Bachelor of Science in Natural Sciences

The Bachelor of Science (BS) in Natural Sciences provides a broad, customizable program of studies in the sciences, with coursework across multiple disciplines. It prepares students for advanced study or careers in the environmental sciences and the health professions. Graduates of the program have gone on to further study and jobs in a diversity of fields, such as veterinary, medical, and dental schools, and environmental consulting.

Admission Requirements

- Complete the Admission Requirements for Baccalaureate Programs (http://catalog.uaa.alaska.edu/academicpoliciesprocesses/admissions/undergraduate/).
- Declare the major (see major requirements) and select one of two options: Pre-health Professions or Environmental Sciences. To declare the BS in Natural Sciences as their major, students must meet with an advisor to be accepted into the major. To schedule an advising session, contact the Department of Biological Sciences. At the advising session students are required to choose one of the two options.

Graduation Requirements

- Complete the General University Requirements for Baccalaureate Degrees (http://catalog.uaa.alaska.edu/undergraduateprograms/baccalaureaterequirements/).
- Complete the General Education Requirements for Baccalaureate Degrees (http://catalog.uaa.alaska.edu/undergraduateprograms/baccalaureaterequirements/gers/).
- It is recommended that mathematical and statistical requirements be completed in the first two years of study.
- No more than 6 credits may come from courses designated as A495, A498 and A499 combined, with no more than 2 credits from A495.
- No more than 2 credits may be A492.
- Courses not listed as approved for the BS in Natural Sciences may be considered by petition, which should be signed by an advisor.
- All prerequisites for courses used to meet the natural sciences degree requirements must be completed with a minimum grade of C. Students who audit a course intended to meet the natural sciences degree requirements or who are unable to earn a minimum grade of C in the course may repeat the course. Students who audit or are unable to earn a minimum grade of C in a lower-division (100- or 200-level) Biology (BIOL) course may repeat the course two additional times on a space-available basis. Students who audit or are unable to earn a minimum grade of C in an upper-division (300- or 400-level) BIOL course may repeat the course one additional time on a space-available basis. Students repeating a BIOL course are required to complete all components of that course during the semester in which the course is retaken. When repeating a course with a lecture and laboratory component, both components must be repeated. Students enrolled in a BIOL laboratory must attend lab the first week of class or they may be administratively dropped.
- All natural sciences majors are required to take an exit examination, a standardized test of knowledge. There is no minimum score required for graduation. The exam may be completed at the UAA Testing Center and a fee will be charged to students, or as part of BIOL A492.
- Complete the following major requirements with a minimum grade of C:

Environmental Sciences Option

Code	Title	Credits
BIOL A108	Principles and Methods in Biology	6
BIOL A271	Principles of Ecology	3
BIOL A273	Experiential Learning: Ecology and Evolution	4
BIOL A288	Principles of Evolution	3
BIOL A492	Undergraduate Seminar	1
CHEM A105 & A105L	General Chemistry I and General Chemistry I Laboratory	4
CHEM A106 & A106L	General Chemistry II and General Chemistry II Laboratory	4
ECON A210	Environmental Economics and Policy	3
GEOL A115 & A115L	Dangerous Earth and Dangerous Earth Laboratory	4
GEOG A470	Environmental Policy and Regulation in Alaska	3
PHIL A303	Environmental Ethics	3
STAT A253 or STAT A307	Applied Statistics for the Sciences Probability and Statistics	4
Select 48 credits of degree electives, of which 36 must be upper-division credits, from the following course lists.		48
Biology and Microbiology Upper Division		
Complete a minimum of 15 credits from the following:		
BIOL A310	Principles of Animal Physiology	
BIOL A311	Experiential Learning: Animal Physiology	
BIOL A316	Principles of Plant Physiology	
BIOL A317	Experiential Learning: Plant Physiology	
BIOL A332	Experiential Learning: Plant Biology	
BIOL A415	Comparative Animal Physiology	
BIOL A418	Fish Physiology	
BIOL A423	Ichthyology	
BIOL A427	Marine Invertebrate Biology	
BIOL A430	Marine Mammal Biology	
BIOL A431	Plant Diversity and Evolution	

BIOL A441	Animal Behavior	
BIOL A442	Experiential Learning: Animal Behavior	
BIOL A467	Wildlife Ecology	
BIOL A469	Arctic Environmental Security	
BIOL A472	Biogeography	
BIOL A473	Conservation Biology	
BIOL/CHEM A474	Ecotoxicology	
BIOL A477	Tundra and Taiga Ecosystems	
BIOL A481	Marine Biology	
BIOL A483	Exploration Ecology	
BIOL A484	Experiential Learning: Exploration Ecology Field Study	
BIOL A486	Evolutionary Ecology	
BIOL A490	Selected Lecture Topics in Biology	
BIOL A490L	Selected Laboratory Topics in Biology	
BIOL A498	Individual Research	
BIOL A499	Senior Thesis	
MBIO A340	Microbial Biology	
MBIO A342	Experiential Learning: Microbial Biology	
MBIO A410	Microbial Physiology	
MBIO A440	Microbial Diversity	
MBIO A450	Microbial Ecology	
MBIO A468	Geomicrobiology	

Geology Upper Division

Complete a minimum of 15 credits from the following:

GEOL A315	Geological Data Visualization and Analysis	
GEOL A331	Sedimentology and Stratigraphy	
GEOL A333	Earthquakes and Seismic Hazards	
GEOL A361	Earth Resources and Society	
GEOL A441	Paleoclimatology	
GEOL A444	The Cryosphere	
GEOL A461	Geochemistry	
GEOL A463	Environmental Geochemistry	
GEOL A480	Geologic Field Methods	
GEOL A490	Advanced Topics in Geology	
GEOL A498	Student Research	
GEOL A499	Senior Thesis	

Math and Computational Skills

Complete a minimum of 12 credits from the following:

CS A109	Computer Programming (Languages Vary)	
or CS A110	Java Programming	
or CSCE A201	Computer Programming I	
CSCE A360	Database Systems	

GIS A370	GIS and Remote Sensing for Natural Resources	
GIS A458	Spatial Data Management	
GIS A466	Spatial Analysis	
GIS A467	Image Analysis	
MATH A251	Calculus I	
or MATH A251F	F.A.T. Calculus I	
MATH A252	Calculus II	
or MATH A252F	F.A.T. Calculus II	
MATH A253	Calculus III	
STAT A308	Intermediate Statistics for the Sciences	
STAT A402	Scientific Sampling	
STAT A403	Regression Analysis	
STAT A404	Analysis of Variance	
STAT A407	Time Series Analysis	
STAT A408	Multivariate Statistics	

Social Sciences Upper Division

Complete a minimum of 6 credits from the following:

ANTH A454	Culture and Ecology	
ANTH A477	Cultural Resource Management	
CEL A390	Special Topics in Civic Engagement	
CEL A450	Civic Engagement Leadership Capstone	
ECON A435	Natural Resource Economics	
ECON A445	Methods for Public Policy Evaluation	
ENGL A478	Public Science Writing	
GEOG A475	Geospatial and Cartographic Techniques for the Sciences	
SOC A404	Environmental Sociology	
Total		**90**

Pre-Health Professions Option

Code	Title	Credits
BIOL A108	Principles and Methods in Biology	6
BIOL A492	Undergraduate Seminar	1
CHEM A105 & A105L	General Chemistry I and General Chemistry I Laboratory	4
CHEM A106 & A106L	General Chemistry II and General Chemistry II Laboratory	4
PHYS A123 & A123L	College Physics I and College Physics I Laboratory	4
PHYS A124 & A124L	College Physics II and College Physics II Laboratory	4

Complete 57 credits of degree electives, of which a minimum of 31 must be upper-division, from the following course lists: 57

Natural Sciences

Complete a minimum of 24 credits from the following:

BIOL A111 & A111L	Human Anatomy and Physiology I and Human Anatomy and Physiology I Lab
BIOL A112 & A112L	Human Anatomy and Physiology II and Human Anatomy and Physiology II Lab
BIOL A200	Introduction to Complexity
BIOL A240 & A240L	Introductory Microbiology for Health Sciences and Introductory Microbiology for Health Sciences Laboratory
or MBIO A340 & MBIO A342	Microbial Biology and Experiential Learning: Microbial Biology
BIOL A242	Fundamentals of Cell Biology
BIOL A243	Experiential Learning: Cell Biology and Genetics
BIOL A252	Principles of Genetics
BIOL A288	Principles of Evolution
BIOL A310	Principles of Animal Physiology
BIOL A311	Experiential Learning: Animal Physiology
BIOL A320	Vertebrate Biology
BIOL A321	Experiential Learning: Vertebrate Biology
BIOL A412	Behavioral Endocrinology
BIOL A413	Neurophysiology
BIOL A415	Comparative Animal Physiology
BIOL A417	Applied Kinesiology and Exercise Physiology
BIOL A419	Sleep and Chronobiology
BIOL A452	Human Genome
BIOL A455	Experiential Learning: Bioinformatics
BIOL A461	Molecular Biology
BIOL A463	Molecular Biology of Cancer
BIOL A464	Metals in Biology
BIOL A465	Experiential Learning: Molecular Biology
BIOL/CHEM A471	Immunology
BIOL A487	Comparative Anatomy of Vertebrates
BIOL A489	Population Genetics and Evolutionary Processes
BIOL A490	Selected Lecture Topics in Biology
BIOL A490L	Selected Laboratory Topics in Biology
BIOL A495A	Internship in the Biological Sciences
BIOL A498	Individual Research
BIOM A418	Human Gross Anatomy
CHEM A312	Quantitative Analysis
CHEM A321	Organic Chemistry I
CHEM A322	Organic Chemistry II
CHEM A323L	Organic Chemistry Laboratory
CHEM A411	Biophysical Chemistry
CHEM A441	Principles of Biochemistry I
CHEM A442	Principles of Biochemistry II
CHEM A443	Biochemistry Laboratory
CHEM A492	Undergraduate Seminar
CHEM A498	Individual Research
MBIO A410	Microbial Physiology
MBIO A451	Microbial Biotechnology
MBIO A460	Host-Microbiome Interactions
MBIO A462	Virology
MBIO A470	Ecology and Evolution of Infectious Disease
PHYS A456	Nonlinear Dynamics and Chaos

Social Sciences

Complete a minimum of 15 credits from the following:

ANTH A101	Introduction to Anthropology
ANTH A205	Biological Anthropology
ANTH A452	Culture and Human Biodiversity
ANTH A455	Culture and Health
ANTH A490	Selected Topics in Anthropology
ECON A101	Principles of Microeconomics
ECON A102	Principles of Macroeconomics
HS A210	Introduction to Environmental Health
HS A220	Introduction to Population Health Sciences
HS A230	Introduction to Global Health
HS A326	Introduction to Epidemiology
HS A370	Social and Cultural Determinants of Health
HS A492	Senior Seminar: Contemporary Health Policy
KIN A383	Movement Theory and Motor Development
KIN A384	Cultural and Psychological Aspects of Health and Physical Activity
PHIL A302	Biomedical Ethics
PSY A111	Introduction to Psychology
PSY A143	Death and Dying
PSY A150	Lifespan Development
PSY A200	Introduction to Behavior Analysis
PSY A260	Statistics for Psychology

PSY A260L	Statistics for Psychology Lab
PSY A261	Research Methods in Psychology
PSY A261L	Research Methods in Psychology Laboratory
PSY A316	Motivation and Emotion
PSY A345	Psychopathology
PSY A366	Sensation and Perception
PSY A367	Cognitive Psychology
PSY A368	Personality
PSY A370	Behavioral Neuroscience
PSY A375	Social Psychology
PSY A398	Individual Research
PSY A400	Strategies of Behavior Change
PSY A412	History of Psychology
PSY A425	Clinical Psychology
PSY A428	Evolutionary Psychology
PSY A442	Psychopathology of Childhood and Adolescence
PSY A447	Behavioral Treatment of Autism Spectrum Disorder
PSY A450	Adult Development and Aging
PSY A455	Interventions for Challenging Behavior
PSY A485	Health Psychology
PSY A498	Individual Research
PSY A499A	Developing Psychological Research

Math and Computational Skills

Complete a minimum of 9 credits from the following:

MATH A221	Applied Calculus for Managerial and Social Sciences
or MATH A251	Calculus I
or MATH A251F	F.A.T. Calculus I
MATH A252	Calculus II
or MATH A252F	F.A.T. Calculus II
MATH A253	Calculus III
MATH A261	Introduction to Discrete Mathematics
MATH A265	Fundamentals of Mathematics
MATH A302	Ordinary Differential Equations
MATH A305	Introduction to Geometries
MATH A306	Discrete Methods
MATH A314	Linear Algebra
MATH A371	Stochastic Processes
MATH A401	Introduction to Real Analysis
MATH A405	Introduction to Abstract Algebra
MATH A407	Mathematical Statistics
MATH A410	Introduction to Complex Analysis
MATH A432	Partial Differential Equations
MATH A490	Selected Topics in Mathematics
MATH A498	Individual Research
STAT A253	Applied Statistics for the Sciences
or STAT A307	Probability and Statistics
STAT A308	Intermediate Statistics for the Sciences
STAT A402	Scientific Sampling
STAT A403	Regression Analysis
STAT A404	Analysis of Variance
STAT A407	Time Series Analysis
STAT A408	Multivariate Statistics

Total	**80**

A minimum of 120 credits is required for the degree, of which 39 credits must be upper-division.