

B.S. in Applied Biology

The Applied Biology program is flexible, offering 20 hours of open electives that allow students to tailor upper-division coursework to their academic interests and career goals.

All students complete a capstone project, internship, or research experience in biology or chemistry tailored to their individual interests. Projects may include biomedical or microbiological laboratory research, environmental monitoring and GIS-based analysis, or aviation sustainability. Internship and experiential learning opportunities are available with partners such as KP Aviation, The Boeing Company, the Northern Arizona VA Health Care System, and Yavapai Regional Medical Center, as well as with state and regional agencies.

Tracks

Students may pursue focused study through either the Health Sciences track or the Environmental Sciences track.

The Health Sciences track supports pathways into medical school, physician assistant programs, and graduate study through advanced laboratory coursework and applied biomedical experience. The Environmental Sciences track emphasizes applied environmental analysis, GIS and remote sensing, and aviation sustainability, equipping students to address biological challenges related to infrastructure, regulatory systems, and environmental monitoring.

Program-Level Student Learning Outcomes

Students will:

- Explain core concepts in biological sciences.
- Apply mathematics, physics, chemistry, and basic biological sciences including genetics, microbiology, anatomy, physiology, and ecology at a foundational level.
- Assess the historical context of biological discoveries and biology's role in modern society.
- Explain the major tenets in a specific area of expertise.
- Refine career-related or post-graduate goals through internships or capstone experiences.
- Apply modern biological techniques to critically evaluate and synthesize information in biological sciences.

Prescott Program Requirements

General Education Requirements	39
Core Requirements	45
Track	27
Open Electives	9
Total Credits	120

Program Details

The Bachelor of Science in Applied Biology program requires successful completion of a minimum of 120 credit hours. The program may be completed in eight semesters, or four years, assuming appropriate background and full-time enrollment. Students pursuing this undergraduate degree must earn a minimum cumulative grade point average (CGPA) of 2.00 for all work completed at the University. The program includes two tracks, Health Sciences and Environmental Sciences, allowing students to pursue specialized coursework aligned with their academic and career interests. Students are also required to complete a capstone, internship, or research experience as part of the degree requirements. The courses necessary to earn this degree are listed below.

Students should be aware that many courses have prerequisites and/or corequisites. Students must earn a grade of C or better in core biology and chemistry courses to progress through the program.

General Education Requirements

Communication	9
COMM 122	English Composition
Humanities - Lower Level	3
Social Sciences - Lower Level	3
Humanities/Social Sciences - Lower or Upper Level	3
Humanities/Social Sciences - Upper Level	3
HUMN 330	Values and Ethics
Computer Science/Information Technology	3
Mathematics	7
MATH 241	Calculus and Analytical Geometry I
STAT 222	Business Statistics
Physical/Life Sciences	8
PHYS 113	Introductory Physics I
PHYS 113L	Introductory Physics I Laboratory
PHYS 117	Introductory Physics II
PHYS 117L	Introductory Physics II Laboratory
Total Credits	39

Core Requirements

BIOL 120	Foundations of Biology I	3
BIOL 120L	Foundations of Biology I Laboratory	1
BIOL 121	Foundations of Biology II	3
BIOL 121L	Foundations of Biology II Laboratory	1
BIOL 215	Genetics	3
BIOL 215L	Genetics Laboratory	1
BIOL 216	Microbiology	3
BIOL 216L	Microbiology Laboratory	1
CHEM 110	General Chemistry I	3
CHEM 110L	General Chemistry I Laboratory	1
CHEM 111	General Chemistry II	3
CHEM 111L	General Chemistry II Laboratory	1
CHEM 210	Organic Chemistry I	3
CHEM 210L	Organic Chemistry I Laboratory	1
BIOL 304	Critical Reading and Scientific Communication	1
or CHEM 304	Critical Reading and Scientific Communication	
BIOL 304	Critical Reading and Scientific Communication	1
or CHEM 304	Critical Reading and Scientific Communication	
BIOL 304	Critical Reading and Scientific Communication	1
or CHEM 304	Critical Reading and Scientific Communication	
BIOL 308	Principles of Ecology	3
BIOL 308L	Principles of Ecology Laboratory	1
BIOL 310	Research	3
or BIOL 490	Senior Seminar	
or COIN 396	Co-Operative Education	
EVSC 142	Introduction to Environmental Science	3
PSYC 101	Introduction to Psychology	3
or SOSC 210	Introduction to Sociology	
UNIV 101	College Success	1
Total Credits		45

Tracks

Health Sciences Track

Choose from the Following:	27
BIOL 302	Instrumental Analysis and Trace Evidence
& 302L	and Instrumental Analysis and Trace Evidence Laboratory

BIOL 305 & 305L	Human Anatomy and Physiology I and Human Anatomy and Physiology Laboratory
BIOL 306 & 306L	Human Anatomy and Physiology II and Human Anatomy and Physiology II Laboratory
BIOL 405 & 405L	Molecular and Cell Biology and Molecular and Cell Biology Laboratory
BIOL 444	Immunology
BIOL 445	Principles of Human Pathophysiology
BIOL 450	Exercise Physiology and Human Performance
CHEM 211 & 211L	Organic Chemistry II and Organic Chemistry II Laboratory
CHEM 310 & 310L	Biochemistry and Biochemistry Laboratory
CHEM 320 & 320L	Quantitative Analytical Chemistry and Quantitative Analytical Chemistry Laboratory
CHEM 340 & 340L	Toxicology and Toxicology Laboratory
PSYC 310	Sensation and Perception
PSYC 315	Cognitive Psychology
PSYC 335	Physiological Psychology
PSYC 365	Abnormal Psychology
Total Credits	27

Environmental Sciences Track

Choose from the Following:	27
CHEM 320 & 320L	Quantitative Analytical Chemistry and Quantitative Analytical Chemistry Laboratory
BIOL 245 & 245L	Natural History of the Region and Natural Hist of the Region Laboratory
BIOL 302 & 302L	Instrumental Analysis and Trace Evidence and Instrumental Analysis and Trace Evidence Laboratory
BIOL 330	Environmental Consulting
BIOL 403	Wildlife and Airports
CHEM 211 & 211L	Organic Chemistry II and Organic Chemistry II Laboratory
CHEM 310 & 310L	Biochemistry and Biochemistry Laboratory
CHEM 320 & 320L	Quantitative Analytical Chemistry and Quantitative Analytical Chemistry Laboratory
CHEM 340 & 340L	Toxicology and Toxicology Laboratory
GEOS 210	Introduction to Geographic Information Systems
GEOS 310	Advanced Geographic Information Systems
GEOS 350	Introduction to Remote Sensing with GIS
GEOS 450	Lidar Processing with GIS
UNSY 220	Uncrewed Aircraft Systems
UNSY 235	sUAS Flight and Mission Planning
UNSY 324	Global Uncrewed Aircraft Systems (UAS) Regulations
UNSY 403	Uncrewed Sensing Systems
DSCI 150	Data Science I: Introduction
DSCI 151	Data Science II: Foundations
DSCI 244	Data Acquisition and Manipulation
DSCI 312	Machine Learning
DSCI 317	Statistical Software

WEAX 201	Introduction to Meteorology
WEAX 203L	Survey of Meteorology Laboratory
WEAX 261	Applied Climatology
WEAX 270	Weather Information Systems
WEAX 353	Thermodynamics of the Atmosphere
WEAX 354	Dynamics of the Atmosphere
WEAX 458	All Hazards Support, Modeling and Mapping
CPSC 118	Fundamentals of Computer Programming
CPSC 125	Computer Science I
CPSC 304	Introduction to Computer Forensics
CPSC 305	Database Systems and Data Mining
Total Credits	27

Open Electives

Open Electives	9
Total Credits	9

Suggested Plan of Study

Year One

Requirements	Credits
BIOL 120 - Foundations of Biology I	3
BIOL 120L - Foundations of Biology I Laboratory	1
CHEM 110 - General Chemistry I	3
CHEM 110L - General Chemistry I Laboratory	1
COMM 122 - English Composition	3
MATH 241 - Calculus and Analytical Geometry I	4
UNIV 101 - College Success	1
Semester Hours	16

Requirements	Credits
BIOL 121 - Foundations of Biology II	3
BIOL 121L - Foundations of Biology II Laboratory	1
EVSC 142 - Introduction to Environmental Science	3
CHEM 111 - General Chemistry II	3
CHEM 111L - General Chemistry II Laboratory	1
Humanities - Lower Level	3
Semester Hours	14

Total Credits

Total Hours for All Requirements: 30

Year Two

Requirements	Credits
BIOL 215 - Genetics	3
BIOL 215L - Genetics Laboratory	1
CHEM 210 - Organic Chemistry I	3
CHEM 210L - Organic Chemistry I Laboratory	1
Communication	3
Social Sciences - Lower Level	3
Semester Hours	14

Requirements	Credits
BIOL 216 - Microbiology	3
BIOL 216L - Microbiology Laboratory	1
BIOL 304 - Critical Reading and Scientific Communication or CHEM 304 - Critical Reading and Scientific Communication	1
STAT 222 - Business Statistics	3
PSYC 101 - Introduction to Psychology or SOSC 210 - Introduction to Sociology Communication	3
Semester Hours	14

Total Credits

Total Hours for All Requirements: 28

Year Three

Requirements	Credits
BIOL 308 - Principles of Ecology and BIOL 308L - Principles of Ecology Laboratory	4
PHYS 113 - Introductory Physics I	3
PHYS 113L - Introductory Physics I Laboratory	1
Computer Science/Information Technology	3
Open Elective	3
Semester Hours	14

Requirements	Credits
PHYS 117 - Introductory Physics II	3
PHYS 117L - Introductory Physics II Laboratory	1
BIOL 304 - Critical Reading and Scientific Communication or CHEM 304 - Critical Reading and Scientific Communication	1
Humanities/Social Sciences - Lower or Upper Level	3
Specified Elective	4
Specified Elective	4
Semester Hours	16

Requirements	Credits
BIOL 490 - Senior Seminar, COIN 396 - Co-Operative Education, or BIOL 310 - Research	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 33

Year Four

Requirements	Credits
BIOL 304 - Critical Reading and Scientific Communication or CHEM 304 - Critical Reading and Scientific Communication	1
HUMN 330 - Values and Ethics	3
Specified Elective	4
Specified Elective	3

Specified Elective	3
Specified Elective	3
Semester Hours	17

Requirements	Credits
Open Elective	3
Open Elective	3
Specified Elective	3
Specified Elective	3
Semester Hours	12

Total Credits

Total Hours for All Requirements: 29