

B. S. BIOLOGICAL SCIENCES

College of the Environment and Life Sciences

Department:	Biological Sciences	
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Website:	http://www.uri.edu/cels/bio/index.html	
Credits:	120	

The Major. *The B.S. Biological Sciences* program reflects the Department's belief that professional biologists, regardless of their ultimate focus in biology, benefit from sound undergraduate training in basic subdisciplines of biology and the supporting sciences of mathematics, chemistry, and physics. After a year of Introductory Biology (which may be satisfied by AP credit), students choose four core biology courses, and take Biology elective courses as soon as prerequisites are met. The program is highly flexible, allowing students to specialize in plant or animal biology, and in one or several subdisciplines, such as ecology, physiology, evolution, behavior, cell or developmental biology.

Career Options. The B.S. Biological Sciences degree is an ideal major for students contemplating admission to a professional school (medical, dental, veterinary) or to graduate school for further study in the biological sciences and related fields. Students are also well-prepared to embark on a wide range of biology-related careers in education, government, industry, or the private sector.

The Faculty in the biology program are actively involved in many areas of research, including the evolution of animal body plans, algal genomes, and plant cell walls, the role of mycorrhizal fungi in plant growth, the impact and ecology of predation in terrestrial and marine environments, functional morphology and sensory physiology of fishes, physiological adaptations of squids to extreme marine environments, and neurobiology of invertebrates.

Experiential Learning. Students are encouraged to participate in research or independent study projects with faculty in Biological Sciences and other departments in the College of the Environment and Life Sciences for academic credit (491, 492), participate in internships during the academic year or the summer (e.g., via the Coastal Fellows and EPSCoR Fellows Programs, or the Graduate School of Oceanography's REU SURFO Program), or study at other universities in national and international exchange programs arranged through URI's Office of International Education.

Program requirements. Majors must complete 35 credits in biological sciences including 2 semesters of introductory biology (BIO 101, 102) and one course from each of 4 core areas chosen from the following 6: Cell and Development, BIO 302, 311, 341, 453; Ecology and Evolution, BIO 262, 272; Genetics, BIO 352; Molecular Biology, BIO 437; Organismal Diversity, BIO 304, 321, 323, 354, 365, 366; and Physiology, BIO 201, 242/244, 346. The remaining credits may be chosen from any of the BIO major electives listed for the B.S. Altogether, at least 3 credits must be chosen from each of the plant biology and animal biology elective lists and at least 3 BIO laboratory courses must be completed (excluding BIO 101, 102 and independent study/research). Up to 3 credits of independent study/research (491, 492, 493, 494, 495) may be used as major electives from one of the following programs: AFS, AVS, BCH, BIO, MIC, NRS, PLS, OCG. A minimum GPA of 2.0 is required in BIO courses used to satisfy the major. Students must complete 2 semesters of mathematics (MTH 131, 132 or MTH 141, 142) or 1 semester each of calculus and statistics (MTH 131 or 141 and STA 308), 2 semesters of general chemistry with lab (CHM 101, 102, 112, 114), 2 semesters of organic chemistry with lab (CHM 227, 228, 226) or 1 semester each of organic chemistry with lab and biochemistry (CHM 124, 126, BCH 311), 2 semesters of physics with lab (PHY 111, 112, 185, 186), and 1 semester of microbiology (MIC 201 or 211). General Education courses in English Communication, Fine Arts and Literature, Foreign Language and Culture, Letters, and Social Science follow the requirements of the College of the Environment and Life Sciences.

BACHELOR OF SCIENCE BIOLOGICAL SCIENCES

B.S. in Biological Sciences – Program Requirements	
Core Requirements (8 credits)	<i>Required (8 credits):</i> Principles of Biology I and II (BIO 101, BIO 102)
Additional Core Courses and Major Electives (27 credits) (must include 1 plant course 1 animal course 3 laboratory courses)	<i>Choose one course from 4 of the following 6 core areas:</i> Cell and Development: BIO 302, 311, 341, 453 Ecology and Evolution: BIO 262, 272 Genetics: BIO 352 Molecular Biology: BIO 437 Organismal Diversity: BIO 304, 321, 323, 354, 365 (465), 366 Physiology: BIO 201, 242/244, 346
	<i>Plant Courses (at least 3 credits):</i> BIO 311, 321, 323, 332, 346, 348, 365 (465), 418
	<i>Animal Courses (at least 3 credits):</i> BIO 121, 201, 242, 244, 302, 304, 327, 329, 334, 335, 354, 355, 366, 385, 386, 412, 441, 445, 467*, 469*, 475* <small>*taught at Bermuda Institute of Ocean Sciences</small>
	<i>Integrative Biology Courses:</i> BIO 262, 272, 341, 345, 352, 353, 360, 396, 437, 451, 453, 455, 457, 472, 480, 491, 492
Mathematics	Applied Calculus I and II (MTH 131, 132) <u>OR</u> Calculus with Analytic Geometry (MTH 141, 142) <u>OR</u> One semester of calculus & one of statistics (MTH 131 or 141 & STA 308 or STA 409)
Chemistry	General Chemistry I and II with laboratories (CHM 101, 102; 112, 114) <u>AND</u> Organic Chemistry I and II with laboratory (CHM 226, 227, 228) <u>OR</u> General Chemistry I and II with laboratories (CHM 101, 102; 112, 114) <u>AND</u> Introduction to Organic Chemistry with laboratory (CHM 124, 126) and Biochemistry(BCH 311)
Physics	General Physics I and II with laboratories (PHY 111,185;112, 186)
Microbiology	Introductory Microbiology (MIC 211) or Introductory Medical Microbiology (MIC 201)
Additional General Education Requirements	English communications, including WRT 104, 105 or 106, 6 cr; Social Sciences, 6 cr; 15 credits from Fine Arts and Literature (3-6 cr), Letters (3-6 cr); and Foreign language and culture (3-6 cr); Mathematics and Natural Sciences requirements are met by the B.S. Biological Sciences program requirements.
Remarks	Students must take 3 biology laboratory courses in addition to BIO 101, 102, excluding independent study/research. Up to 3 credits of Independent Study/Research/Special Problems (491, 492, 493, 494, or 495) in one of the following programs, AFS, AVS, BCH, BIO, MIC, NRS, PLS, or OCG, may be used as a BIO elective. Any BIO course in the latest catalog can be counted as a Major Elective unless stated that it is excluded from the major. 120 credits are required for graduation. Students must maintain a 2.00 grade point average in BIO courses used to meet graduation requirements.

B.S. Biological Sciences Academic Worksheet

Biology Requirements _____] credits

Introductory Biology (8 credits)

BIO 101 _____ (4 credits)

BIO 102 _____ (4 credits)

Other BIO courses (27 credits, minimum)¹

Core BIO courses (4 courses required)

<i>Core Area</i>	<i>Core courses</i>
_____	_____ (___ credits)
_____	_____ (___ credits)
_____	_____ (___ credits)
_____	_____ (___ credits)

These requirements can be fulfilled by courses listed in the left column of this section.

Note: 101, 102, 491-495 cannot be used.

Plant biology course _____

Animal biology course _____

Lab courses (3) _____

BIO Electives* (balance of 27 credits)

_____ (___ credits)

_____ (___ credits)

_____ (___ credits)

_____ (___ credits)

_____ (___ credits)

_____ (___ credits)

*Up to 3 credits of 491, 492, 493, 494, or 495 from one of the following programs may be used for a BIO elective: AFS, AVS, BCH, BIO, MIC, NRS, PLS, or OCG. These may not be used to fulfill the lab requirement. Additional research credits count as free electives. ¹Note: A course can be used to satisfy more than one requirement, e.g., a core and a lab, or a core, a plant, and a lab.

Additional Science Requirements _____] credits

Microbiology (4 credits)

MIC 211 or MIC 201 _____

Chemistry (15 or 16 credits)

CHM 101, 102 _____, _____

CHM 112, 114 _____, _____

CHM 226, 227 and 228 _____, _____, _____ **OR** CHM 124, 126 and BCH 311 _____, _____, _____

Mathematics (6, 7 or 8 credits)

MTH 131 or MTH 141 _____

MTH 132 or MTH 142 or STA 308 _____

Physics (8 credits)

PHY 111, 185 _____, _____

PHY 112, 186 _____, _____

General Education Requirements _____] credits

WRT 104, 105 or 106 _____ (___ credits) Diversity courses (2) can be

English Communication (1) _____ (___ credits) fulfilled by courses listed in

*Fine Arts/Literature (1 or 2) _____, _____ (___ credits) the left column of this section.

*Letters (1 or 2) _____, _____ (___ credits) _____

*Language/Culture (1 or 2) _____, _____ (___ credits) _____

Social Science (2) _____, _____ (___ credits)

Natural Sciences (2) (CHM 101), (PHY 111) Courses from "additional science requirements"

Math (1) _____ Course from "additional science requirements"

*A total of 15 credits in these three areas is required.

Free Electives (See Reverse) _____] credits

Total - 120 required for graduation _____] credits

B.S. BIOLOGICAL SCIENCES	
FIRST YEAR FALL	FIRST YEAR SPRING
BIO 101 (4) CHM 101/102 or Gen Ed (3-4) MTH 111 or MTH 131 (3) Gen Ed (3-4) URI 101 (1)	BIO 102 (4) CHM 112/114 or 101/102 (4) MTH 131, 132 or STA 308 (3) Gen Ed (3-4)
15-16 credits	14-15 credits
SECOND YEAR FALL	SECOND YEAR SPRING
BIO core course (3-4) CHM 124/126 or 227 or 112/114 (4) Elective or MTH 132 or STA 308 (3-4) Gen Ed (3-4) Optional: Gen Ed or elective (3-4)*	BIO core course (3-4) CHM 124/126 or 227 or 228/226 or BCH 311 (3-5) MIC 201 or MIC 211 (4) Gen Ed (3-4) Optional: Gen Ed or elective (3-4)*
14-17 credits	14-17 credits
THIRD YEAR FALL**	THIRD YEAR SPRING**
BIO core course (3-4) PHY 111/185 (4) CHM 228/226 or BCH 311 or elective (3-5) Gen Ed (3-4) Optional: elective (3-4)*	BIO core course (3-4) BIO elective (3-4) PHY 112/186 (4) Gen Ed or BCH 311 (3 or 4) Optional: elective (3-4)*
14-17 credits	14-17 credits
FOURTH YEAR FALL**	FOURTH YEAR SPRING**
BIO elective (3-4) BIO elective (3-4) Gen Ed (3-4) Elective (3-4) Optional: elective (3-4)*	BIO elective (3-4) BIO elective or elective (3-4) Gen Ed or elective (3-4) Elective (3-4) Optional: elective (3-4)*
14-17 credits	14-17 credits

*Consider including when fewer than 15 credits total for other courses.

**Study abroad /full-time internship, substitute required courses for electives in other semesters.

B.S. BIOLOGICAL SCIENCES--TRANSFER	
SECOND YEAR FALL	SECOND YEAR SPRING
BIO 101 (4) CHM 101/102 (4) MTH 111 or MTH 131 (3) Gen Ed or elective (3-4)	BIO 102 (4) CHM 112/114 (4) MTH 131, 132 or STA 308 (3) Gen Ed or elective (3-4)
14-15 credits	14-15 credits
THIRD YEAR FALL	THIRD YEAR SPRING
BIO core course* (3-4) CHM 124/126 or 227 (3-4) MTH 132 or STA 308 or elective (3-4) BIO elective*, Gen Ed or elective (3-4) Optional: BIO elective*, Gen Ed or elective (3-4)**	BIO core course* (3-4) CHM 228/226 or BCH 311 (3-5) MIC 201 or MIC 211 (4) BIO elective*, Gen Ed or elective (3-4) Optional: BIO elective*, Gen Ed or elective (3-4)**
14-17 credits	14-17 credits
FOURTH YEAR FALL	FOURTH YEAR SPRING
BIO core course* (3-4) PHY 111/185 (4) BIO elective* (3-5) BIO elective*, Gen Ed or elective (3-4) Optional: BIO elective*, Gen Ed or elective (3-4)**	BIO core course* (3-4) PHY 112/186 (4) BIO elective* (3-4) BIO elective*, Gen Ed or elective (3 or 4) Optional: BIO elective*, Gen Ed or elective (3-4)**
14-17 credits	14-17 credits

**Consider including when fewer than 15 credits total for other courses.

* A total of 27 credits of BIO core + electives is required (i.e. 9 X 3-credit courses, 7 X 4-credit courses, or a combination of 3 and 4 credit courses).