

Fields of Concentration

The biology department offers students the opportunity to pursue a broad background in biology and the supporting sciences through any of three concentrations. Each student electing a field of concentration in biology must complete a four-course core sequence, four or five breadth courses in biology, three courses in chemistry and mathematics, and a capstone course. In addition, students take other courses specific to their chosen concentrations. With proper arrangements, courses taken at other institutions, including field stations, can satisfy certain course requirements.

Note: Students intending to elect a concentration in biology or to pursue a health profession should complete an appropriate 100-level biology course, Chemistry 117 or 150, and one other required course in science or mathematics during their first two semesters. Such students should consult with a member of the biology department as soon as possible.

Note: Students majoring in biology may choose either the Bachelor of Arts or the Bachelor of Science degree. Students anticipating graduate study or a medical career are urged to include Chemistry 117 or 150, 220, 230, 235; Mathematics 110 or 113, 115; and Physics 101, 102 in their undergraduate preparation. Additional courses (e.g. Chemistry 240, 245, 300 and Mathematics 175) may be appropriate for graduate work in biology. Many graduate schools and some professional schools require knowledge of a foreign language (e.g. Spanish, French, German, Japanese, or Russian) for admission to their programs. Depending on the specific goal of the student and the requirements of potential professional or graduate programs, various additional courses in the sciences and other departments may be relevant and appropriate. In some cases course substitutions may be permitted, with approval of the biology advisor and chair of the biology department.

Biochemistry Major

(13.5 units)

See biochemistry in the catalog.

Ecology, Evolution, and Behavioral Biology

(13.5 units)

The ecology, evolution, and behavioral biology major provides a broad background in biology with a focus on how organisms evolve, behave, and interact.

1. Nine and one-half departmental units:
 - a. One organismal biology course chosen from Biology 110, 111, 121, 141, 151, or 172.
 - b. Biology 217, 247, 289, and 385 or 387.
 - c. Three ecology, evolution, and behavioral biology units (at least 1 unit of biology at the 300-level) chosen from Biology 206, 210, 215, 274, 337, 343, 372, 374, or 385*, or Anthropology 260 or 324.
 - d. Two molecular, cellular, and integrative biology units chosen from Biology 237, 256, 260, 273, 300, 340, 345, 357, 373, or 385*.
2. Supporting courses (4 units):
 - a. Two chemistry courses chosen from Chemistry 117 or 150, and 220, 230, or 235.
 - b. One mathematics course chosen from Mathematics 104, 110, or 113.
 - c. One geology or physics course chosen from Geology 100, 105, 110, or Physics 101.
3. Writing/communication requirement: The biology department has designed its writing experiences in a developmental sequence to enhance each biology major's ability to write effectively. We use writing assignments throughout our curriculum to facilitate and assess student learning. Biology majors take at least 3 writing-designated units, which are otherwise required for the major, to satisfy a portion of the Beloit College writing requirement.
4. Capstone: Two capstone course options are available for biology majors: Biology 385, a topically focused course in which students read the current literature on a topic, discuss and debate it, and write a culminating, peer-reviewed manuscript, or Biology 387, a course in which the student writes a critical review or primary research manuscript. Students in Biology 387 submit their manuscripts for publication in *The Beloit Biologist*, the department's in-house journal, which is distributed at the end of the

spring semester. Publication of a paper in *The Beloit Biologist* is required for graduation with departmental honors in biology.

**Courses that may be used to satisfy this requirement with appropriate course content and advisor approval.*

Note: No course may satisfy two requirements.

Environmental Biology

(13.5 units)

The environmental biology major provides a broad background in biology with a focus on how organisms interact with their biological and geological environments.

1. Eight and one-half departmental units:

- a. One organismal biology course chosen from Biology 110, 111, 121, 141, 151, or 172.
- b. Biology 217, 247, 289, and 385 or 387.
- c. Two ecology, evolution, and behavioral biology courses (at least 1 unit of biology at the 300-level) chosen from Biology 206, 210, 215, 274, 337, 343, 372, 374, or 385*.
- d. Two molecular, cellular, and integrative biology units chosen from Biology 237, 256, 260, 273, 300, 340, 345, 357, 373, or 385*.

2. Supporting courses (5 units):

- a. Two chemistry courses chosen from Chemistry 117 or 150, and 220, 230, or 235.
- b. One mathematics course chosen from Mathematics 104, 110, or 113.
- c. Two units in geology: one chosen from Geology 100 or 110; and 1 chosen from Geology 235, 240, or 251*.

3. Writing/communication and capstone requirements: *See ecology, evolution, and behavioral biology.*

**Courses that may be used to satisfy this requirement with appropriate course content and advisor approval.*

Note: No course may satisfy two requirements.

Molecular, Cellular, and Integrative Biology

(13.5 units)

The molecular, cellular, and integrative biology major provides a broad background in biology, with a focus on the molecular, cellular, and integrative mechanisms by which organisms regulate life processes.

1. Eight and one-half departmental units:

- a. One organismal biology unit chosen from Biology 110, 111, 121, 141, 151, or 172.
- b. Biology 217, 247, 289, and 385 or 387.
- c. One ecology, evolution, and behavioral biology unit chosen from Biology 206, 210, 215, 274, 337, 343, 372, 374, or 385*.
- d. Three molecular, cellular, and integrative biology units, at least 1 unit of biology at the 300 level, chosen from Biology 237, 256, 260, 273, 300, 340, 345, 357, 373, or 385*.

2. Supporting courses (5 units):

- a. Two chemistry units chosen from Chemistry 117 or 150, 230, or 235.
- b. Mathematics 110 or 113.
- c. Physics 101.
- d. One unit chosen from Chemistry 220, 230, 235, 240, 245, 260, 300, Mathematics 115, Physics 102 or 210.

3. Writing/communication and capstone requirements: *See ecology, evolution, and behavioral biology.*

**Courses that may be used to satisfy this requirement with appropriate course content and advisor approval.*

Note: No course may satisfy two requirements.

Note: Students anticipating careers in the health professions are strongly encouraged to complete 2 units in literature and composition, Sociology 275, and Philosophy 221.

The following minor is not open to majors in biology, biological chemistry, biochemistry, or applied chemistry (with biology as a complementary discipline).

Biology Minor

(5.5 units)

The biology minor focuses on the mechanisms by which organisms regulate life processes, grow and develop, reproduce, and behave. The minor requires 4.5 units representing 100-, 200-, or 300-levels in the biology curriculum, as well as 1 supporting unit in another science or mathematics.

- 1.** Four and one-half departmental units:
 - a.** One organismal biology unit chosen from Biology 110, 111, 121, 141, 151, or 172.
 - b.** Three and one-half biology units chosen from Biology 201, 206, 210, 215, 217, 237, 247, 256, 260, 273, 274, 289, 300, 337, 340, 343, 345, 357, 372, 373, 374, or 385.
- 2.** Supporting course (1 unit)
 - a.** One unit chosen from chemistry, geology, physics, mathematics, or computer science.

Note: *No more than 2 units taken to satisfy requirements for a major or another minor may count toward the biology minor.*

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