Biological Sciences

College of Natural Science and Mathematics
Department of Biology and Wildlife
(907) 474-7671
www.bw.uaf.edu

B.A., B.S. Degrees

Minimum Requirements for Degrees: 130 credits

The biological sciences program provides a broad education and sound foundation in the basic principles of biology. Students who major in biological sciences may pursue either a B.A. or B.S. degree. The B.A. requires fewer credits in the major field than the B.S., but it gives greater emphasis in the social sciences and humanities and allows a greater breadth of subject matter.

The B.S. degree includes a foundation in the basic sciences and stronger requirements within the biological sciences than the B.A. Candidates who expect to teach in public secondary schools must be sure that they meet education requirements.

Major—B.A. Degree

1. Complete the general university requirements. (See page 116. As part of the core curriculum requirements, complete: CHEM 105X* and 106X*.)
2. Complete the B.A. degree requirements (page 120).
3. Complete the following program (major) requirements:*
   - BIOL 105X—Fundamentals of Biology I 4
   - BIOL 106X—Fundamentals of Biology II 4
   - BIOL 271—Principles of Ecology 4
   - BIOL 303—Principles of Metabolism and Biochemistry (4) or CHEM 321—Organic Chemistry (3) and CHEM 322—Organic Chemistry (3) 4–6
   - BIOL 310—Animal Physiology (4) or BIOL 111X and 112X—Human Anatomy and Physiology I & II (8) or BIOL 334W—Structure and Function of Vascular Plants (4) or BIOL 342—Microbiology (4) 4–8
   - BIOL 362—Principles of Genetics 4
   - BIOL 481—Principles of Evolution 4
   - BIOL elective 3
   - STAT 200X—Elementary Probability and Statistics 3
4. Minimum credits required 130

Major—B.S. Degree

1. Complete the general university requirements. (See page 116. As part of the core curriculum requirements, complete: MATH 200X* or MATH 272X*; and CHEM 105X* and 106X*.)
2. Complete the B.S. degree requirements. (See page 121. As part of the B.S. degree requirements, complete STAT 200X* or STAT 300*. Biology foundation courses may be used toward partial fulfillment of the natural science requirement.)
3. Complete the following program (major) requirements:*
   a. Complete the following:
      - BIOL 105X—Fundamentals of Biology I 4
      - BIOL 106X—Fundamentals of Biology II 4
      - BIOL 261—Introduction to Cell and Molecular Biology 4
      - BIOL 271—Principles of Ecology 4
      - BIOL 303—Principles of Metabolism and Biochemistry (4) or CHEM 321—Organic Chemistry (3) and CHEM 322—Organic Chemistry (3) 4–6
      - BIOL 310—Animal Physiology (4) or BIOL 111X and 112X—Human Anatomy and Physiology I & II (8) or BIOL 334W—Structure and Function in Vascular Plants (4) or BIOL 342—Microbiology (4) 4–8
      - BIOL 362—Principles of Genetics 4
      - BIOL 481—Principles of Evolution 4

   b. Complete biology electives** 20

   c. In addition to all other requirements, complete two electives (6 or more credits) from the following:
      Chemistry (200-level or above)
      Geosciences
      Marine Science
      Mathematics (200-level or above)
      Physics
      Space Physics and Atmospheric Sciences
      Statistics
4. Minimum credits required 130

** Student must earn a C grade or better in each course.*

*** A maximum of 6 credits of independent study (course numbers ending in 97) may be applied to this requirement. Students may petition to substitute chemistry courses (up to 10 credits for the biology electives required for the B.S. degree.)*

Note: A foreign language is encouraged by the department in meeting requirements of the core curriculum.

Note: Biology foundation courses may be used toward partial fulfillment of the natural science requirement for the B.S. degree with a major in biological sciences.

Note: Candidates for the bachelor of science degree in general science wishing to major in biological sciences must satisfy both the requirements of their major curriculum and those listed above for a B.A. degree with a major in biological sciences.

Requirements for Biology Teachers (grades 7–12)*

1. Complete all the requirements of the biological sciences B.A. or B.S. degree.
2. Complete the following:
   BIOL 310—Animal Physiology (4)
   or BIOL 111X and BIOL 112X—Human Anatomy and Physiology (8) 4–8
   BIOL 239—Introduction to Plant Biology (4)
   or BIOL 334—Structure and Function in Vascular Plants (4)... 4
   BIOL 342—Microbiology 4
   Complete one of the following:
   BIOL 305—Invertebrate Zoology (5)
   or BIOL 406—Entomology (4)
   or BIOL 425—Mammalogy (3)
   or BIOL 426W,O/2—Ornithology (3)
   or BIOL 427—Ichthyology (4) 3–5
3. Complete one of the following:
   PHIL 380—Conceptual Foundations of Science (3)
   or PHIL 382—Science & Technological Limits (3)
   or PHIL 481—Philosophy of Science (3)..... 3

**We strongly recommend that prospective secondary science teachers seek advising from the UAF School of Education early in your undergraduate degree program, so that you can be appropriately advised of the state of Alaska requirements for teacher licensure. You will apply for admission to the UAF School of Education's post-baccalaureate teacher preparation program, a one-year intensive program, during your senior year. Above requirements apply to all candidates who apply to the UAF School of Education Spring 2006 or later, for licensure in biology.*

Minor

1. Complete the following:
   BIOL 105X—Fundamentals of Biology I..... 4
   BIOL 106X—Fundamentals of Biology II 4
2. Complete three of the following:
   BIOL 310—Animal Physiology (4)
   or BIOL 111X and 112X—Human Anatomy and Physiology I and II (8) 4–8
   BIOL 271—Principles of Ecology..... 4
   BIOL 303—Principles of Metabolism and Biochemistry..... 4
   BIOL 334W—Structure and Function in Vascular Plants..... 4
   BIOL 342—Microbiology 4
   BIOL 362—Principles of Genetics 4
   BIOL 481—Principles of Evolution..... 4
3. Minimum credits required 20

Baccalaureate Core Requirements

All degrees (e.g. B.A., B.S., etc.) require additional courses. Refer to specific degree and program requirements.

COMMUNICATION (9)

Complete the following:
ENGL 111X ..... (3) _____
ENGL 190H may be substituted.

Complete one of the following:
ENGL 211X **OR** ENGL 213X ..... (3) _____

Complete one of the following:
COMM 131X **OR** COMM 141X..... (3) _____

PERSPECTIVES ON THE HUMAN CONDITION (18)

Complete all of the following four courses:
ANTH 100X/SOC 100X..... (3) _____
ECON 100X **OR** PS 100X ..... (3) _____
HIST 100X..... (3) _____
ENGL/FL 200X..... (3) _____

Complete one of the following three courses:
ART/MUS/THR 200X, HUM 201X **OR** ANS 202X..... (3) _____

Complete one of the following six courses:
BA 323X, COMM 300X, JUST 300X, NRM 303X,
PS 300X **OR** PHIL 322X..... (3) _____

OR complete 12 credits from the above courses PLUS

- two semester-length courses in a single Alaska Native language or other non-English language **OR**
- three semester-length courses (9 credits) in American Sign Language taken at the university level.

MATHEMATICS (3)

Complete one of the following:
MATH 103X, MATH 107X, MATH 161X **OR** STAT 200X.....(3-4) _____
** No credit may be earned for more than one of MATH 107X or 161X.*

OR complete one of the following:*
MATH 200X, MATH 201X, MATH 202X,
MATH 262X **OR** MATH 272X..... (4) _____
**Or any math course having one of these as a prerequisite*

NATURAL SCIENCES (8)

Complete any two (4-credit) courses:
ATM 101X ..... (4) _____
BIOL 100X..... (4) _____
BIOL 103X..... (4) _____
BIOL 104X..... (4) _____
BIOL 105X..... (4) _____
BIOL 106X..... (4) _____
BIOL 111X..... (4) _____
BIOL 112X..... (4) _____
CHEM 100X ..... (4) _____
CHEM 103X ..... (4) _____
CHEM 104X ..... (4) _____
CHEM 105X ..... (4) _____
CHEM 106X ..... (4) _____
GEOG 205X ..... (4) _____
GEOS 100X ..... (4) _____
GEOS 101X ..... (4) _____
GEOS 112X ..... (4) _____
GEOS 120X ..... (4) _____
GEOS 125X ..... (4) _____
MSL 111X..... (4) _____
PHYS 102X..... (4) _____
PHYS 103X..... (4) _____
PHYS 104X..... (4) _____
PHYS 115X..... (4) _____
PHYS 116X..... (4) _____
PHYS 175X..... (4) _____
PHYS 211X..... (4) _____
PHYS 212X..... (4) _____
PHYS 213X..... (4) _____

LIBRARY AND INFORMATION RESEARCH (0–1)
Successful completion of library skills competency test **OR**
LS 100X or 101X prior to junior standing ..... (0–1) _____

UPPER-DIVISION WRITING AND ORAL COMMUNICATION (0)

Complete the following:
Two writing intensive courses designated (W) .....(0) _____
One oral communication intensive course designated (O) .....(0) _____
OR two oral communication intensive courses designated (O/2), at the upper-division level (see degree and/or major requirements).....(0) _____

TOTAL CREDITS REQUIRED.....38–39