The Biology Major changed in Fall 2016. For previous versions of this major, visit the Archives (https://hccatalog.holycross.edu/archives).

Department Advanced Placement Policy

Students with AP credit in Biology do not receive credit toward the minimum number of course required by the major or advanced standing in the Biology curriculum.

Requirements

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<th>Code</th>
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<tr>
<td>BIOL 161</td>
<td>Introduction to Cell &amp; Molecular Biology</td>
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<tr>
<td>BIOL 162</td>
<td>Introduction to Mechanisms of Multicellular Life</td>
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<tr>
<td>BIOL 163</td>
<td>Introduction to Biol Diversity and Ecology</td>
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Select five of the following, with at least one course from three of the four Course Distribution Areas:

1. Cellular and Molecular Biology:
   - BIOL 223 Microbiology
   - BIOL 241 Virology
   - BIOL 266 Cell Biology
   - BIOL 267 Neurobiology
   - BIOL 301 Biochemistry 1
   - BIOL 302 Biochemistry 2
   - BIOL 392 Molecular Immunology

2. Mechanistic Organismal Biology:
   - BIOL 213 Comparative Vertebrate Morphology
   - BIOL 230 Developmental Biology
   - BIOL 361 Toxicology
   - BIOL 390 Physiology

3. Organismal Diversity:
   - BIOL 220 Entomology
   - BIOL 250 Field Botany
   - BIOL 255 Vertebrate History

4. Ecology and Evolution:
   - BIOL 233 Freshwater Ecology
   - BIOL 235 Marine Biology
   - BIOL 280 Ecology
   - BIOL 283 Evolution
   - BIOL 287 Ethology & Behavioral Ecology
   - BIOL 331 Ecosystem Ecology
   - BIOL 381 Conservation Biology

5. CHEM 181 Atoms & Molecules (with lab)

6. CHEM 221 Organic Chemistry 1 (with labs)

7. or MATH 135 Calculus 1 (or equivalent)

8. or STAT 220 Statistics

Select two cognate courses chosen from the approved list maintained by the department:

- CHEM 222 Organic Chemistry 2
- CHEM 231 Equilibrium & Reactivity
- CSCI 131 Techniques of Programming
- CSCI 132 Data Structures
- CSCI 135 Discrete Programming
- GEOS 150 Introduction to Geology
- GEOS 210 Geomorphology
- GEOS 270 Watershed Hydrology
- GEOS 310 Paleoclimatology
- MATH 136 Calculus 2
- MATH 241 Multivariable Calculus
- PHYS 115 Introductory Physics 1: Mechanics, Fluids and Waves
- PHYS 116 Introductory Physics 2: Electromagnetism, Optics and Modern Physics
- PSYC 221 Physiology and Behavior

Of the five upper division biology courses, at least three must have accompanying labs.

AP or IB may not be used to fulfill this requirement. Students may elect to substitute an upper division biology course (beyond the required five) for one of these cognates.

To be admitted to the biology major, students must have completed at least one introductory biology course and a lab course in chemistry, geology or physics, all at Holy Cross. The applicant must have earned at least a C average in biology and also in the other science courses (both averages are considered separately). Admission is competitive; it depends on classroom performance, an essay submitted with the admission process and on available space. Because the biology major, like all science majors, is structured, it is important that prospective majors begin their science courses as early as possible and certainly no later than their third semester.

All biology majors must earn an average grade of C or better in introductory biology courses to continue in the major. Additional courses, up to a maximum of 14, may be taken at Holy Cross or, with the chair’s permission, in other programs, such as Study Abroad, Study Away, the Higher Education Consortium of Central Massachusetts or summer school.

In addition to formal courses, the Department offers qualified students an opportunity to conduct research (BIOL 401 Undergraduate Research) in association with faculty members in their research laboratories. Opportunities also exist for students to pursue individual interests in faculty-directed readings courses based on biological literature (BIOL 405 Directed Readings). Students conducting research for a thesis in the College Honors Program must elect BIOL 407 Honors Research, BIOL 408 Honors Research. Students may receive up to one semester of lab credit towards the major by taking either BIOL 401 Undergraduate Research or BIOL 407 Honors Research. Additional semesters of research count for credit towards graduation from the College but do not count as biology credits. Research credits are subject to the rule of no more than 14 courses in any department.