

# ***B.S. MARINE BIOLOGY***

at URI

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*The Bachelor of Science* degree in Marine Biology encompasses a rigorous curriculum stressing excellence in the basic sciences as preparation for further study in graduate school and for careers in the marine sciences. Courses in Mathematics, Chemistry, Physics and Oceanography as well as Biology are required. All majors start their freshman year with a seminar on Topics in Marine Biology. After taking a year of introductory biology, students choose four core biology courses. Marine elective courses such as Marine Ecology, Ecology of Marine Plants, and Marine Environmental Physiology can be taken as soon as the prerequisites are met.

*The faculty* in the marine biology program are actively involved in research on a wide variety of topics, including functional morphology of sharks, physiology of aggression in lobsters, community ecology of marine algae and seaweeds, physiological adaptations to environmental stresses in cephalopods, and sensory biology of fishes.

*The coordinator* of the marine biology program has a wide knowledge of course offerings and internship opportunities at URI and elsewhere and can help direct students to programs that will enhance their educational experience. In addition, a Marine Biology Office staffed by enthusiastic and knowledgeable student mentors has walk-in hours.

*Other interests?* Students may choose from undergraduate courses and some graduate courses given in URI's many marine-related programs such as Fisheries, Aquaculture, and Marine Affairs. These courses include: Research Diving Methods, Fishery Science, Introductory Aquaculture, and New England and the Sea.

*Experiential Learning:* Students are encouraged to participate in research directed by faculty in Biological Sciences, in other departments in the College of the Environment or Life Sciences, and the Graduate School of Oceanography, or to become involved in off-campus research. Internships are available through the URI Office of Internships and Field Experience and through URI's Coastal Fellows Program. They may take place at various sites, such as the RI Department of Environmental Management, the Mystic

Aquarium and Institute for Exploration, and the Roger Williams Zoo. URI is also formally affiliated with the Bermuda Institute of Ocean Science and the SEA Semester program at Woods Hole, where students can spend a semester taking courses and doing research in the field or aboard ship.

## **Program**

Majors must complete 36 credits in Biological Sciences (BIO) including 2 semesters of Introductory Biology (BIO 101 & 102), Topics in Marine Biology (BIO 130), and Marine Biology (BIO 360). Of the remaining 23 BIO credits, 1 course each must be chosen from 4 of the 6 core areas (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, 366, 412X, 465; and Physiology, BIO 201, 346). The balance of a student's 36 BIO credits must be chosen from among the marine biology elective courses (BIO 345, 355, 412X, 418, 441, 455, 457, 458, 465, 469, 475, 491, 492, 495, 563 and OCG 420, 576). A maximum of 3 credits of independent study or research (491, 492, 493, 494, 495) may be used to fulfill major credit requirements.

In addition, 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 & STA 308), 2 semesters of chemistry with laboratories (CHM 101, 102, 112, 114), 2 semesters of organic chemistry with laboratory (CHM 226, 227, 228) or 1 semester each of organic chemistry with laboratory and biochemistry (CHM 124, 126, BCH 311), 2 semesters of physics with laboratories (PHY 111, 112, 185, 186), 1 semester of oceanography (OCG 401 or 451), and 6 credits in a modern or classic foreign language (or through the intermediate level). 130 credits are required for graduation.

**BACHELOR OF SCIENCE  
MARINE BIOLOGY**

7/08

<b>B.S. in Marine Biology – Program Requirements</b>	
Core Requirements (13 credits)	<i>Required (13 credits):</i> Principles of Biology I and II (BIO 101, 102); Topics in Marine Biology BIO 130; Marine Biology BIO 360
Additional Core Courses and Major Electives (23 credits) (2 laboratory courses required)	<i>Choose one course from 4 of the following 6 core areas (a minimum of 12 credits):</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, 366, 412X, 465 Physiology: BIO 201, 346
	<i>Choose at least 11 more credits from:</i> Marine Environmental Physiology (BIO 345) Marine Invertebrates of Southern New England (BIO 355) Evolution and Diversity of Fishes (BIO 412X) Ecology of Marine Plants (BIO 418) Deep Sea Biology (OCG 420) Environmental Physiology of Animals (BIO 441) Marine Ecology (BIO 455) Marine Ecology Laboratory (BIO 457) Freshwater Ecology (BIO 458) Biology of Algae (BIO 465) Tropical Marine Invertebrates (BIO 469)* Coral Reef Ecology (BIO 475)* Directed Research/Special Problems (AFS, AVS, BCH, BIO, MIC, NRS, and PLS 491, 492; BIO 495*; OCG 493, 494) Tropical Marine Biology Research (BIO 495) Ichthyology (BIO 563) Marine Microbiology (OCG 576)  *Taught at the Bermuda Institute of Ocean Science
Mathematics	Applied Calculus I and II (MTH 131, 132) <b><u>OR</u></b> Calculus with Analytic Geometry (MTH 141, 142) <b><u>OR</u></b> One semester of calculus & one of statistics (MTH 131 or 141 & STA 308)
Chemistry	General Chemistry I and II with laboratories (CHM 101, 102; 112, 114) <b><u>AND</u></b> 1. Organic Chemistry I and II with laboratory (CHM 226, 227, 228) <b><u>OR</u></b> 2. Introduction to Organic Chemistry with laboratory and Biochemistry (CHM 124, 126; BCH 311)
Physics	General Physics I and II with laboratories (PHY 111,112;185, 186)
Oceanography	General Oceanography (OCG 401) <b><u>OR</u></b> Oceanographic Science (OCG 451)
Foreign Language	Language through intermediate level (104) <b><u>OR</u></b> 6 credits in one language (study abroad does not fulfill this requirement)
Additional General Education Requirements	ECw, 6 cr, including WRT 104, 105 or 106; Fine Arts, 3 cr; Literature, 3 cr; Letters, 6 cr; Social Sciences, 6 cr; Math/Quant Skills, 3 cr; Natural Sciences, 6 cr. Math/Quant Skills and Natural Sciences requirements are met by the B.S. Biological Sciences program requirements.
Remarks	Students must take 2 laboratory courses in Biology in addition to BIO 101, 102, and 360, excluding independent study/research. No more than 3 credits of Research/ Special Problems (491, 492, 493, 494, or 495) may be used towards the major. 130 credits are required for graduation. A total of 36 credits in BIO courses is required.

**Biology Requirements** | | credits

**Required BIO Courses (13 credits)**

- BIO 101 \_\_\_\_\_ ( 4 credits)
- BIO 102 \_\_\_\_\_ ( 4 credits)
- BIO 130 \_\_\_\_\_ ( 1 credit)
- BIO 360 \_\_\_\_\_ ( 4 credits)

**Core BIO Courses and Marine Biology Electives (23 credits, minimum)**

<i>Core Area</i>	<i>Core courses (4 required)</i>
_____	_____ (____ credits)
_____	_____ (____ credits)
_____	_____ (____ credits)
_____	_____ (____ credits)

The lab course requirement (2) can be fulfilled by courses listed in the left column of this section.  
 Note: 101, 102, 360, 491-495 cannot be used.

Lab courses \_\_\_\_\_  
 \_\_\_\_\_

**Marine Biology Electives\* (11 credits, minimum)**

- \_\_\_\_\_ (\_\_\_\_ credits)
- \_\_\_\_\_ (\_\_\_\_ credits)
- \_\_\_\_\_ (\_\_\_\_ credits)
- \_\_\_\_\_ (\_\_\_\_ credits)
- \_\_\_\_\_ (\_\_\_\_ credits)

\*Up to 3 credits of independent study/research (491, 492, 493, 494, or 495) in one of the following programs may be used for marine biology electives: AFS, AVS, BCH, BIO, MIC, NRS, PLS or OCG. Additional research credits count as free electives.

**Additional Science Requirements** | | credits

**Oceanography (3 credits)**

OCG 401 *or* OCG 451 \_\_\_\_\_

**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 fulfilled by courses listed in the left column of this section.
English Communication (1)	_____ (____ credits)	
Fine Arts (1)	_____ (____ credits)	
Literature (1)	_____ (____ credits)	
Letters (2)	_____, _____ (____ credits)	
Social Science (2)	_____, _____ (____ credits)	
Foreign Language (2)	_____, _____ (____ credits)	
Natural Sciences (2)	_____(CHM 101), _____(PHY 111)	Courses from "additional science requirements"
Math (1)	_____	Course from "additional science requirements"

**Free Electives (see reverse)** | | credits

**Total – 130 required for graduation** | | credits

