of the following:		3
ENGL 1213	Composition II ¹	
ENGL 1413	Critical Analysis and Writing II ¹	
ENGL 3323	Technical Writing (Recommended for Biochemistry option) ¹	
<i>American History & Government</i>		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
<i>Quantitative Thought & Logical Reasoning (Q)</i>		
Select one course from the following:		3
STAT 2013	Elementary Statistics (Q) ^{1,2}	
STAT 4013	Statistical Methods I (Q) (Required for Physics Emphasis) ^{1,2}	
Select one course from the following:		3
MATH 1813	Preparation for Calculus (Q) (Required for Biology & Biochemistry emphasis) ^{1,2}	
MATH 2144	Calculus I (Q) (Required for Chemistry, Physics and Earth Science Emphasis) ^{1,2}	
<i>Understanding Humanities-Human Heritage & Cultures (H)</i>		
Course designated (H)		3
Course designated (DH)		3
<i>Reasoning in the Natural Sciences (N)</i>		
Must include one Laboratory-Based Inquiry (L) course		
CHEM 1314	Chemistry I (LN) ^{1,2}	4
Select one of the following options:		4
BIOL 1113 & BIOL 1111	Introductory Biology (N) and Introductory Biology Laboratory (LN) ^{1,2}	
BIOL 1114	Introductory Biology (LN) ^{1,2}	
<i>Exploring Society & Human Behavior (S)</i>		

Courses designated (S) (AGEC 1113 recommended for Biochemistry option)		3
<i>Diversity (D)</i>		
Courses designated (D)		
May be paired with another designated course		
<i>Global Cultural Competency (G)</i>		
Courses designated (G)		3
<i>Additional General Education</i>		
Additional general education credit hours (at least 2 hours) 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 2 hours of additional general education will be required here to meet the 40-hour minimum.		
Courses designated (Q), (H), (N), (S), (D), (G), or (F).		2
Hours Subtotal		40
College/Departmental Requirements		
Minimum grade of "C" or "P" in each course		
UNIV 1111	First Year Seminar (or other approved first year seminar course)	1
EDHS 3111	Preparing for Your Future Career	1
CHEM 1515	Chemistry II (LN)	5
Select 4-12 hours of electives to total 120 credit hours for degree		4-12
3 hours may need to be foreign language		
Hours Subtotal		11-19
Electives per Area of Emphasis: Biology- 4; Biochemistry- 7; Chemistry- 12; Earth Science- 5; and, Physics- 9		
Major Requirements		
Minimum GPA 2.50 with a minimum grade of “C” or “P” in each course in the emphasis area and those with a footnote of 1, 2.		
Select one area of emphasis: (https://catalog.okstate.edu/education-human-sciences/teaching-learning-educational-sciences/secondary-education-science-bs/#areas)		32-40
Hours Subtotal		32-40
Professional Core Requirements		
Minimum GPA 2.50 with a minimum grade of “C” or “P” in each course		
SMED 1012	Inquiry Approaches to Teaching	2
SMED 3013	Knowing and Learning in K-12 Education	3
SMED 4611	Authentic Research in the Science Classroom ³	1
SMED 4613	Teaching the Nature of Science Through an Inquiry Approach ³	3
SMED 4713	Teaching and Learning Science in the Secondary School ³	3
CIED 3313	Field Experience in the Secondary Schools	3
CIED 4720	Internship in the Secondary Classroom ³	8
CIED 4724	Classroom Management in the Multicultural PK-12/ Secondary School	4
SPED 3202	Educating Exceptional Learners	2
Hours Subtotal		29
Total Hours		120

¹ Minimum grade of "C"

² Included in the Major Requirements when calculating Major GPA

³ Full admission to Professional Education required

Areas of Emphasis Biology (40 Hours)

Code	Title	Hours
Biology Emphasis Requirements		
BIOL 1604	Animal Biology	4
BIOL 3023	General Genetics	3
BIOL 3034	General Ecology	4
BIOL 3203 & BIOL 3201 or BIOL 3204	Physiology and Physiology Lab Physiology	4
BIOL 4133	Evolution	3
CHEM 3013	Survey of Organic Chemistry	3
MICR 2123	Introduction to Microbiology	3
MICR 2132	Introduction to Microbiology Laboratory	2
MICR 3033	Cell and Molecular Biology	3
PHYS 1114 or PHYS 2014	College Physics I (LN) University Physics I (LN)	4
PBIO 1404	Plant Biology (LN)	4
Select 3 hours of upper-division PBIO coursework		3

Biochemistry (37 Hours)

Code	Title	Hours
Biochemistry Emphasis Requirements		
BIOC 1990	Freshman Research in Biochemistry and Molecular Biology	1
BIOC 3713	Biochemistry I	3
BIOC 3723	Biochemistry and Molecular Biology Laboratory	3
BIOC 3813	Biochemistry II	3
CHEM 3053	Organic Chemistry I	3
CHEM 3112	Organic Chemistry Laboratory	2
CHEM 3153	Organic Chemistry II	3
BIOL 1604 or PBIO 1404	Animal Biology Plant Biology (LN)	4
MICR 2123	Introduction to Microbiology	3
MICR 2132	Introduction to Microbiology Laboratory	2
PHYS 1114 or PHYS 2014	College Physics I (LN) University Physics I (LN)	4
Select one of the following:		3
AGCM 3203	Oral Communications in Agricultural Sciences & Natural Resources (S)	
SPCH 2713	Introduction to Speech Communication (S)	
SPCH 3733	Elements of Persuasion (S)	
Select one of the following:		3
PLNT 1213	Introduction to Plant and Soil Systems (N)	
HORT 1013	Principles of Horticultural Science (LN)	
NREM 1113	Elements of Forestry	
SOIL 1113	Land, Life and the Environment (N)	
SOIL 2124	Fundamentals of Soil Science (N)	

ANSI 1023 & ANSI 1021	Introduction to the Animal Sciences for NON-MAJORS and Introduction to the Animal Sciences Lab
or ANSI 1124	Introduction to the Animal Sciences
FDSC 1133	Fundamentals of Food Science
ENTO 2993	Introduction to Entomology (LN)
ENTO 3003	Livestock Entomology
NREM 1014	Introduction to Natural History (LN)
NREM 3013	Applied Ecology and Conservation
ENVR 1113	Elements of Environmental Science (N)
BIOC 2344	Chemistry and Applications of Biomolecules
LA 1013	Introduction to Landscape Architecture

Chemistry (32 Hours)

Code	Title	Hours
Chemistry Emphasis Requirements		
CHEM 2113	Principles of Analytical Chemistry	3
CHEM 2122	Quantitative Analysis Laboratory	2
CHEM 3053	Organic Chemistry I	3
CHEM 3112	Organic Chemistry Laboratory	2
CHEM 3153	Organic Chemistry II	3
CHEM 3353 or CHEM 3363	Descriptive Inorganic Chemistry Bioinorganic Chemistry	3
CHEM 3413	Physical Chemistry Applications	3
CHEM 4990 or CHEM 4482	Undergraduate Research in Chemistry Chemical Research & Literature Review	2
PHYS 1114 or PHYS 2014	College Physics I (LN) University Physics I (LN)	4
PHYS 1214 or PHYS 2114	College Physics II (LN) University Physics II (LN)	4
BIOC 3653	Survey of Biochemistry	3

Earth Science (39 Hours)

Code	Title	Hours
Earth Science Emphasis Requirements		
GEOL 1214 or GEOL 1114	Introductory Geological Processes (LN) Physical Geology (LN)	4
GEOL 1224	Evolution of the Earth (LN)	4
GEOL 2773	Introduction to Planetary Geology (N)	3
GEOL 3014	Structural Geology	4
GEOL 3034	Principles of Stratigraphy and Sedimentology	4
GEOL 3044	Rocks and Minerals	4
GEOL 3503	Environmental Geology (N)	3
GEOL 4503	Introduction to Oceanography (N)	3
GEOG 3023 or GEOG 3033	Climatology (N) Meteorology (N)	3
ASTR 1023	Stars, Galaxies, Universe (N)	3
PHYS 1114 or PHYS 2014	College Physics I (LN) University Physics I (LN)	4

Physics (35 Hours)

Code	Title	Hours
Physics Emphasis Requirements		
PHYS 2014	University Physics I (LN)	4
PHYS 2114	University Physics II (LN)	4
PHYS 2203	University Physics III	3
PHYS 3013	Mechanics I	3
PHYS 3323	Modern Laboratory Methods I	3
PHYS 3513	Mathematical Physics	3
PHYS 3623	Modern Laboratory Methods II	3
PHYS 3713	Fundamentals of Modern Physics	3
MATH 2153	Calculus II (Q)	3
MATH 2163	Calculus III	3
MATH 2233	Differential Equations	3

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

- 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 2032.

Other Requirements

- 40 hours of upper-division coursework.
- Required for graduation and recommendation for Standard Certification:
 - a. 2.50 Overall GPA;
 - b. 2.50 GPA in Major Requirements and specified general education courses; and
 - c. 2.50 GPA in Professional Core Requirements.
- The student must earn minimum grades of “C” or “P” in each course in the Major Requirements and Professional Core Requirements and must earn grades of “P” in all sections of observation courses and student teaching for recommendation for Certification.
- Students must demonstrate proficiency in a foreign language at the novice high level from among those languages identified by the Office of Educational Quality and Accountability. For clarification see OSU academic advisor. This proficiency can be demonstrated by presenting a high school transcript which demonstrates two years of study of a single foreign language with grades of “B” or better. 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.) Students whose primary language is other than English may document proficiency in English as their second language with a score of 550 or more on the Test of English as a Foreign Language. 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.

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.