Submit originals and one copy and electronic copy to Governance/Faculty Senate Office (email electronic copy to jbharvie@alaska.edu)

PROGRAM/DEGREE REQUIREMENT CHANGE (MAJOR)

SUBMITTED BY:

<table>
<thead>
<tr>
<th>Department</th>
<th>Biology and Wildlife</th>
<th>College/School</th>
<th>CNSM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared by</td>
<td>Diane Wagner</td>
<td>Phone</td>
<td>474-5227</td>
</tr>
<tr>
<td>Email Contact</td>
<td><a href="mailto:Diane.wagner@alaska.edu">Diane.wagner@alaska.edu</a></td>
<td>Faculty Contact</td>
<td></td>
</tr>
</tbody>
</table>

See http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/ for a complete description of the rules governing curriculum & course changes.

PROGRAM IDENTIFICATION:

DEGREE PROGRAM

<table>
<thead>
<tr>
<th>Biological Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree Level: (i.e., Certificate, A.A., A.A.S., B.A., B.S., M.A., M.S., Ph.D.)</td>
</tr>
<tr>
<td>BA and BS</td>
</tr>
</tbody>
</table>

A. CHANGE IN DEGREE REQUIREMENTS: (Brief statement of program/degree changes and objectives)

Two major changes are proposed.

1. A new concentration in Biomedical Science. The objective is to prepare students for employment or advanced study in the fields of human and animal health. The concentration provides prerequisites for medical, veterinary, and other professional degree programs in the health sciences and preparation for the MCAT and GRE exams.

2. An option for students to take computer science instead of physics. Some sub-disciplines of biology rely heavily on computational and computer skills and faculty report that students are generally lacking these skills. Rather than add requirements to the degree programs, we propose to allow BA students to choose either one semester of physics and computer science, and BS students to choose either 2 semesters of physics or 1 semester each of physics and computer science.

Minor changes to the program include deleting redundancies, deleting references to W and O requirements, adjusting disciplinary course lists, and adjusting capstone course lists to reflect new and dropped course offerings. For the BA program, we also propose to change the current requirement that the minor include 3 credits of upper division work to a recommendation. The requirement caused difficulties because some minors do not require upper division courses.

B. CURRENT REQUIREMENTS AS IT APPEARS IN THE CATALOG:

Please see the online catalog.

C. PROPOSED REQUIREMENTS AS IT WILL APPEAR IN THE CATALOG WITH THESE CHANGES:

(Underline new wording strike through old wording and use complete catalog format)

B.A., BIOLOGICAL SCIENCES

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)

As part of the general education requirements, complete:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM F105X and CHEM F106X</td>
<td>8</td>
</tr>
</tbody>
</table>

B.A. Degree Requirements

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

As part of the B.A. degree requirements, complete:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>STAT F200X</td>
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Program Requirements

<table>
<thead>
<tr>
<th>Course</th>
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</tr>
</thead>
<tbody>
<tr>
<td>BIOL F115X</td>
<td>4</td>
</tr>
<tr>
<td>BIOL F116X</td>
<td>4</td>
</tr>
</tbody>
</table>
BIOL F260 Principles of Genetics 4
BIOL F481 Principles of Evolution 4
CHEM F321 Organic Chemistry I 4
PHYS F103X College Physics I 3-4
  or CS F103 Introduction to Computer Programming
  or CS F201 Computer Science I

**Biology Breadth Requirements**
Select two from the following: 7-12
- BIOL F360 Cell and Molecular Biology
- BIOL F371 Principles of Ecology
- BIOL F310 Animal Physiology
- or BIOL F342 Microbiology
- or BIOL F434 Structure and Function of Vascular Plants
- or BIOL F213X and BIOL F214X Human Anatomy and Physiology I and Human Anatomy and Physiology II

**Electives**
Select three courses, at least one of which is designated a **W** course, from the following: 9-12

**Capstone**
- BIOL F400 Capstone Project 0
- BIOL F403 Metabolism and Biochemistry
- BIOL F434 Structure and Function of Vascular Plants
- BIOL F441 Animal Behavior
- BIOL F459 Wildlife Nutrition
- BIOL F466 Advanced Cell and Molecular Biology Laboratory
- BIOL F472 Community Ecology
- BIOL F473 Limnology

Total Credits 51-63

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1 As part of the humanities and social science requirement, take at least 9 credits of upper division course work. As part of the minor, take at least 3 credits of upper division course work are recommended.
2 Because biology breadth courses for the B.A. degree serve as prerequisites for many upper-division biology electives, course choices should be made with consideration of the elective biology courses the student plans to complete.
3 BIOL 397 or BIOL F497 or BIOL F490, URSA F388 or URSA F488 courses may be substituted by petition for a maximum of two required elective courses in biology (3-4 credits of independent study or research per substituted course). The subject area of the independent study or research will determine which biological subject areas the credits satisfy.
4 If possible, satisfy all UAF core requirements for **W** and **O** courses and the biology capstone requirement with these elective courses.
5 Students working individually with a faculty member may, for example, take BIOL F490, BIOL F497 or do so without course credits.

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**B.S., BIOLOGICAL SCIENCES WITHOUT CONCENTRATION**

Minimum Requirements for Degree: 120 credits

**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)
As part of the general education requirements, complete:
- MATH F230X Calculus Essentials with Applications 3
- or MATH F251X Calculus I
- CHEM F105X and CHEM F106X General Chemistry I and General Chemistry II 8

**B.S. Degree Requirements**
Complete the B.S. degree requirements. (http://catalog.uaf.edu/bachelors/summary-of-bachelors-degree-reqs/#bachelorsofsciencetext)
As part of the B.S. degree requirements, complete:
- STAT F200X Elementary Probability and Statistics 3
- or STAT F300 Statistics
- BIOL F115X and F116X Fundamentals of Biology I and Fundamentals of Biology II 8

Select one from the following PHYS sequences:
- PHYS F103X and PHYS F104X College Physics I and College Physics II
- PHYS F211X and PHYS F212X General Physics I and General Physics II

**Program Requirements**
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL F115X</td>
<td>Fundamentals of Biology I</td>
<td>4</td>
</tr>
<tr>
<td>BIOL F116X</td>
<td>Fundamentals of Biology II</td>
<td>4</td>
</tr>
<tr>
<td>BIOL F260</td>
<td>Principles of Genetics</td>
<td>4</td>
</tr>
<tr>
<td>BIOL F360</td>
<td>Cell and Molecular Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL F371</td>
<td>Principles of Ecology</td>
<td>4</td>
</tr>
</tbody>
</table>

Select one from the following four options:

- BIOL F310 Animal Physiology
- or BIOL F342 Microbiology
- or BIOL F213X and BIOL F214X Human Anatomy and Physiology I and II
- or BIOL F434 Structure and Function of Vascular Plants
- BIOL F481 Principles of Evolution
- CHEM F321 Organic Chemistry I
- CHEM F325 Organic Chemistry II
- or CHEM F351 General Biochemistry: Metabolism
- PHYS F103 College Physics I
- or PHYS 211X General Physics I
- PHYS F104 College Physics II
- or PHYS 212X General Physics II
- or CS F103 Introduction to Computer Programming
- or CS F201 Computer Science I

### Electives

#### Organismal elective
Select one additional course from the following:

- List D

#### Biology electives
Select four additional courses at the 200 level or above, at least three of which must be from the following:

- Lists A, B, C, or D, or E

### Capstone

- BIOL F400 Capstone Project

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:

- BIOL F402 Metabolism and Biochemistry
- BIOL F434 Structure and Function of Vascular Plants
- BIOL F441 Animal Behavior
- BIOL F466 Advanced Cell and Molecular Biology Laboratory
- BIOL F472 Community Ecology
- BIOL F473 Limnology

Total Credits: 74-85

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*At least one must satisfy the W requirement.
* BIOL F397 or BIOL F497 or BIOL F490, URSA F388 or URSA F488 courses may be substituted by petition for a maximum of two required elective courses in biology (3-4 credits of independent study or research per substituted course). The subject area of the independent study or research will determine which biological subject areas the credits satisfy.
* Fulfills the baccalaureate capstone requirement.

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**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](http://catalog.uaf.edu/bachelors))

**General Education Requirements**

Complete the general education requirements. ([http://catalog.uaf.edu/bachelors/general-education-requirements](http://catalog.uaf.edu/bachelors/general-education-requirements))

As part of the general education requirements, complete:

- MATH F230X Calculus Essentials with Applications
- or MATH F251X Calculus I
- CHEM F105X and CHEM F106X General Chemistry I and General Chemistry II

**B.S. Degree Requirements**

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

As part of the B.S. degree requirements, complete:
STAT F200X or STAT F300

BIOL F115X and BIOL F116X

Select one PHYS sequence:

PHYS F103X and PHYS F104X

PHYS F211X and PHYS F212X

Program Requirements

BIOL F115X

BIOL F116X

BIOL F260

Select one from of the following four options:

BIOL F310

BIOL F434

BIOL F342

BIOL F213X and BIOL F214X

BIOL F481

CHEM F321

CHEM F325

or CHEM F351

PHYS F103X or PHYS 211X

PHYS F104X or PHYS 212X

or CS F103 or CS F201

Capstone

Select one from the following concentrations:

Cell and Molecular Biology

Physiology

Ecology and Evolutionary Biology

Biomedical Science

Concentration

Select one from the following concentrations:

Physiology or Cell and Molecular Biology Electives

Select two courses from lists A or B

Select two courses from list B

Biology Breadth Elective

Select one additional course from lists C or D

Total Credits

Concentrations

Cell and Molecular Biology

As part of the Program Requirements, take:

CHEM F325

Complete the following:

BIOL F360

CHEM F450

CHEM F351

Cell and Molecular and Physiology Electives

Select three additional courses from lists A or B, at least one of which must be from list A

Select one additional course from list A

A Select two courses from lists A or B

Biology Breath Elective

Select one additional course from lists C or D

Total Credits

At least one of the courses above must satisfy the W requirement.
Biology Breadth Elective
Select one additional course from lists C or D 3-4

Biology Elective
Select one additional biology course at the 300 or 400 level 3-4
Total Credits 21-27

At least one of the courses above must satisfy the W requirement.

Ecology or 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, or E 3-4

Biology Elective
Select one additional biology course at the 300 or 400 level 3-4

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

Total Credits 22-28

At least one of the courses above must satisfy the W requirement.

Biomedical Science
As part of the general education requirements, the following courses are recommended:
PSY F101X Introduction to Psychology
SOC 100X Individual, Society, and Culture
ECON 100X Political Economy
or ECON 201X Principles of Economics I: Microeconomics
or ECON 202X Principles of Economics II: Macroeconomics

As part of the program requirements, complete:
BIOL F213X and BIOL F214X Human Anatomy and Physiology I and 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

Biomedical Electives
Select at least three additional courses from list E 9-11

Biology Breadth Elective
Select one additional course from lists C or D 3-4
Total Credits 22 - 25

At least one must satisfy the W requirement.

Courses that satisfy upper-division elective credit may require prerequisites in addition to the required biology course.

List A - Cell and Molecular Biology
BIOL F342 Microbiology 4
BIOL F360 Cell and Molecular Biology 3
BIOL F403 Metabolism and Biochemistry 4
BIOL F417 Neurobiology 3
BIOL F435 Introduction to Biology of Cancer 3
BIOL F460 Principles of Virology 3
BIOL F462 Concepts of Infectious Diseases 3
BIOL F465 Immunology 3
BIOL F466 Advanced Cell and Molecular Laboratory 3

1 At least one must satisfy the W requirement.
2 BIOL F397 or BIOL F497 or BIOL F490, URSA F388 or URSA F488 courses may be substituted by petition for a maximum of two required elective courses in biology (3-4 credits of independent study or research per substituted course). The subject area of the independent study or research will determine which biological subject areas the credits satisfy.
3 Fulfills the baccalaureate capstone requirement.
4 Students working individually with a faculty member may, for example, take BIOL F490, BIOL F497 or do so without course credits.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL F239</td>
<td>Introduction to Plant Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL F301</td>
<td>Biology of Fishes</td>
<td>4</td>
</tr>
<tr>
<td>BIOL F310</td>
<td>Principles of Ecology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL F312</td>
<td>Medical Physiology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL F315</td>
<td>Systematic Botany</td>
<td>4</td>
</tr>
<tr>
<td>BIOL F319</td>
<td>Invertebrate Zoology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL F406</td>
<td>Entomology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL F418</td>
<td>Biogeography</td>
<td>3</td>
</tr>
<tr>
<td>BIOL F425</td>
<td>Mammalogy</td>
<td>3</td>
</tr>
<tr>
<td>BIOL F426</td>
<td>Ornithology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL F427</td>
<td>Ichthyology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL F486</td>
<td>Vertebrate Paleontology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL F489</td>
<td>Vegetation Description and Analysis</td>
<td>3</td>
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</table>

**List F - Biomedical Science**

<table>
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<td>BIOL F311</td>
<td>Medical Physiology</td>
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<td>BIOL F315</td>
<td>Principles of Epidemiology</td>
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<td>Behavioral Neuroscience Research</td>
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<td>BIOL F402</td>
<td>Biomedical Research Ethics</td>
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<td>BIOL F403</td>
<td>Metabolism and Biochemistry</td>
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<td>BIOL F412</td>
<td>Exercise Physiology</td>
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<td>BIOL F417</td>
<td>Neurobiology</td>
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**List B - Physiology**

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<td>Medical Physiology</td>
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<td>BIOL F335</td>
<td>Principles of Epidemiology</td>
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<tr>
<td>BIOL F342</td>
<td>Microbiology</td>
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<td>BIOL F394</td>
<td>Behavioral Neuroscience Research</td>
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<td>BIOL F412</td>
<td>Exercise Physiology</td>
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<td>BIOL F417</td>
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<tr>
<td>BIOL F434</td>
<td>Structure and Function of Vascular Plants</td>
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<tr>
<td>BIOL F441</td>
<td>Animal Behavior</td>
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<td>BIOL F455</td>
<td>Environmental Toxicology</td>
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<td>BIOL F457</td>
<td>Environmental Microbiology</td>
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<td>BIOL F458</td>
<td>Vertebrate Endocrinology</td>
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<td>BIOL F459</td>
<td>Wildlife Nutrition</td>
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<td>BIOL F462</td>
<td>Concepts of Infectious Diseases</td>
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**List C - Ecology and Evolutionary Biology**

<table>
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<tr>
<td>BIOL F418</td>
<td>Biogeography</td>
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<tr>
<td>BIOL F433</td>
<td>Conservation Genetics</td>
<td>3</td>
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<td>BIOL F441</td>
<td>Animal Behavior</td>
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<td>BIOL F457</td>
<td>Environmental Microbiology</td>
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<td>BIOL F469</td>
<td>Landscape Ecology and Wildlife Habitat</td>
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<td>BIOL F471</td>
<td>Population Ecology</td>
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<td>BIOL F472</td>
<td>Community Ecology</td>
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<td>BIOL F473</td>
<td>Limnology</td>
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<td>BIOL F474</td>
<td>Plant Ecology</td>
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<td>BIOL F476</td>
<td>Ecosystem Ecology</td>
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<td>BIOL F483</td>
<td>Stream Ecology</td>
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<tr>
<td>BIOL F485</td>
<td>Global Change Biology</td>
<td>3</td>
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<tr>
<td>BIOL F486</td>
<td>Vertebrate Paleontology</td>
<td>3</td>
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<tr>
<td>BIOL F487</td>
<td>Conceptual Issues in Evolutionary Biology</td>
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<tr>
<td>BIOL F488</td>
<td>Arctic Vegetation Ecology: Geobotany</td>
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<td>BIOL F489</td>
<td>Vegetation Description and Analysis</td>
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<td>WLF F301</td>
<td>Design of Wildlife Studies</td>
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<td>WLF F410</td>
<td>Wildlife Populations and Their Management</td>
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**List D - Organismal Biology**

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<tr>
<td>BIOL F301</td>
<td>Biology of Fishes</td>
<td>4</td>
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<tr>
<td>BIOL F311</td>
<td>Systematic Botany</td>
<td>4</td>
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<tr>
<td>BIOL F319</td>
<td>Invertebrate Zoology</td>
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<td>BIOL F406</td>
<td>Entomology</td>
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<td>Biogeography</td>
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<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>
<td>3</td>
</tr>
</tbody>
</table>
D. ESTIMATED IMPACT

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

1. The proposed concentration in Biomedical Science will have no negative impacts on budget, facilities, space, or faculty because it utilizes established courses that are already incorporated in faculty workloads. The number of students enrolled in the Cell and Molecular Biology and Physiology concentrations will likely decrease when Biomedical Science becomes available, but this will cause no administrative impact because those concentrations share "core" biology courses and many elective options. Positive impacts may result from increased student retention and recruitment to UAF. We anticipate the concentration will be popular with students. Approximately half of Biological Sciences majors report that they plan a career in human or animal health, and student polling has indicated that a health-related concentration is in high demand.

2. The option to take computer science rather than physics will have no impact on the Biology and Wildlife budget or administration, but will impact other departments (see below).

E. IMPACTS ON PROGRAMS/DEPTS:

What programs/departments will be affected by this proposed action?
Include information on the Programs/Departments contacted (e.g., email, memo)

1. The concentration in Biomedical Science is unlikely to have a strong impact other departments or programs. We expect the distribution of students enrolled in the Biological Sciences concentration options to shift when Biomedical Sciences becomes available, resulting in fewer students in the Cell and Molecular Biology and Physiology concentrations. The Chemistry department may see a small drop in enrollment in CHEM F450 if enough students shift from Cell and Molecular Biology, which requires CHEM F450, to Biomedical Sciences, which does not require the course but treats it as a disciplinary elective. The Physiology concentration, currently the largest of the concentrations, has the same chemistry requirements as Biomedical Sciences. Tom Green, chair of Chemistry and Biochemistry, was provided with a draft of the Biomedical Science curriculum in August 2016 and has not objected to the plan.

2. The proposed computer science option will impact the Physics and Computer Science Departments. Diane Wagner, on behalf of Biology and Wildlife, has communicated with Renate Wackerbauer, chair of Physics, and Jon Genetti, chair of Computer Science, and neither raised objections to the plan. Chairs were provided with rough estimates of the expected impact on their courses, summarized below, but we will conduct polling later this year to generate better estimates of impact.

We expect a minority of our majors to take advantage of the computer science option. About half of Biological Sciences majors in both the BA and BS programs report plans to pursue a career in the health sciences requiring additional education, and many of the programs they target (e.g. medical, veterinary, dentistry, physical therapy programs) require at least one, and usually two, semesters of
physic; these students are unlikely to opt for computer science over physics. However, a portion of students headed for other careers in biology will take advantage of the option. Students matriculate into the BA program at a rate of approximately 10-15 per year. BA students currently take PHYS F103, but under the proposed curriculum could opt for CS F103 or CS F201 instead. If 30% of each year's class chooses computer science, that would result in 3-5 fewer students per year in PHYS F103. About 50-60 students per year matriculate into the BS program. BS students currently take a full year of physics (either PHYS F103 & F104 or PHYS F211 & F212; the majority take F103 & F104). Under the proposed curriculum, they would be required to take at least one semester of physics but could replace the second semester with one of the two CS courses named above. If 30% of BS students choose computer science, we expect 15-18 fewer students per year in PHYS F104 and F212 (mostly F104). In total, we expect an increase of roughly 20 students per year in computer science, spread across CS F103 and F201.

Because Biological Sciences majors have a full plate of other courses during freshman and sophomore years, most do not attempt to complete the physics requirement until the junior year. Therefore CS and PHYS courses are unlikely to experience significant changes in enrollment until 2018-19 at the earliest.

F. IF MAJOR CHANGE - ASSESSMENT OF THE PROGRAM:

Description of the student learning outcomes assessment process.)

1. Biomedical Science concentration - Our major assessment tool in the biological sciences programs is the ETS Major Field Test in Biology (MFT-B), delivered to all undergraduate majors in the senior year. The test provides an estimate of student performance in the major sub-disciplines of biology (e.g. cell biology, ecology, etc.) as well as an overall performance measure. Once the Biomedical Science concentration has produced sufficient seniors to pursue an analysis, we will compare sub-disciplinary MFT-B scores across concentrations to assess depth and breadth of knowledge.

2. Computer science option - The MFT-B provides an assessment of analytical skills, which might provide the means to compare the effects of course choices on quantitative problem-solving.

The most meaningful assessment of both of these changes, and of the program as a whole, would be to track our students' subsequent education, employment, and career satisfaction post-graduation, but we lack the administrative resources to do this within the department.

JUSTIFICATION FOR ACTION REQUESTED

The purpose of the department and campus-wide curriculum committees is to scrutinize program/degree change applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. If you drop a course, is it because the material is covered elsewhere? Use as much space as needed to fully justify the proposed change and explain what has been done to ensure that the quality of the program is not compromised as a result.

1. Biomedical concentration

Many UAF students plan a career in health science and the opportunity to focus their education on this discipline, with validation on the transcript, is popular among biology majors. When our department first investigated the feasibility of adopting concentrations in 2011-12, polling revealed strong support among students for a health-related concentration (nearly 40% of 92 respondents chose that option). However, at the time the department had few biomedical faculty and few appropriate courses, and faculty voted to forego a health concentration. In 2016 we have 7 biomedical teaching faculty and more who teach courses relevant to the discipline. These faculty have developed a rich set of courses that covers a wide range of topics in biomedicine. The department is now equipped to deliver an excellent biomedical curriculum, and the faculty recently voted to formalize this concentration track. The addition of a concentration will cost nothing, because the courses are already established, and may help to recruit students to UAF.

2. Computer science option

Technical advances in genetic sequencing have created a new challenge in biology: making sense of the large, multivariate data sets that we can now produce with speed and efficiency. As a result, there is a growing need for expertise in bioinformatics. To encourage biology majors to develop competency in computation, biology faculty propose that basic computer science be integrated into the baccalaureate curriculum. Adding an additional course requirement was not an attractive option, but faculty found the idea of letting students choose between physics and computer sciences to be acceptable. While BA students may graduate without taking physics under this proposal, BS students will still have exposure to basic physics because they will be required to take at least one semester. Students targeting disciplines in which a year of physics is advisable (e.g. Biomedical Science) are instructed to complete a year of physics within the concentration requirements.
APPROVALS: SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

Signature, Chair, Program/Department of: 
Date

Signature, Chair, College/School Curriculum Council for: 
Date

Signature, Dean, College/School of: 
Date

CHAIR SIGNATURE OBTAINED FOLLOWING APPROVAL BY FACULTY SENATE COMMITTEE

Signature, Chair, UAF Faculty Senate 
Date

___Curriculum Review Committee

___Graduate Academic and Advisory Committee