

BACHELOR OF SCIENCE IN BIOLOGY - GENERAL

The undergraduate curriculum for the Bachelor of Science in Biology degree is designed to prepare students for employment in academia, government, or industry; for graduate studies in the biological sciences or science teaching; or for admission to medical, dental, or veterinary schools. The theme of the curriculum is systems biology, employing a systems approach in solving biological problems. All students participate in research through undergraduate research courses. The School also offers the International Plan, Business Option, a minor in biology, and several certificates.

Biology Undergraduate Programs (<http://www.biology.gatech.edu/undergraduate-program>)

Effective Spring 2020: The School of Biological Sciences has transitioned all undergraduate Biology (BIOL) and Applied Physiology (APPH) courses to Biological Sciences (BIOS) to reflect the merger of the two Schools. Courses under the BIOL- and APPH- may still apply to these requirements. Students should consult with advisors to determine which requirements have been met.

| Code | Title | Credit Hours |
|---|--|--------------|
| Wellness | | |
| APPH 1040 | Scientific Foundations of Health or APPH 10 The Science of Physical Activity and Health | 2 |
| Core A - Essential Skills | | |
| ENGL 1101 | English Composition I | 3 |
| ENGL 1102 | English Composition II | 3 |
| MATH 1552 | Integral Calculus or MATH 15 Calculus for Life Sciences | 4 |
| Core B - Institutional Options | | |
| Select one of the following: | | 3 |
| CS 1301 | Introduction to Computing | |
| CS 1315 | Introduction to Media Computation | |
| CS 1371 | Computing for Engineers | |
| Core C - Humanities | | |
| Any HUM (http://www.catalog.gatech.edu/academics/undergraduate/core-curriculum/core-area-c) | | 6 |
| Core D - Science, Math, & Technology | | |
| PHYS 2211 | Introductory Physics I | 4 |
| PHYS 2212 | Introductory Physics II | 4 |
| MATH 1551 | Differential Calculus | 2 |
| MATH 1553 | Introduction to Linear Algebra | 2 |
| Core E - Social Sciences | | |
| Select one of the following: | | 3 |
| HIST 2111 | The United States to 1877 | |
| HIST 2112 | The United States since 1877 | |
| INTA 1200 | American Government in Comparative Perspective | |
| POL 1101 | Government of the United States | |
| PUBP 3000 | American Constitutional Issues | |

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|--|---|-----|
| Any SS (http://www.catalog.gatech.edu/academics/undergraduate/core-curriculum/core-area-e) | | 9 |
| Core F - Courses Related to Major | | |
| BIOS 1207 & 1207L | Biological Principles for Majors and Biological Principles Project Laboratory | 4 |
| CHEM 1211K | Chemical Principles I | 4 |
| CHEM 1212K | Chemical Principles II | 4 |
| CHEM 2311 | Organic Chemistry I | 3 |
| CHEM 2312 | Organic Chemistry II or CHEM 23 Organic and Bioorganic Chemistry | 3 |
| Major Requirements | | |
| BIOS 1208 & 1208L | Organismal Biology for Majors and Organismal Biology Project Laboratory | 4 |
| BIOS 2300 | Ecology or BIOS 231 Problems in Ecology | 3 |
| BIOS 3450 | Cell and Molecular Biology | 3 |
| BIOS 2600 | Genetics or BIOS 261 Integrative Genetics | 3 |
| Biology Lab ¹ | | 2 |
| BIOS 3600 | Evolutionary Biology | 3 |
| BIOS 4460 | Behavioral Biology | 1 |
| Select one of the following: | | 3 |
| BIOS 4590 | Independent Research Project | |
| BIOS 4690 | Independent Research Project | |
| BIOS 4691 | Research Thesis | |
| Non-Biology Courses | | |
| CHEM 2380 | Synthesis Laboratory I | 2 |
| Select one of the following: | | 3 |
| BIOS 2400 | Math Models in Biology | |
| BIOS 4150 | Genomics and Applied Bioinformatics | |
| BIOS 4401 | Experimental Design and Statistical Methods in Biological Sciences | |
| Biology Electives | | |
| Biology Electives 3000-level or higher ² | | 21 |
| Free Electives | | |
| Free Electives | | 11 |
| Total Credit Hours | | 122 |

¹ Students must complete two of following three lab options: BIOS 2301, BIOS 2311, BIOS 2601, BIOS 2611, BIOS 3451

² Students are required to complete 21 credit hours of Biology electives defined as follows:

- 12 "depth" credit hours must be courses with a "BIOS" prefix, excluding BIOS 4694-BIOS 4699. Biology Elective courses that are cross-listed with other departments are included in these 12 depth credit hours.
- The remaining 9 "breadth" credit hours can be selected from: other BIOL 3000-level and higher courses, BIOS 4695, BIOS 4697, BIOS 4699, VIP courses with a Biological Sciences instructor, and the list of approved courses offered in the other departments (MATH 2000-level and higher courses and APPH, BMED, CHEM, EAS, PHYS, PSYC 3000-level and higher courses; EXCEPT for the following: BMED 4699, BMED 4900-BMED 4903, CHEM 4601, CHEM 4699, CHEM 4901-CHEM 4903, EAS 4651, EAS 4699, EAS 4900, MATH 2699, MATH 4080, MATH 4090, MATH 4699, MATH 4999, PHYS 4601, PHYS 4602, PHYS 4699, PSYC 4600, PSYC 4601, PSYC 4699, PSYC 4900-PSYC 4910.)

³ Minimum grade of C required.

International Plan

Georgia Tech's International Plan, through the Office of International Education (www.oie.gatech.edu/ (<http://www.oie.gatech.edu/>)), involves two study abroad experiences and coursework in global studies. The plan offers a challenging and coherent academic program for students to develop global competence within the context of a Biology degree. The requirements include: language proficiency equivalent to two years of college coursework (twelve hrs), one course in international relations (three hrs), global economy (three hrs), focused study of a region (three hrs), an integrative course synthesizing the international experience (three hrs), and two semesters (minimum of 26 weeks) in residence abroad. Georgia Tech biology courses are taught in Australia/New Zealand (www.oie.gatech.edu/sa/programs/ (<http://www.oie.gatech.edu/sa/programs/>)) and Spain (www.oie.gatech.edu/sa/programs/ (<http://www.oie.gatech.edu/sa/programs/>)) as part of the Study Abroad program. In addition, many biology courses are available through Georgia Tech partner universities abroad (www.oie.gatech.edu/sa/programs/ (<http://www.oie.gatech.edu/sa/programs/>)). Some of these universities teach biology courses in English, such as Hong Kong University, Tokyo Technological University, University of Victoria (New Zealand), National University of Singapore, University of Strathclyde (Scotland), and Bilkent University (Turkey). Successful completion of this plan earns students an international designation on their Georgia Tech degree.

Research Option

This Research Option enables students to complete nine credit hours of supervised research with a Biology faculty member over multiple semesters. With faculty guidance, students write a brief proposal, perform independent, original research, and write a thesis about their work. The thesis is evaluated by two Biology Faculty members. The first six credit hours of the research option are taken as BIOL 2699/BIOL 4699 (research for credit) or BIOL 2698/BIOL 4698 (research for pay). Students then take either BIOL 4690 or BIOL 4910 in their final semester and two, one credit-hour writing courses, LMC 4701 and LMC 4702. These writing courses can be counted as Biology electives for Research Option students. Note that LMC 4701 should be taken in the semester prior to enrolling in BIOL 4910/BIOL 4690. The student's research is presented in BIOL 4460.

| Code | Title | Credit Hours |
|---|--|--------------|
| Select one of the following research options: | | 6 |
| BIOL 2699/4699 | Undergraduate Research | |
| BIOL 2698/4698 | Undergraduate Research Assistantship | |
| In the final semester of study, select the following courses: | | |
| BIOL 4690 | Independent Research Project | 3 |
| | or BIOL 4910 Honors Undergraduate Research Thesis | |
| LMC 4701 & LMC 4702 | Undergraduate Research Proposal Writing and Undergraduate Research Thesis Writing ¹ | 2 |
| Total Credit Hours | | 11 |

¹ These writing courses can be counted as Biology electives for Research Option students. Note that LMC 4701 should be taken in the semester prior to enrolling in BIOL 4910/BIOL 4690.

Successful completion of this option earns students a "Research Option in Biology" designation on their Georgia Tech transcripts.

BS/MS Programs

The School of Biological Sciences offers two 5-year BS/MS programs:

BS in Biology/MS in Biology (<http://biosci.gatech.edu/undergrad/5-year-bsms-program-bsbiomsbio-0>)

BS in Biology/MS in Bioinformatics (<http://biosci.gatech.edu/undergrad/5-year-bsms-program-bsbiolmsbinf-0>)