BIOLOGY UF ONLINE

The online biology major prepares undergraduates for careers in the biological sciences, advanced study in graduate schools, productive citizenship, and leadership and lifelong learning. The program is comprehensive and flexible, emphasizing the diverse forms, processes, and systems of life. Students in the program complete required and elective courses that promote critical thinking through the investigation and understanding of principles and unifying themes that govern living systems. The biology major offers a broader approach to biology than is available through a major in botany, zoology, or other specialized biological sciences majors.

About this Program

- College: Liberal Arts and Sciences
- Degree: Bachelor of Arts
- Credits for Degree: 120
- Additional Information
- Contact: 1.855.99GATOR
- Related Biology Programs

To graduate with this major, students must complete all university, college, and major requirements.

The biology major develops fundamental knowledge of animals, plants, and microorganisms. The Bachelor of Arts in biology is a flexible degree that is best suited for students interested in a career in education, the allied health professions, and interdisciplinary fields such as environmental or biotechnology law, science journalism, and bioscience management. This degree is not recommended for students seeking admission into professional schools such as medicine, dentistry, or veterinary medicine. Please contact an academic advisor for more information.

Coursework for the Major

All coursework for the major must be completed with minimum grades of C.

### Required Foundation Coursework

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC 2010 &amp; 2010L</td>
<td>Integrated Principles of Biology 1 and Integrated Principles of Biology Laboratory 1</td>
<td>4</td>
</tr>
<tr>
<td>BSC 2011 &amp; 2011L</td>
<td>Integrated Principles of Biology 2 and Integrated Principles of Biology Laboratory 2</td>
<td>4</td>
</tr>
</tbody>
</table>

**Chemistry**

Select one of the following options: 6-8

Option A:

- CHM 1030 & CHM 1031 General Chemistry 1 and General Chemistry 1 Laboratory

Option B:

- CHM 2045 & 2045L General Chemistry 2 and General Chemistry 2 Laboratory

**Mathematics**

Select one of the following: 4-5

- MAC 1147 Precalculus Algebra and Trigonometry
- MAC 1114 Trigonometry
- & MAC 1140 and Precalculus Algebra

A higher math course

**Physics**

Select one of the following options: 8-10

Option A:

- PHY 2004 Applied Physics 1 & PHY 2004L and Laboratory for Applied Physics 1

Option B:

- PHY 2048 Physics with Calculus 1 & PHY 2048L and Laboratory for Physics with Calculus 1
- PHY 2049 Physics with Calculus 2 & PHY 2049L and Laboratory for Physics with Calculus 2

Option C:

- PHY 2053 Physics 1 & PHY 2053L and Laboratory for Physics 1
- PHY 2054 Physics 2 & PHY 2054L and Laboratory for Physics 2

**Statistics**

- STA 2023 Introduction to Statistics 1 3

**Required Core Coursework**

Select at least one biology distribution course from three of the following five groups: 9-13

**Molecular Biology, Cellular Biology and Genetics**

- AGR 3303 Genetics
- BCH 3023 Elementary Organic and Biological Chemistry 3
- PCB 3023 Essential Cell Biology
- PCB 3063 Genetics
- PCB 3134 Eukaryotic Cell Structure and Function
- PCB 4522 Molecular Genetics
- PCB 4553 Population Genetics

**Organismal Biology**

- BOT 3503 & 3503L Physiology and Molecular Biology of Plants and Physiology and Molecular Biology of Plants Laboratory 3
- BSC 3096 Human Physiology
- MCB 2000 Microbiology & MCB 2000L and Microbiology Laboratory
- MCB 3020 & 3020L Basic Biology of Microorganisms and Laboratory for Basic Biology of Microorganisms 3
- PCB 3134 Eukaryotic Cell Structure and Function 3
- PCB 3713C Cellular and Systems Physiology 3
- PCB 4712 Comparative Biomechanics 3
- PCB 4723C Physiology and Molecular Biology of Animals 3
- ZOO 3603C Evolutionary Developmental Biology
- ZOO 3713C Functional Vertebrate Anatomy

**Ecology**

- BSC 3307C Climate Change Biology
- PCB 3601C Plant Ecology
- PCB 4043C General Ecology

**Evolution and Diversity**

- BOT 2011C Plant Diversity
- BOT 2710C Practical Plant Taxonomy
- BOT 3151C Local Flora of North Florida
- PCB 4674 Evolution 3
- ZOO 3513C Animal Behavior
Biology and Society

AGG 3501  Environment, Food and Society
AGR 2332
ALS 4162/6935  Consequences of Biological Infections
BOT 2800C  Plants in Human Affairs
PLP 2000  Plants, Plagues and People
PLP 2060  Fungus among Us: Mushrooms, Molds and Civilization
PSB 3002  Physiological Psychology
VEC 2100  World Herbs and Vegetables

B.A. Electives
Select 15 credits minimum of additional biology distribution courses or approved biological science courses. At least nine credits of B.A. Electives must be taken at UF.

Capstone

BSC 4936  Critical Analysis of Biological Research  2

Total Credits

55-64

1 This major requires a minimum of 30 credits in core courses. At least 18 of the 30 credits of the required core coursework must be taken at UF. Any additional credits remaining after completion of required coursework must be met by taking courses from the approved additional life sciences electives. Any additional credits remaining after completion of the required core coursework must be met by taking courses from the approved B.A. electives in the biological sciences.

2 At least two Biology Distribution Courses must be taken at UF. Only one 2000-level course may be applied to the Biology Distribution Course requirement. Students must complete at least one course from three of the five following groups. Please note: classes vary from 3-5 credits in each category.

3 Course has specific prerequisites; students should consult the course description when planning their programs to ensure they may select this course.

Related Biology Programs

• Bachelor of Science in Biology, CALS
• Bachelor of Science or Bachelor of Arts in Biology, CLAS

Critical Tracking

Critical Tracking records each student’s progress in courses that are required for entry to each major. Please note the critical-tracking requirements below on a per-semester basis.

For degree requirements outside of the major, refer to CLAS Degree Requirements: Structure of a CLAS Degree.

Equivalent critical-tracking courses as determined by the State of Florida Common Course Prerequisites may be used for transfer students.

Semester 1

• Complete one of the following: BSC 2010 and BSC 2010L; or CHM 1025 or CHM 1030 or CHM 2045 and CHM 2045L; or MAC 1147 or equivalent or higher math course
• 2.0 UF GPA required

Semester 2

• Complete CHM 1030 or CHM 2045 and CHM 2045L and one of the following: BSC 2010 and BSC 2010L or MAC 1147 or equivalent or higher MAC course
• 2.0 UF GPA required

Semester 3

• Complete BSC 2010 and BSC 2010L and MAC 1147 or equivalent or higher MAC course
• 2.0 UF GPA required

Semester 4

• Complete CHM 1031 or CHM 2046 and CHM 2046L; BSC 2011 and BSC 2011L; and MAC 1147 or equivalent or higher MAC course with a 2.5 GPA required for all critical-tracking courses
• 2.0 UF GPA required

Semester 5

• Complete at least one biology distribution course
• 2.5 GPA required for all critical-tracking courses
• 2.0 UF GPA required

Model Semester Plan

Students are expected to complete the writing requirement while in the process of taking the courses below. Students are also expected to complete the general education international (GE-N) and diversity (GE-D) requirements concurrently with another general education requirement (typically, GE-C, H, or S).

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHM 1030</td>
<td>Basic Chemistry Concepts and Applications 1 (Critical Tracking)</td>
<td>3-4</td>
</tr>
<tr>
<td>CHM 2045 &amp; 2045L</td>
<td>General Chemistry 1 and General Chemistry 1 Laboratory (Critical Tracking; Gen Ed Physical Sciences)</td>
<td></td>
</tr>
<tr>
<td>IUF 1000</td>
<td>What is the Good Life (Gen Ed Humanities)</td>
<td>3</td>
</tr>
<tr>
<td>MAC 1147</td>
<td>Precalculus Algebra and Trigonometry (Critical Tracking; State Core Gen Ed Mathematics)</td>
<td>4</td>
</tr>
<tr>
<td>State Core Gen Ed Composition</td>
<td></td>
<td>3</td>
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</table>

Semester Two

Select one:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CHM 1031</td>
<td>Basic Chemistry Concepts and Applications 2 (Critical Tracking)</td>
<td>3-4</td>
</tr>
<tr>
<td>CHM 2046 &amp; 2046L</td>
<td>General Chemistry 2 and General Chemistry 2 Laboratory (Critical Tracking)</td>
<td></td>
</tr>
<tr>
<td>STA 2023</td>
<td>Introduction to Statistics 1 (Gen Ed Mathematics)</td>
<td>3</td>
</tr>
<tr>
<td>Gen Ed Composition (Writing Requirement)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>State Core Gen Ed Social and Behavioral Sciences</td>
<td></td>
<td>3</td>
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<tr>
<td>Electives</td>
<td></td>
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</tbody>
</table>

Credits

16-17
Semester Three

BSC 2010 & 2010L Integrated Principles of Biology 1 and Integrated Principles of Biology Laboratory 1 (Critical Tracking: Gen Ed Biological Sciences) 4

Gen Ed Social and Behavioral Sciences 3

Foreign language 5

Elective 3

Semester Four

BSC 2011 & 2011L Integrated Principles of Biology 2 and Integrated Principles of Biology Laboratory 2 (Critical Tracking: Gen Ed Biological Sciences) 4

State Core Gen Ed Humanities 3

Gen Ed Social and Behavioral Sciences 3

Foreign language 5

Elective 3

Semester Five

Select one: PHY 2004 & 2004L Applied Physics 1 and Laboratory for Applied Physics 1 4-5

PHY 2053 & 2053L Physics 1 and Laboratory for Physics 1 4

Biological distribution courses (Critical Tracking) 6

Elective (3000 level or above, not in major) 3

Elective 3

Semester Six


PHY 2054 & 2054L Physics 2 and Laboratory for Physics 2 4

Gen Ed Humanities 3

Biological distribution course 3

Elective (3000 level or above; not in major) 3

Elective 3

Semester Seven

Biology electives 9

Electives (3000 level or above, not in major) 6

Electives 15

Semester Eight

BSC 4936 Critical Analysis of Biological Research 2

Biology electives 6

Electives (3000 level or above, not in major) 6

Total Credits 120

Approved Electives

See course descriptions for prerequisites and requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALS 4162</td>
<td>Consequences of Biological Invasions (^1)</td>
<td>3</td>
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<tr>
<td>ANS 3006</td>
<td>Introduction to Animal Science</td>
<td>3</td>
</tr>
<tr>
<td>ANT 3514C</td>
<td>Introduction to Biological Anthropology</td>
<td>4</td>
</tr>
<tr>
<td>ANT 3515</td>
<td>Human Evolutionary Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>ANT 3520</td>
<td>Skeleton Keys: Forensic Identification</td>
<td>3</td>
</tr>
<tr>
<td>APK 2100C</td>
<td>Applied Human Anatomy with Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>BOT 2011C</td>
<td>Plant Diversity</td>
<td>4</td>
</tr>
<tr>
<td>BSC 3096</td>
<td>Human Physiology (^1)</td>
<td>3</td>
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<tr>
<td>ENY 3005</td>
<td>Principles of Entomology</td>
<td>3</td>
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<tr>
<td>&amp; 3005L</td>
<td>and Principles of Entomology Laboratory</td>
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<tr>
<td>ENY 3007C</td>
<td>Life Science</td>
<td>3</td>
</tr>
<tr>
<td>ENY 4161</td>
<td>Insect Classification</td>
<td>3</td>
</tr>
<tr>
<td>ENY 4210</td>
<td>Insects and Wildlife</td>
<td>3</td>
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<tr>
<td>ENY 4660</td>
<td>Medical and Veterinary Entomology</td>
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<tr>
<td>&amp; 4660L</td>
<td>and Medical and Veterinary Entomology Laboratory</td>
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<tr>
<td>GLY 3603C</td>
<td>Paleontology</td>
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<tr>
<td>NEM 3002</td>
<td>Principles of Nematology</td>
<td>3</td>
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<tr>
<td>PCB 3023</td>
<td>Essential Cell Biology</td>
<td>3</td>
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<tr>
<td>PCB 3063</td>
<td>Genetics (^1)</td>
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<tr>
<td>PCB 4043C</td>
<td>General Ecology (^1)</td>
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<td>PCB 4522</td>
<td>Molecular Genetics (^1)</td>
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<tr>
<td>PCB 4674</td>
<td>Evolution (^1)</td>
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<tr>
<td>PCB 4723C</td>
<td>Physiology and Molecular Biology of Animals (^1)</td>
<td>5</td>
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<tr>
<td>PSB 3002</td>
<td>Physiological Psychology (^1)</td>
<td>3</td>
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<tr>
<td>ZOO 3603C</td>
<td>Evolutionary Developmental Biology (^1)</td>
<td>4</td>
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<tr>
<td>ZOO 3713C</td>
<td>Functional Vertebrate Anatomy (^1)</td>
<td>4</td>
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<tr>
<td>ZOO 4232</td>
<td>Human Parasitology (^1)</td>
<td>3</td>
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</tbody>
</table>

\(^1\) Cannot be counted as both an elective and a Biology Distribution Course.

Academic Learning Compact

Biology is the study of the many diverse forms, processes and systems of life. These studies range across all levels of the biological hierarchy, from the simplest to the most complex life forms, across all environments on the earth and across recent and evolutionary time that interconnects ancestors to their descendants.

To understand this vast diversity, the field of biology correspondingly relies on integrative and comparative approaches for the resolution of the general processes, principles and unifying themes that govern living systems. Biology is therefore very interdisciplinary and biologists rely on knowledge from the physical sciences and mathematics, as well as from across the disciplines and subdisciplines of biology for advances and breakthroughs.

The biology major is administered jointly by the College of Agricultural and Life Sciences and the College of Liberal Arts and Sciences.

Before Graduating Students Must

- Achieve a passing score for all content subsections of the Major Field Test for Biology. Content subcore areas are molecular biology and genetics, organismal biology, evolution, ecology and population biology.
- Achieve a passing score on the analytical skills assessment indicator of the Major Field Test for Biology.
- Achieve a passing score on the bioethics module quiz in BSC 4936. The content of the module and quiz are reviewed and approved by a faculty committee.
- Achieve a passing score on the scientific literacy paper assignment given in BSC 4936. This paper is graded using a faculty-developed rubric.
- Complete requirements for the baccalaureate degree, as determined by faculty.
Students in the Major will Learn to
Student Learning Outcomes (SLOs)

Content
1. Identify, describe and explain the basic terminology, concepts, methodologies and theories used within the biological sciences.

Critical Thinking
2. Analyze biological information and develop reasoned solutions to problems using the processes and applications of scientific inquiry.
3. Discriminate ethical behavior from unethical behavior in scientific research.

Communication
4. Communicate knowledge, ideas and reasoning clearly and effectively in written or oral forms appropriate to the biological sciences.

Curriculum Map
I = Introduced; R = Reinforced; A = Assessed

<table>
<thead>
<tr>
<th>Courses</th>
<th>SLO 1</th>
<th>SLO 2</th>
<th>SLO 3</th>
<th>SLO 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR 3303 or PCB 3063 or PCB 4522</td>
<td></td>
<td>R</td>
<td></td>
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</tr>
<tr>
<td>ANS 3319C or R BOT 3503 or HOS 4304 or PCB 3713C or PCB 4723C</td>
<td>R</td>
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<tr>
<td>BSC 1920</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
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<tr>
<td>BSC 2010</td>
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<td>I</td>
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<tr>
<td>BSC 2011</td>
<td>I</td>
<td>I</td>
<td>I</td>
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<td>BSC 4936</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>MCB 3020 and 3020L, or PCB 3134 or PCB 4674</td>
<td>R</td>
<td>R</td>
<td></td>
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</tr>
</tbody>
</table>

Assessment Types
- Major field test for biology
- Bioethics module
- Scientific literacy paper