Biology – Marine and Freshwater
Major Checklist for General Education, Biology Core & Option Requirements

General Education Requirements

Group	Course	Semester	Credits	Grade
1	ENGL 401	_____	_____	_____
2	_____	_____	_____	_____
3a	_____	_____	_____	_____
3b	_____	_____	_____	_____
3c	_____	_____	_____	_____
4	_____	_____	_____	_____
5	_____	_____	_____	_____
6	_____	_____	_____	_____
7	_____	_____	_____	_____
8	_____	_____	_____	_____

Writing Intensive Requirements

Course	Semester	Credits	Grade
ENGL 401	_____	_____	_____
One course in major	_____	_____	_____
One at the 600 or 700 level	_____	_____	_____
Elective	_____	_____	_____

Biology Core Requirements

Course	Semester	Credits	Grade
BIOL 400 [1]	_____	_____	_____
BIOL 401 (strongly recommended)	_____	_____	_____
BIOL 411 [2]	_____	_____	_____
BIOL 412 [2]	_____	_____	_____
BIOL 541	_____	_____	_____
MICRO 503	_____	_____	_____
BIOL 604	_____	_____	_____
CHEM 403	_____	_____	_____
CHEM 404	_____	_____	_____
CHEM 545/546 & BCHM 658/659 [3]	_____	_____	_____
OR			
CHEM 651/653 & CHEM 652/654 [3]	_____	_____	_____
MATH 424B **OR** 425	_____	_____	_____
BIOL 528 **OR** MATH 426 [4]	_____	_____	_____
PHYS 401	_____	_____	_____
PHYS 402	_____	_____	_____
ENGL 501 [3]	_____	_____	_____
EDUC 500 [5]	_____	_____	_____

Option Requirement

	Course	Semester	Credits	Grade
PBIO/ZOOL 717 **OR** PBIO/ZOOL 719	_____	_____	_____	_____
<u>Category 1:</u> (3 courses)				
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
<u>Category 2:</u> (4 courses)				
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____

[1] BIOL 400 is required only for first year biology majors.

[2] BIOL 411 and 412 are not sequential and may be taken in reverse order.

[3] CHEM 651/653 and 652/654 and ENGL 501 are required for Pre-med or affiliated professional programs.

[4] Calculus II (MATH 426) can be substituted for Statistics, but we recommend Statistics.

[5] Required only for those preparing for teacher certification.

Marine and Freshwater Biology Option Requirements

Students must choose 8 courses in addition to the Biology Core Curriculum courses in order to fulfill the requirements of this Option. All students must take Biology of Lakes (PBIO/ZOOL 717) or Field Studies in Lake Biology (PBIO/ZOOL 719).

Category 1. (Choose 3 courses)

BIOL 601, Biology of Plants
BIOL 605, Eukaryotic Cell and Developmental Biology
ESCI 501, Introduction to Oceanography
PBIO/ZOOL503, Introduction to Marine Biology or ZOOL 674, Field Marine Science – Summer at Shoals
ZOOL 518, Vertebrate Morphology
ZOOL 625, Principles of Animal Physiology or PBIO 701, Plant Physiology
ZOOL 628, Marine Invertebrate Evolution and Ecology

Category 2. Electives (Choose 4 courses, preferably distributed broadly in the different groups).

I. Aquatic Animals, Plants and Microbes

MICR 707, Marine Microbiology
MICR 713, Microbial Ecology & Evolution
PBIO 566, Systematic Botany
PBIO 625, Introduction to Marine Botany
PBIO 721, Microscopic Algae
PBIO 722, Marine Phycology
PBIO 723, Seaweeds, Plankton, and Seagrass – Summer at Shoals
PBIO 747, Aquatic Higher Plants
GEN/PBIO 753, Cytogenics
ZOOL 510, Field Ornithology – Summer at Shoals
ZOOL 542, Ornithology
ZOOL 610, Principles of Aquaculture
ZOOL 628, Marine Invertebrate Evolution and Ecology
ZOOL 674, Field Marine Science – Summer at Shoals
ZOOL 710, Ichthyology
ZOOL 711, Zooplankton Ecology
ZOOL 734, Diversity of Fishes
ZOOL 740, Introduction to Biogeography
ZOOL 753, Marine Vertebrates – Summer at Shoals
ZOOL 772, Fisheries Biology

II. Marine and Freshwater Ecology

MICR 720, Microbes in the Marine Environment
NR 721, Ecology of Polluted Waters
PBIO 719/ZOOL, Field Studies in Lake Biology
PBIO/ZOOL 725, Marine Ecology
ZOOL 570, Climates and Ecosystems – Summer at Shoals
ZOOL 674, Field Marine Science – Summer at Shoals
ZOOL 675, Field Marine Biology and Ecology – Summer at Shoals
ZOOL 708, Stream Ecology
ZOOL 711, Zooplankton Ecology
ZOOL 714, Ecology of Animal Behavior – Summer at Shoals
ZOOL 751, Research in Marine Ecology – Summer at Shoals

III. Cell Biology and Physiology

MICR 714, Public Health & Waterborne Diseases
PBIO 701, Plant Physiology
PBIO 727, Algal Physiology
ZOOL 773, Physiology of Fish

IV. Freshwater, Estuarine and Marine Habitats

ESCI 501, Introduction to Oceanography
NR 503, Wetlands Resources – Summer at Shoals
NR 504, Freshwater Resources
NR 703, Watershed Water Quality Management
NR 711, Wetland Ecology and Management
EREC 611, Marine Resource Economics
ZOOL 570, Climates and Ecosystems – Summer at Shoals
ZOOL 674, Field Marine Science – Summer at Shoals
ZOOL 675, Field Marine Biology and Ecology – Summer at Shoals
ZOOL 701, Conservation Biology
ZOOL 730, Underwater Research – Summer at Shoals
ZOOL 740, Introduction to Biogeography
ZOOL 750, Biological Oceanography
ZOOL 751, Research in Marine Biology – Summer at Shoals

V. Research and Special Projects

BIOL 600, Field Experience
BIOL/BCHM/PBIO/MICR/ZOOL 795, Special Investigations: Research;
BIOL 799, Honors Thesis
TECH 797, Undergraduate Ocean Research Project
ZOOL 730, Underwater Research - Summer at Shoals)
ZOOL 751, Research in Marine Biology – Summer at Shoals

Note: Field Marine Science (ZOOL 674) is a six-credit summer course taught at the Isles of Shoals. For those who elect to take ZOOL 674, we suggest that you request enrollment in the course as early as possible, preferably in the summer before the junior year.

Effective Date: March, 2006