B.S., BIOLOGICAL SCIENCES WITH CONCENTRATION

Concentrations: Cell and Molecular Biology, Physiology, Ecology and Evolutionary Biology, and Biomedical Science

Minimum Requirements for Degree: 120 credits

Students must earn a C- grade or better in each course.

General University Requirements
Complete the general university requirements. (http://catalog.uaf.edu/bachelors)

General Education Requirements
Complete the general education requirements. (http://catalog.uaf.edu/bachelors/general-education-requirements)

B.S. Degree Requirements
Complete the B.S. degree requirements. (http://catalog.uaf.edu/bachelors/summary-of-bachelors-degree-reqs/#bachelorofsciencetext)

Program Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOL F260</td>
<td>4</td>
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<tr>
<td>Select one from the following four options:</td>
<td>4-8</td>
</tr>
<tr>
<td>BIOL F310</td>
<td></td>
</tr>
<tr>
<td>BIOL F434</td>
<td></td>
</tr>
<tr>
<td>BIOL F342</td>
<td></td>
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<tr>
<td>BIOL F213X</td>
<td></td>
</tr>
<tr>
<td>and BIOL F214X</td>
<td></td>
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<tr>
<td>BIOL F481</td>
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<tr>
<td>CHEM F320</td>
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<td>BIOL F115X</td>
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<td>BIOL F116X</td>
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<tr>
<td>STAT F200X</td>
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<tr>
<td>or STAT F300</td>
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<tr>
<td>BIOL F260</td>
<td>4</td>
</tr>
<tr>
<td>or PHYS F211X</td>
<td></td>
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<tr>
<td>PHYS F103X</td>
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<tr>
<td>or PHYS F104X</td>
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Total Credits 47-64

Concentrations

CELL AND MOLECULAR BIOLOGY

As part of the program requirements above, complete:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM F325</td>
<td>Organic Chemistry II 3</td>
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Complete the following (at least one of which must satisfy the W requirement):

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOL F360</td>
<td>Cell and Molecular Biology 3</td>
</tr>
<tr>
<td>CHEM F450</td>
<td>General Biochemistry: Macromolecules 3</td>
</tr>
<tr>
<td>CHEM F351</td>
<td>General Biochemistry: Metabolism 3</td>
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</tbody>
</table>

Cell and Molecular and Physiology Electives
Select one additional course from list A. 3-4
Select two additional courses from lists A or B. 6-8

Biology Breadth Elective
Select one additional course from lists C or D. 3-4

Total Credits 21-25

PHYSIOLOGY

As part of the program requirements above, complete:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL F360</td>
<td>Cell and Molecular Biology 3</td>
</tr>
</tbody>
</table>

Physiology or Cell and Molecular Biology Electives
Select two additional courses from list B. 6-8
Select two additional courses from lists A or B. 6-8

Biology Breadth Elective
Select one additional course from lists C or D. 3-4

Total Credits 21-25

Biomedical Science

Capstone

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOL F400</td>
<td>Capstone Project 0</td>
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</tbody>
</table>

Satisfactory completion of a capstone research project which can be done either working individually with a faculty member or within one of the following courses: 3-4

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOL F434</td>
<td>Structure and Function of Vascular Plants</td>
</tr>
<tr>
<td>BIOL F441</td>
<td>Animal Behavior</td>
</tr>
<tr>
<td>BIOL F446</td>
<td>Advanced Cell and Molecular Laboratory</td>
</tr>
<tr>
<td>BIOL F472</td>
<td>Community Ecology</td>
</tr>
<tr>
<td>BIOL F473</td>
<td>Limnology</td>
</tr>
</tbody>
</table>

Total Credits 47-64

Note: A foreign language is encouraged by the department to meet the general education requirements.
Select one additional course from lists A, B, C, D, or E 3-4

Total Credits 21-27

ECOLOGY AND EVOLUTIONARY BIOLOGY
BIOL F371 Principles of Ecology 4

Ecology and Evolutionary Biology Electives
Select two additional courses from list C 6-8

Organismal Elective
Select one additional course from list D 3-4

Biology Breadth Elective
Select one additional course from lists A, B, C, D, or E 3-4

STAT F401 Regression and Analysis of Variance 3-4
or STAT F402 Scientific Sampling

Total Credits 22-28

BIOMEDICAL SCIENCE
As part of the general education requirements the following are recommended:

PSY F101X Introduction to Psychology
SOC F101X Introduction to Sociology
ECON F100X Political Economy
or ECON F201X Principles of Economics I: Microeconomics
or ECON F202X Principles of Economics II: Macroeconomics

Complete the following as part of the program requirements:

BIOL F213X and Human Anatomy and Physiology I
and BIOL F214X and Human Anatomy and Physiology II
or BIOL F310 Animal Physiology
CHEM F325 Organic Chemistry II
PHYS F104X College Physics II
or PHYS F212X General Physics II

Complete the following:

BIOL F342 Microbiology 4
BIOL F360 Cell and Molecular Biology 3
CHEM F351 General Biochemistry: Metabolism 3

Biological Electives
Select one additional course from lists C or D 3-4

Biomedical Electives
Select at least three additional courses from list E 9-12

Total Credits 22-26

Biology Elective Course Lists
Courses that satisfy upper-division elective credit may require prerequisites.

LIST A - CELL AND MOLECULAR BIOLOGY
BIOL F342 Microbiology 4
BIOL F360 Cell and Molecular Biology 3
BIOL F417 Neurobiology 3
BIOL F435 Introduction to Biology of Cancer 3
BIOL F460 Principles of Virology 3
BIOL F462 Infectious Diseases 3

BIOL F465 Immunology 3
BIOL F466 Advanced Cell and Molecular Laboratory
CHEM F325 Organic Chemistry II
CHEM F351 General Biochemistry: Metabolism 3
CHEM F450 General Biochemistry: Macromolecules 3
CHEM F470 Cellular and Molecular Neuroscience 3
CHEM F474 Neurochemistry 3

LIST B - PHYSIOLOGY
BIOL F310 Animal Physiology 4
BIOL F312 Medical Physiology 3
BIOL F335 Principles of Epidemiology 3
BIOL F342 Microbiology 4
BIOL F412 Exercise Physiology 3
BIOL F417 Neurobiology 3
BIOL F434 Structure and Function of Vascular Plants 4
BIOL F441 Animal Behavior 3
BIOL F442 Environmental Toxicology 3
BIOL F457 Environmental Microbiology 3
BIOL F462 Infectious Diseases 3
BIOL F465 Immunology 3

LIST C - ECOLOGY AND EVOLUTIONARY BIOLOGY
BIOL F371 Principles of Ecology 4
BIOL F418 Biogeography 3
BIOL F433 Conservation Genetics 3
BIOL F441 Animal Behavior 3
BIOL F457 Environmental Microbiology 3
BIOL F469 Landscape Ecology and Wildlife Habitat 3
BIOL F471 Population Ecology 3
BIOL F472 Community Ecology 3
BIOL F473 Limnology 3
BIOL F476 Ecosystem Ecology 3
BIOL F483 Stream Ecology 3
BIOL F485 Global Change Biology 3
BIOL F486 Vertebrate Paleontology 3
BIOL F487 Conceptual Issues in Evolutionary Biology 3
BIOL F488 Arctic Vegetation Ecology: Geobotany 3
BIOL F489 Vegetation Description and Analysis 3
WLF F301 Design of Wildlife Studies 3

LIST D - ORGANISMAL BIOLOGY
BIOL F239 Introduction to Plant Biology 4
BIOL F301 Biology of Fishes 4
BIOL F305 Invertebrate Zoology 4
BIOL F331 Systematic Botany 4
BIOL F406 Entomology 4
BIOL F418 Biogeography 3
BIOL F425 Mammalogy 3
BIOL F426 Ornithology 3
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<thead>
<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>BIOL F427</td>
<td>Ichthyology</td>
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<td>BIOL F486</td>
<td>Vertebrate Paleontology</td>
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</tr>
<tr>
<td>BIOL F489</td>
<td>Vegetation Description and Analysis</td>
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**LIST E - BIOMEDICAL SCIENCE**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOL F312</td>
<td>Medical Physiology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL F335</td>
<td>Principles of Epidemiology</td>
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<tr>
<td>BIOL F402</td>
<td>Biomedical and Research Ethics</td>
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<tr>
<td>BIOL F412</td>
<td>Exercise Physiology</td>
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<tr>
<td>BIOL F417</td>
<td>Neurobiology</td>
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<tr>
<td>BIOL F435</td>
<td>Introduction to Biology of Cancer</td>
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<td>BIOL F455</td>
<td>Environmental Toxicology</td>
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<tr>
<td>BIOL F460</td>
<td>Principles of Virology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL F462</td>
<td>Infectious Diseases</td>
<td>3</td>
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<tr>
<td>BIOL F465</td>
<td>Immunology</td>
<td>3</td>
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<tr>
<td>BIOL F466</td>
<td>Advanced Cell and Molecular Laboratory</td>
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<tr>
<td>CHEM F450</td>
<td>General Biochemistry: Macromolecules</td>
<td>3</td>
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<tr>
<td>CHEM F470</td>
<td>Cellular and Molecular Neuroscience</td>
<td>3</td>
</tr>
<tr>
<td>CHEM F474</td>
<td>Neurochemistry</td>
<td>3</td>
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<tr>
<td>WLF F305</td>
<td>Wildlife Diseases</td>
<td>3</td>
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