# MARINE, ESTUARINE AND FRESHWATER BIOLOGY MAJOR (B.S.)

https://colsa.unh.edu/biological-sciences/program/bs/marine-estuarine-and-freshwater-biology

### Description

The Major in Marine, Estuarine, and Freshwater Biology is intended to give students interested in the fields of marine and freshwater biology the background and direct hands-on experience needed to pursue productive careers, including potential advanced study. This strategically cross-disciplinary major builds on a broad set of science courses in high-impact areas of study for today's world, represented by a core curriculum in math, chemistry, physics, and biology. The core background is strengthened by a series of required and elective courses in a diverse range of aquatic sciences spanning watersheds to oceans, providing opportunities for study from organismal to ecosystem scales. Designed to provide a solid foundation of knowledge in freshwater, estuarine, and marine biology, the MEFB Major allows flexibility and encourages students to focus on particular areas of interest from molecular biology to ecosystem and policy studies. Students will have the opportunity to specialize in areas of their own interest, such as aquaculture and fisheries, animal behavior, ecological restoration, or management. While MEFB students must complete rigorous course requirements, our students are encouraged to tailor their elective courses within and across departments and colleges as needed to build their own, unique crossdisciplinary path.

The University of New Hampshire is uniquely located for the study of aquatic organisms and their habitats. We are centered between the Great Bay Estuary and the Gulf of Maine, with easy access to diverse marine environments as well as the freshwater habitats of New Hampshire's Lakes Region and the White Mountain National Forest. We boast three Marine Laboratories that provide exceptional opportunities for our student's research and educational needs, including Jackson Estuarine Laboratory (JEL), the Coastal Marine Lab (CML; part of the larger Judd Gregg Marine Research Center), and the Shoals Marine Laboratory (SML), as well as strong affiliations with the Great Bay National Estuarine Research Reserve. While JEL is located on Great Bay in Durham, CML is in nearby New Castle at the Seacoast, and SML is located seven miles off the coast. SML provides summer undergraduate programing with field-based marine courses that fulfill major electives, as well as internships and research opportunities for advanced study. In addition, UNH's campus maintains two fish aquaculture facilities, a world-class genomics laboratory, and the State Veterinary Diagnostic Laboratory, which provide hands-on opportunities for undergraduates. There is also an active diving program with courses at both beginner and advanced levels. A major strength of the MEFB program is the hands-on approach to learning combined with an emphasis on involving undergraduate students in mentored research opportunities.

# Off Campus Coursework and Study Abroad Opportunities

It is strongly recommended that students consider participating in a summer, semester, or year-long study abroad program. UNH's Shoals

Marine Laboratory (https://www.shoalsmarinelaboratory.org/), in conjunction with Cornell University, offers a host of marine biologyrelated college level courses that meet many degree requirements of the MEFB major over the summer on our island campus in the Isles of Shoals. SML offers both Merit and Need-based Scholarships, multicourse discounts, as well as competitive Research Internships offering summer stipends. UNH Global is the definitive resource for Study Abroad opportunities for undergraduates (https://www.unh.edu/global/ education-abroad). UNH Global can provide information on programs of study, while students' academic advisors can assist in course selection options that provide equivalencies to requirements in MEFB so progress toward degree is not compromised. In addition, Ecoquest, run by the Department of Natural Resources, offers summer and semester programs of environmentally oriented courses in New Zealand (https:// ecoquest.unh.edu/). These are just some of the many opportunities available for MEFB students and we encourage you to explore more.

# **Pre-health Professional Program**

MEFB majors who wish to pursue postgraduate degrees in the health care professions should visit the premed advising website (http://www.unh.edu/premed-advising).

### Requirements

# **Degree Requirements**

Minimum Credit Requirement: 128 credits

Minimum Residency Requirement: 32 credits must be taken at UNH

Minimum GPA: 2.0 required for conferral\*

Core Curriculum Required: Discovery & Writing Program Requirements

Foreign Language Requirement: No

All Major, Option and Elective Requirements as indicated. \*Major GPA requirements as indicated.

# **Major Requirements**

A minimum grade of C- is required in all biological science courses that are counted toward the requirements for a degree in MEFB. Students who expect to compete successfully for post-baccalaureate programs should attain a cumulative GPA of 3.0 or higher by the end of the sophomore year and maintain it at that level.

Code	Title	Credits
MEFB Core		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
MEFB 401	Marine Estuarine and Freshwater Biology: Freshmen Seminar	1
MEFB 503	Introduction to Marine Biology	3
MEFB 725	Marine Ecology	3
ZOOL 690	Evolution	4
GEN 604	Principles of Genetics	4
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMCB 658A	General Biochemistry	3
MATH 424B	Calculus for Life Sciences	4
or BIOL 428	Quantitative Biosciences	
or BIOL 633	Data Analysis for Life Science	
or BIOL 706	Data Science with R for the Life Sciences	

BIOL 528 Applied Biostatistics I Introduction to Physics I Introduction to Physics II Introduction to Physics II Introduction to Physics II Introduction to Physics II Introduction to Marine Botary  METB 747 Aquatic Plants in Rectoration/Management  Choose one Systems course:  METB 755 Biological Decenography (C)  ZOOL 708 Stream Ecology (C)  Choose one Physiology/Function course:  ZOOL 625 Principles of Animal Physiology  & ZOOL 627 Physiology Function course:  ZOOL 627 Physiology of Fishes  METB 773 Physiology of Fishes  METB 773 Physiology of Fishes  Marine Manmal Biology and Conservation  ZOOL 420 Orithology  ZOOL 740 Capstone Companion Course  METB 675 Marine Manmal Biology and Conservation  ZOOL 421 Orithology  ZOOL 720 Sharks and Bony Fishes  Capstone  BIOL 730 Capstone Companion Course  METB 826 Amine Invested The Life Sciences  BIOL 730 Capstone Companion Course  METB 826 Systematic Botary  BIOL 736 Systematic Botary  BIOL 736 Data Science with R for the Life Sciences  BIOL 736 Data Science with R for the Life Sciences  BIOL 736 General Microbiology  & BMS 033 General Microbiology  & BMS 034 and General Microbiology Laboratory  ESCI 501 Introduction to Applied Science Communication (SML)  METB 830 Introduction to Applied Science Communication (SML)  METB 830 Evolution and Marine Diversity (SML)  METB 831 Field Orithology (SML)  METB 832 Amine Manmal Biology and Disease (SML)  METB 833 Field Physiology of Fishes  METB 835 Marine Manmal Biology and Disease (SML)  METB 737 Introduction to Applied Science Communication (SML)  METB 737 Lake Ecology  METB 747 Aquatic Plants in Restoration Management (CML)  METB 757 Research in Biology at the Shoats Marine Lake (SML)  METB 758 Biological Occanography (C)  METB 759 Country of Fishes  Na 744 Biospect Occanism Country of Fishes  Na 744 Biospect Demanding Physiology  Ad Animal Physiology  AD OLD 420 COLD 509 Country of Fishes	or BIOL 711	Experimental Design & Analysis	
PHYS 402 Introduction to Physics II Choose one Plant Survey course: MEFB 8747 Aquatic Plants in Restoration/Management Choose one expetence course: MEFB 775 Biological Oceanography (C) MEFB 775 Physiology/Function course: ZOOL 625 Principles of Animal Physiology & ZOOL 670 A Principles of Animal Physiology & ZOOL 670 A Physiology Flabes Choose one Animal Survey course: MEFB 675 Marine Marmal Biology and Conservation ZOOL 572 Marine Marmal Biology and Conservation ZOOL 572 O Tribology ZOOL 710 Sharks and Bony Fishes Capatione: BIOL 780 Capatione Companion Course MEFB 810 Tribology ZOOL 710 Sharks and Bony Fishes Solic three courses from the following: AMSC 701 Physiology of Reproduction BIOL 780 Special Solic Physiology of Reproduction Special Solic Physiology of Reproduction to Marine Physiology of Reproduction Special Spe	BIOL 528		4
Choose one Plant Survey course:  MEFB 825 Introduction to Marine Botany MEFB 717 Lake Ecology MEFB 717 Lake Ecology MEFB 717 Lake Ecology MEFB 7185 Biological Oceanography (C) Choose one Systems course:  MEFB 7185 Biological Oceanography (C) Choose one Physiology Function course:  ZOOL 626 Principles of Animal Physiology 8 z 200L 626W and Animal Physiology Laboratory MEFB 7187 Physiology of Fishes  Choose one Animal Survey course:  MEFB 828 Marine Invertebrate Evolution and Ecology MEFB 727 Marine Mammal Biology and Conservation  ZOOL 524 Ornithology ZOOL 710 Sharka and Bony Fishes  BIOL 780 Capstone Companion Course  MEFB BCECT Marine Marine Invertebrate Evolution and Ecology MEFB 827 Marine Marine Invertebrate Evolution  MEFB BCECT Marine Marine Invertebrate Evolution  BIOL 780 Capstone Companion Course  MEFB BCECT Marine Course Marine Invertebrate Evolution  BIOL 780 Capstone Companion Course  MEFB BCECT Marine Course Invertebrate Evolution  BIOL 780 Data Science with Flor the Life Sciences  BIOL 790 Data Science with Flor the Life Sciences  BIOL 790 Data Science with Flor the Life Sciences  BIOL 790 Data Science with Flor the Life Sciences  BIOL 790 Data Science with Flor the Life Sciences  BIOL 790 Data Science with Flor the Life Sciences  BIOL 790 Data Science with Flor the Life Sciences  BIOL 790 Data Science with Flor the Life Sciences  BIOL 790 Data Science with Flor the Life Sciences  BIOL 790 Data Science with Flor the Life Sciences  BIOL 790 Data Science with Flor the Life Sciences  BIOL 790 Data Science with Flor the Life Sciences  BIOL 790 Data Science with Flor the Life Sciences  BIOL 790 Data Science with Flor the Life Sciences  BIOL 790 Data Science with Flor the Life Sciences  BIOL 790 Data Science with Flor the Life Sciences  BIOL 790 Data Science with	PHYS 401	Introduction to Physics I	4
MEFB 625 MEFB 747 Aquatic Plants in Restoration/Management Choose one Systems course:  MEFB 717 Lake Ecology MEFB 757 Biological Oceanography (C) ZOOL 708 Stream Ecology (C) Choose one Physiology/Function course: ZOOL 625 A 200L 626W Phispiology/Function course: ZOOL 626 and Arimal Physiology Laboratory MEFB 73 Physiology of Fishes Choose one Animal Survey course: MEFB 828 Marine Invertebrate Evolution and Ecology MEFB 73 Physiology of Fishes Choose one Animal Survey course: MEFB 828 Marine Invertebrate Evolution and Ecology MEFB 675 Marine Marmal Biology and Conservation ZOOL 542 ZOOL 710 Sharks and Bony Fishes BIOL 780 Capstone: BIOL 780 Capstone: BIOL 780 Sharks and Bony Fishes WEFB Electives  Select three courses from the following: ANSC 701 Physiology of Reproduction BIOL 566 Systematic Botany BIOL 780 BIO	PHYS 402	Introduction to Physics II	4
MEFB 1747  Choose one Systems cook or Stream Ecology (C)  MEFB 175  Biological Oceanography (C)  Stream Ecology (C)  Choose one Physiology/Function course:  ZOUL 625  A ZOUL 626  Principles of Animal Physiology  A ZOUL 627  A ZOUL 627  A ZOUL 627  A ZOUL 628  A ZOUL 628  A ZOUL 629  MEFB 628  Marine Invertebrate Evolution and Ecology  MEFB 628  Marine Invertebrate Evolution and Ecology  MEFB 627  Marine Marmal Biology and Conservation  ZOUL 642  Omithology  ZOUL 710  Sharks and Bony Fishes  Capatone:  BIOL 780  Capatone:  BIOL 780  Capatone:  BIOL 780  Capatone:  BIOL 780  Capatone with Fishes  AMSC 701  Physiology of Reproduction  BIOL 666  Systematic Botany  BIOL 760  Data Science with R for the Life Sciences  BIOL 720  Pant-Animal Interactions  BMC 605  BMC 605  BMS 503  General Microbiology  BMS 504  And General Microbiology Laboratory  ESI 501  Introduction to Danagory  MEFB 805  Marine Base Conspraying  MEFB 806  Marine Parasitlogy and Disease (SML)  MEFB 808  Marine Enzesiden Policy Understanding US Ocean, Coastal and Great Lakes  Policy  MEFB 806  Marine Parasitlogy and Disease (SML)  MEFB 807  MEFB 808  Marine Enzesiden Policy Understanding US Ocean, Coastal and Great Lakes  Policy  MEFB 809  Marine Parasitlogy and Disease (SML)  MEFB 809  Marine Brasilian Diversity (SML)  MEFB 809  Marine Brasilian Diversity (SML)  MEFB 809  MEFB 807  MARINE 808  Marine Marine Diversity (SML)  MEFB 809  MEFB 807  MARINE 808  Marine Marine Brasilian Diversity (SML)  MEFB 807  MEFB 701  MARIN Brasilian Diversity (SML)  MEFB 807  MEFB 702  Sustainable Marine Fisheries (SML)  MEFB 703  MEFB 704  MARINE 704  MEFB 705  MEFB 707  Fisheries Biology and Conservation  MEFB 707  MEFB 708  MARINE 809  MARINE 809	Choose one Plant Survey of	course:	
Choose one Systems course  MEFB 717	MEFB 625	Introduction to Marine Botany	
MEFB 717 Lake Ecology MEFB 755 Biological Oceanography (C) 2001.708 Stream Ecology (C) Choose one Physiology/Function course. 2001.625 Principles of Animal Physiology 8 2001.626W and Animal Physiology Laboratory MEFB 773 Physiology of Fishes Choose one Animal Survey course: MEFB 773 Physiology of Fishes Choose one Animal Survey course: MEFB 8675 Marine Invertebrate Evolution and Ecology MEFB 675 Marine Mammal Biology and Conservation 2001.642 Ornithology 2001.710 Sharks and Bony Fishes Capstone: BIOL 780 Capstone Companion Course MEFB Electives 1 Select three courses from the following: ANSO 701 Physiology of Feproduction BIOL 566 Systematic Botany BIOL 706 Data Science with R for the Life Sciences BIOL 707 Plant Animal Interactions BIOL 566 Systematic Botany BIOL 507 Plant Animal Interactions BIOL 568 Principles of Cell Biology BIOL 509 Principles of Animal Principles Science Communication (SML) BIOL 509 Principles of Animal Principles Science Communication (SML) BIOL 509 Principles of Animal Principles Science Communication (SML) BIOL 509 Principles of Animal Principles Science Communication Coll.) BIOL 509 Principles of Animal Physiology BIOL 509 Principles of Animal Physiology BIOL 500 Principle	MEFB 747	Aquatic Plants in Restoration/Management	
MEFB 755 Biological Oceanography (C) ZOOL 708 Stream Ecology (C) Choose one Physiology/Function course: ZOOL 625 & ZOOL 625 & ZOOL 6267 MEFB 773 Physiology of Fishes Choose one Animal Survey course: MEFB 628 Marine Invertebrate Evolution and Ecology MEFB 675 Marine Mammal Biology and Conservation ZOOL 542 Contribology ZOOL 710 Sharks and Borny Fishes Capatone: BIOL 780 Capatone: BIOL 780 Capatone or Systematic Botany BIOL 780 Capatone or Systematic Botany BIOL 780 BIOL 780 Data Science with R for the Life Sciences BIOL 780 Data Science with R for the Life Sciences BIOL 780 Data Science with R for the Life Sciences BIOL 780 Data Science with R for the Life Sciences BIOL 780 Data Science with R for the Life Sciences BIOL 780 BIOL 780 Data Science with R for the Life Sciences BIOL 780 BIOL 780 Data Science with R for the Life Sciences BIOL 780 BIOL 780 Data Science with R for the Life Sciences BIOL 780 BIOL 780 Data Science with R for the Life Sciences BIOL 780 BIOL 780 Data Science with R for the Life Sciences BIOL 780 BIOL 780 BIOL 780 Data Science with R for the Life Sciences BIOL 780 BIOL 780 BIOL 780 Data Science with R for the Life Sciences BIOL 780 BIOL 780 BIOL 780 Data Science with R for the Life Sciences BIOL 780 BIOL			3-4
ZOOL 708 Stream Ecology (C) Choose one Physiology/Function course: ZOOL 626 Principles of Animal Physiology & ZOOL 626W and Animal Physiology Laboratory MEPB 773 Physiology of Fishes Choose one Animal Survey course: MEFB 628 Marine Invertebrate Evolution and Ecology MEPB 675 Marine Mammal Biology and Conservation ZOOL 542 Ornithology ZOOL 710 Sharks and Bony Fishes Capatone: BIOL 780 Capstone Companion Course MEFB Electives  Select three courses from the following: ANSC 701 Physiology of Reproduction BIOL 766 Systematic Botany BIOL 720 Data Science with R for the Life Sciences BIOL 720 Data Science with R for the Life Sciences BIOL 720 Data Science with R for the Life Sciences BIOL 720 Plant-Animal Interactions BMCB 655 Principles of Cell Biology BMS 503 General Microbiology Laboratory ESCI 501 Introduction to Oceanography GEN 713 Microbial Ecology and Evolution MARI 705 Introduction to Applied Science Communication (SML) MEPB 506 Marine Parasitology and Discusses (SML) MEPB 508 Marine Evarsitology and Discusses (SML) MEPB 509 Coastlines in Crisis MEPB 509 Coastlines in Crisis MEPB 629 Marine Evarsitology (SML) MEPB 501 Evolution and Marine Policersity (SML) MEPB 503 Laboratory MEPB 629 Marine Marine Botany MEPB 629 Marine Marine Botany MEPB 629 Marine Marine Botany MEPB 630 Coastlines in Crisis MEPB 631 Evolution and Marine Diversity (SML) MEPB 535 Marine Mammal Biology (SML) MEPB 536 Marine Mammal Biology (SML) MEPB 537 Marine Mammal Biology (SML) MEPB 540 Coastlines in Crisis MEPB 541 Ecology and Marine Evolution and Ecology MEPB 641 Ecology and Marine Evolution and Ecology MEPB 673 Marine Mammal Biology and Conservation MEPB 774 Aquatic Plants in Restoration/Management (C) MEPB 775 Biological Oceanography (C) MEPB 776 Fisheries Biology and Conservation (SML) MEPB 777 Eisheries Biology Conservation and Management MEPB 778 Physiology of Fishes NR 504 Freshwater Resource NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry ZOOL 640 Company and Animal Physiology Laboratory ZOOL 650			
Choose one Physiology/Function course:  ZOOL 625			
ZOOL 625 Principles of Animal Physiology & ZOOL 626W and Animal Physiology Laboratory MEFB 773 Physiology of Fishes  Choose one Animal Survey course: MEFB 628 Marine Invertebrate Evolution and Ecology MEFB 675 Marine Mammal Biology and Conservation ZOOL 542 Ornithology ZOOL 710 Sharks and Borry Fishes  Capstone: BIOL 780 Capstone Companion Course  MEFB Electives  Select three courses from the following: ANSC 701 Physiology of Reproduction BIOL 766 Systematic Botany BIOL 720 Data Science with R for the Life Sciences BIOL 720 Data Science with R for the Life Sciences BIOL 720 Plant-Animal Interactions BMCB 605 Principles of Cell Biology BMS 503 General Microbiology Laboratory ESCI 501 Introduction to Oceanography GEN 713 Microbial Ecology and Evolution MARI 705 Introduction to Marine Policy: Understanding US Ocean, Coastal and Great Lakes Policy MEFB 505 Introduction to Applied Science Communication (SML) MEFB 506 Marine Parasitology and Disease (SML) MEFB 508 Marine Ecosystem Research and Management (SML) MEFB 509 Coastines in Crisis MEFB 509 Locatines in Crisis MEFB 625 Introduction to Marine Policy: Understanding US Ocean, Coastal and Great Lakes Policy MEFB 506 Marine Parasitology (SML) MEFB 507 Coastines in Crisis MEFB 508 Marine Ecosystem Research and Management (SML) MEFB 509 Selection and Marine Diversity (SML) MEFB 509 Coastines in Crisis MEFB 625 Introduction to Marine Botany MEFB 626 Marine Mammal Biology (SML) MEFB 637 Marine Mammal Biology and Conservation MEFB 717 Lake Ecology MEFB 674 Ecology and Marine Environment (SML) MEFB 737 Aquatic Plants in Restoration/Management (C) MEFB 738 Marine Mammal Biology and Conservation (SML) MEFB 749 Aquatic Plants in Restoration/Management MEFB 740 Fisheries Biology: Conservation of Marine Lab (SML) MEFB 751 Research in Biology at the Shoals Marine Lab (SML) MEFB 753 Biological Oceanography (C) MEFB 773 Physiology of Fishes NR 703 Watersheld Water Quality Management MEFB 775 Fisheries Biology: Conservation and Management MEFB 776 Physiology of Fishes NR 708 Phys			
A 2001. 626W and Animal Physiology Laboratory METB 773 Physiology of Fishes Choose one Animal Survey course: METB 628 Marine Invertebrate Evolution and Ecology METB 675 Marine Mammal Biology and Conservation ZOOL 542 Omithology ZOOL 710 Sharks and Bony Fishes Capatione: BiOL 780 Capatione Companion Course METB Electives  Select three courses from the following: ANSC 701 Physiology of Reproduction BiOL 766 Data Science with R for the Life Sciences BiOL 720 Plant-Animal Interactions BiOL 720 Plant-Animal Interactions BiOL 720 Plant-Animal Interactions BiOL 720 Plant-Animal Interactions BMCB 605 Principles of Cell Biology BMS 503 General Microbiology BMS 503 General Microbiology BMS 504 and General Microbiology BMS 505 General Microbiology BMS 506 Introduction to Oceanography GEN 713 Microbial Ecology and Evolution MARI 705 Introduction to Marine Policy Understanding US Ocean, Coastal and Great Lakes Policy METB 506 Marine Parasitology and Disease (SML) METB 506 Marine Parasitology and Disease (SML) METB 507 Evolution and Marine Diversity (SML) METB 508 Evolution and Marine Diversity (SML) METB 509 Coastilines in Crisis METB 625 Introduction to Marine Botany METB 630 Evolution and Marine Botany METB 640 Marine Mammal Biology (SML) METB 551 Marine Mammal Biology (SML) METB 562 Usutainable Marine Environment (SML) METB 563 Marine Mammal Biology and Conservation METB 675 Marine Mammal Biology and Conservation METB 772 Aquation Plantines in Biology and Conservation METB 787 Aquation Plantines in Biology and Conservation (SML) METB 787 Aquation Plantines Environment (SML) METB 787 Research in Biology and Conservation and Management METB 787 Aquation Plantines Resources METB 788 Biological Oceanography (T) METB 787 Aquation Plantines Biology Conservation and Management METB 787 Physiology of Fisher Silology Conservation and Management METB 787 Apartony of Fisher National Plantines Plantines Resources Nationa			4-5
MEFB 773 Physiology of Fishes  Choose one Animal Survey course:  MEFB 628 Marine Invertebrate Evolution and Ecology  MEFB 675 Marine Mammal Biology and Conservation  ZOOL 542 Ornithology  ZOOL 710 Sharks and Bony Fishes  Capstone:  BIOL 780 Capstone Companion Course  MEFB Electives  Select three courses from the following:  ANSC 701 Physiology of Reproduction  BIOL 566 Systematic Botany  BIOL 706 Data Science with Flor the Life Sciences  BIOL 706 Data Science with Flor the Life Sciences  BIOL 707 Plant-Animal Interactions  BMCB 605 Principles of Cell Biology  BMS 503 General Microbiology  & BMS 503 General Microbiology Laboratory  ESCI 501 Introduction to Oceanography  GEN 713 Microbial Ecology and Evolution  MARI 705 Introduction to Applied Science Communication (SML)  MEFB 505 Marine Parasitology and Discusses (SML)  MEFB 506 Marine Parasitology and Discusses (SML)  MEFB 508 Marine Ecosystem Research and Management (SML)  MEFB 509 Caostines in Crisis  MEFB 509 Caostines in Crisis  MEFB 625 Introduction to Marine Diversity (SML)  MEFB 509 Caostines in Crisis  MEFB 625 Introduction to Marine Diversity (SML)  MEFB 509 Caostines in Crisis  MEFB 626 Marine Parasitology and Conservation  MEFB 637 Marine Mammal Biology (SML)  MEFB 642 Ecology and Marine Environment (SML)  MEFB 653 Marine Mammal Biology and Conservation  MEFB 674 Ecology and Marine Environment (SML)  MEFB 702 Sustainable Marine Fisheries (SML)  MEFB 714 Field Animal Behavior (SML)  MEFB 715 Biological Oceanography (C)  MEFB 741 Sharks: Biology and Conservation MARINE Lab (SML)  MEFB 753 Research in Biology of the Shoals Marine Lab (SML)  MEFB 773 Physiology of Fishes  NR 703 Watershed Water Quality Management  MEFB 773 Physiology of Fishes  NR 704 Fisheries Biology: Conservation and Management  MEFB 775 Research in Biology and Marine Potention of Marine Lab (SML)  MEFB 754 Anatomy and Function of Marine Vertebrates (SML)  MEFB 755 Research in Biology at the Shoals Marine Lab (SML)  MEFB 756 Research in Biology at the Shoals Marine Lab (SML)  MEFB 751			
Choose one Animal Survey course:  MEPB 628 Marine Invertebrate Evolution and Ecology MEFB 675 Marine Mammal Biology and Conservation 200L 542 200L 710 Sharks and Borry Fishes Capatone: BIOL 780 Capatone: BIOL 780 Capatone Companion Course MEPB Electives  Select three courses from the following: ANSC 701 Physiology of Reproduction BIOL 565 Systematic Botany BIOL 706 Data Science with R for the Life Sciences BIOL 720 Plant-Animal Interactions BIOL 720 Plant-Animal Interactions BMCB 605 Principles of Cell Biology BMS 503 BMS 504 And Microbiology BMS 503 BMS 504 And General Microbiology Laboratory ESCI 501 Introduction to Oceanography GEN 713 Microbial Ecology and Evolution MARI 705 Introduction to Marine Policy: Understanding US Ocean, Coastal and Great Lakes Policy MEFB 505 Marine Parasitology and Disease (SML) MEFB 506 Marine Parasitology and Disease (SML) MEFB 508 Marine Ecosystem Research and Management (SML) MEFB 509 MEFB 500 Coastlines in Crisis MEFB 501 MEFB 502 Marine Mammal Biology (SML) MEFB 503 Marine Mammal Biology (SML) MEFB 504 MEFB 605 Marine Marine Botany MEFB 605 Marine Marine Botany MEFB 606 Marine Invertebrate Evolution and Ecology MEFB 607 MEFB 608 Marine Marmal Biology and Conservation MEFB 702 Sustainable Marine Environment (SML) MEFB 717 Lake Ecology MEFB 741 Sharks: Biology and Conservation MEFB 751 Research in Biology and Conservation MEFB 751 Research in Biology at the Shoals Marine Lab (SML) MEFB 751 Research in Biology and Conservation Management (C) MEFB 772 Physiology of Fishes NR 703 Watershed Water Quality Management MEFB 773 Physiology of Fishes NR 704 Physiology end Animal Physiology Action of Animal Physiology Laboratory C			
MEFB 675 Marine Mammal Biology and Conservation 200L 542 Ornithology 200L 710 Sharks and Bony Fishes  Capstone: BIOL 780 Capstone Companion Course  MEFB Electives  Select three courses from the following: ANSC 701 Physiology of Reproduction BIOL 566 Systematic Botany BIOL 706 Data Science with R for the Life Sciences BIOL 720 Plant-Animal Interactions BIOL 580 Principles of Cell Biology BMS 503 General Microbiology BMS 503 General Microbiology Laboratory ESCI 501 Introduction to Narine Policy Understanding US Ocean, Coastal and Great Lakes Policy MEFB 505 Introduction to Applied Science Communication (SML) MEFB 506 Marine Parasitology and Disease (SML) MEFB 508 Marine Ecosystem Research and Management (SML) MEFB 500 Evolution and Marine Diversity (SML) MEFB 500 Evolution and Marine Diversity (SML) MEFB 500 Loastines in Crisis MEFB 674 Ecology and Group Marine Ecology MEFB 675 Marine Mammal Biology (SML) MEFB 675 Marine Mammal Biology (SML) MEFB 676 Marine Mammal Biology (SML) MEFB 670 Coastlines in Crisis MEFB 674 Ecology and Marine Ervironment (SML) MEFB 702 Sustainable Marine Environment (SML) MEFB 717 Lake Ecology MEFB 71 Field Animal Behavior (SML) MEFB 71 Research in Biology and Conservation MEFB 73 Physiology of Fishes NR 70 Continued or Physiology NR 744 Biogeochemistry 200L 610 Principles of Aquaculture 200L 620 Principles of Animal Physiology 200L 610 Principles of Aquaculture 200L 690 Evolution 200L 710 Sharks and Bony Fishes	Choose one Animal Survey		3-4
ZOOL 542 Omithology ZOOL 710 Sharks and Bony Fishes Capstone: BIOL 780 Capstone Companion Course MEFB Electives  Select three courses from the following: ANSC 701 Physiology of Reproduction BIOL 566 Systematic Botany BIOL 706 Data Science with R for the Life Sciences BIOL 720 Plant-Animal Interactions BMCB 605 Principles of Cell Biology BMS 503 General Microbiology & BMS 504 and General Microbiology & BMS 504 Introduction to Oceanography GEN 713 Microbial Ecology and Evolution MARI 705 Introduction to Applied Science Communication (SML) MEFB 506 Marine Parasitology and Disease (SML) MEFB 506 Marine Parasitology and Disease (SML) MEFB 508 Marine Ecosystem Research and Management (SML) MEFB 500 Evolution and Marine Diversity (SML) MEFB 501 Field Omithology (SML) MEFB 502 Evolution and Marine Diversity (SML) MEFB 503 Evolution and Marine Diversity (SML) MEFB 504 Casatlines in Crisis MEFB 505 Introduction to Marine Botany MEFB 625 Introduction to Marine Botany MEFB 626 Marine Evolution and Ecology MEFB 647 Ecology and Marine Environment (SML) MEFB 500 Sustainable Marine Fineries (SML) MEFB 675 Marine Mammal Biology (SML) MEFB 676 Marine Mammal Biology and Conservation MEFB 677 Aguatic Plants in Restoration/Management (SML) MEFB 702 Sustainable Marine Environment (SML) MEFB 714 Field Animal Behavior (SML) MEFB 715 Research in Biology and Conservation MEFB 716 Research in Biology and Conservation MEFB 717 Aguatic Plants in Restoration/Management (C) MEFB 718 Parks: Biology and Conservation (SML) MEFB 719 Aguatic Plants in Restoration/Management (SML) MEFB 750 Physiology of Fishes NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 714 Biogeochemistry ZOOL 518 Comparative Morphology and Biology of Vertebrates ZOOL 524 Ontithology ZOOL 610 Principles of Aquaculture ZOOL 625 Principles of Aquaculture ZOOL 6260 And Animal Physiology Laboratory ZOOL 610 Principles of Aquaculture	MEFB 628	Marine Invertebrate Evolution and Ecology	
Capstone: BIOL 780 Capstone Companion Course MEFB Electives  Select three courses from the following: ANSC 701 Physiology of Reproduction BIOL 566 Systematic Botany BIOL 706 Data Science with fire the Life Sciences BIOL 720 Plant-Animal Interactions BIOL 503 BMCB 605 Principles of Cell Biology BMS 503 General Microbiology & BMS 504 and General Microbiology Laboratory ESCI 501 Introduction to Oceanography GBN 173 Microbial Ecology and Evolution MARI 705 Introduction to Applied Science Communication (SML) MEFB 506 Marine Parasitology and Disease (SML) MEFB 508 Marine Coosystem Research and Management (SML) MEFB 509 MEFB 501 Field Omithology (SML) MEFB 503 MEFB 625 Introduction to Marine Diversity (SML) MEFB 504 MEFB 625 Introduction to Marine Botany MEFB 625 MeFB 625 Marine Mammal Biology (SML) MEFB 630 MEFB 640 MEFB 674 Ecology and Marine Environment (SML) MEFB 675 Marine Mammal Biology and Conservation MEFB 702 Sustainable Marine Fisheries (SML) MEFB 714 Field Animal Behavior (SML) MEFB 717 Lake Ecology MEFB 718 Research in Biology and Conservation MEFB 751 Research in Biology and Conservation MEFB 753 Research in Biology and Conservation MEFB 754 Aquatic Plants in Restoration/Management (C) MEFB 755 Biological Oceanography (C) MEFB 756 MEFB 751 Research in Biology and Conservation (SML) MEFB 755 Biological Oceanography (C) MEFB 751 Research in Biology at the Shoals Marine Lab (SML) MEFB 755 Biological Oceanography (C) MEFB 751 Research in Biology of These NR 504 Freshwater Resources NR 703 Research in Biology of Vertebrates (SML) MEFB 755 Biological Oceanography (C) MEFB 751 Research in Biology of Animal Physiology Research in Biology and Biology of Vertebrates NR 704 Principles of Aquaculture ZOOL 626 ZOOL 626 ZOOL 620 ZOOL 630 ZOOL 63	MEFB 675	Marine Mammal Biology and Conservation	
Capstone:  BIOL 780 Capstone Companion Course  MERB Electives  Select three courses from the following:  ANSC 701 Physiology of Reproduction  BIOL 566 Systematic Botany  BIOL 706 Data Science with R for the Life Sciences  BIOL 720 Plant-Animal Interactions  BMCB 605 Principles of Cell Biology  BMS 503 General Microbiology  BMS 504 and General Microbiology Laboratory  ESCI 501 Introduction to Oceanography  GEN 713 Microbial Ecology and Evolution  MARI 705 Introduction to Marine Policy Understanding US Ocean, Coastal and Great Lakes Policy  MEFB 505 Introduction to Applied Science Communication (SML)  MEFB 506 Marine Parasitology and Disease (SML)  MEFB 508 Marine Ecoaystem Research and Management (SML)  MEFB 509 Evolution and Marine Diversity (SML)  MEFB 530 Evolution and Marine Diversity (SML)  MEFB 530 Marine Mammal Biology (SML)  MEFB 674 Ecology and Marine Environment (SML)  MEFB 675 Marine Mammal Biology and Conservation  MEFB 702 Sustainable Marine Environment (SML)  MEFB 714 Field Animal Behavior (SML)  MEFB 737 Aguatic Plants in Restoration (SML)  MEFB 741 Sharks: Biology and Conservation (SML)  MEFB 751 Research in Biology and Conservation (SML)  MEFB 752 Biological Oceanography (C)  MEFB 753 Physiology of Fishes  NR 703 Watershed Water Quality Management (C)  MEFB 773 Physiology of Fishes  NR 704 President of Marine Physiology  NR 705 Physiology of Pishes  NR 706 President of Marine Physiology  NR 714 Biogeochemistry  ZOOL 610 Principles of Animal Physiology  A COOL 670 Sharks and Bony Fishes	Z00L 542	Ornithology	
MEFB Electives  Select three courses from the following:  ANSC 701 Physiology of Reproduction  BIOL 566 Systematic Botany  BIOL 706 Data Science with R for the Life Sciences  BIOL 720 Plant-Animal Interactions  BMCB 605 Principles of Cell Biology  BMS 503 General Microbiology  8 MMS 504 and General Microbiology  CEST 501 Introduction to Oceanography  GEN 713 Microbial Ecology and Evolution  MARI 705 Introduction to Applied Science Communication (SML)  MEFB 506 Marine Parasitology and Disease (SML)  MEFB 508 Marine Ecosystem Research and Management (SML)  MEFB 500 Evolution and Marine Diversity (SML)  MEFB 530 Evolution and Marine Diversity (SML)  MEFB 535 Marine Marmand Biology (SML)  MEFB 625 Introduction to Marine Botany  MEFB 625 Introduction to Marine Botany  MEFB 626 Marine Marine Botany  MEFB 627 Ecology and Marine Botany  MEFB 628 Marine Marmand Biology (SML)  MEFB 629 Coastlines in Crisis  MEFB 629 Coastlines in Crisis  MEFB 620 Sustainable Marine Fisheries (SML)  MEFB 621 Ecology and Marine Environment (SML)  MEFB 622 Sustainable Marine Fisheries (SML)  MEFB 623 Harine Marmand Biology and Conservation  MEFB 714 Field Animal Behavior (SML)  MEFB 715 Lake Ecology  MEFB 716 Research in Biology at the Shoals Marine Los (SML)  MEFB 717 Lake Ecology  MEFB 718 Research in Biology at the Shoals Marine Los (SML)  MEFB 719 Research in Biology at the Shoals Marine Los (SML)  MEFB 75 Biological Oceanography (C)  MEFB 75 Biological Oceanography (C)  MEFB 771 Harines Biology of Fishes  NR 504 Freshwater Resources  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 714 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 525 Principles of Animal Physiology  A 200L 600 Evolution  ZOOL 670 Evolution  Soul 710 Sharks and Bony Fishes	Z00L 710	Sharks and Bony Fishes	
Select three courses from the following:  ANSC 701	Capstone:		
Select three courses from the following:  ANSC 701 Physiology of Reproduction BIOL 566 Systematic Botarny BIOL 706 Data Science with R for the Life Sciences BIOL 720 Plant-Animal Interactions BMCB 605 Principles of Cell Biology BMS 503 General Microbiology Laboratory ESCI 501 Introduction to Oceanography GEN 713 Microbial Ecology and Evolution MARI 705 Introduction to Oceanography GEN 713 Microbial Ecology and Evolution MARI 705 Introduction to Marine Policy: Understanding US Ocean, Coastal and Great Lakes Policy MEFB 505 Introduction to Applied Science Communication (SML) MEFB 506 Marine Parasitology and Disease (SML) MEFB 508 Marine Ecosystem Research and Management (SML) MEFB 510 Field Ornithology (SML) MEFB 530 Evolution and Marine Diversity (SML) MEFB 531 Evolution and Marine Diversity (SML) MEFB 625 Introduction to Marine Botany MEFB 625 Introduction to Marine Botany MEFB 628 Marine Invertebrate Evolution and Ecology MEFB 674 Ecology and Marine Environment (SML) MEFB 702 Sustainable Marine Fisheries (SML) MEFB 714 Field Animal Behavior (SML) MEFB 717 Lake Ecology MEFB 741 Sharks: Biology and Conservation (SML) MEFB 741 Sharks: Biology and Conservation (SML) MEFB 753 Research in Biology at the Shoals Marine Lab (SML) MEFB 754 Anatomy and Function of Marine Vertebrates (SML) MEFB 755 Biological Oceanography (O) MEFB 770 Hysiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management MEFB 773 Physiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry 2001. 518 Comparative Morphology and Biology of Vertebrates 2001. 625 Principles of Aquaculture 2001. 626 Principles of Animal Physiology 2001. 610 Principles of Animal Physiol		Capstone Companion Course	
ANSC 701 Physiology of Reproduction BIOL 566 Systematic Botany BIOL 706 Data Science with R for the Life Sciences BIOL 720 Plant-Animal Interactions BMCB 605 Principles of Cell Biology BMS 503 General Microbiology BMS 503 General Microbiology Laboratory ESCI 501 Introduction to Oceanography GEN 713 Microbial Ecology and Evolution MARI 705 Introduction to Marine Policy: Understanding US Ocean, Coastal and Great Lakes Policy MEFB 506 Marine Parasitology and Disease (SML) MEFB 508 Marine Ecosystem Research and Management (SML) MEFB 500 Field Ornithology (SML) MEFB 530 Evolution and Marine Diversity (SML) MEFB 530 Evolution and Marine Diversity (SML) MEFB 530 Coastlines in Crisis MEFB 625 Introduction to Marine Botany MEFB 628 Marine Invertebrate Evolution and Ecology MEFB 628 Marine Invertebrate Evolution and Ecology MEFB 674 Ecology and Marine Environment (SML) MEFB 702 Sustainable Marine Fisheries (SML) MEFB 714 Field Animal Behavior (SML) MEFB 731 Lake Ecology MEFB 741 Sharks: Biology and Conservation MEFB 742 Aquatic Plants in Restoration/Management (C) MEFB 743 Research in Biology at the Shoals Marine Lab (SML) MEFB 755 Biological Oceanography (C) MEFB 773 Physiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management MEFR 773 Physiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry 2001. 610 Principles of Aquaculture 2001. 625 Principles of Animal Physiology 2001. 610 Sharks and Bony Fishes			
BIOL 566 Systematic Botany BIOL 706 Data Science with R for the Life Sciences BIOL 720 Plant-Animal Interactions BMCB 605 Principles of Cell Biology BMS 503 General Microbiology 8 BMS 504 and General Microbiology 8 BMS 504 And General Microbiology Laboratory ESCI 501 Introduction to Oceanography GEN 713 Microbial Ecology and Evolution MARI 705 Introduction to Marine Policy: Understanding US Ocean, Coastal and Great Lakes Policy MEFB 505 Introduction to Applied Science Communication (SML) MEFB 506 Marine Parasitology and Disease (SML) MEFB 508 Marine Ecosystem Research and Management (SML) MEFB 500 Evolution and Marine Diversity (SML) MEFB 530 Evolution and Marine Diversity (SML) MEFB 530 Marine Marmal Biology (SML) MEFB 530 Marine Individual Coasting in Crisis MEFB 626 Introduction to Marine Botany MEFB 627 Marine Marmal Biology and Conservation MEFB 628 Marine Invertebrate Evolution and Ecology MEFB 674 Ecology and Marine Environment (SML) MEFB 710 MEFB 711 Lake Ecology MEFB 712 Sustainable Marine Fisheries (SML) MEFB 713 Research in Biology and Conservation (SML) MEFB 714 Sharks: Biology and Conservation (SML) MEFB 715 Research in Biology and Conservation (SML) MEFB 716 MEFB 717 Aquatic Plants in Restoration/Management (C) MEFB 718 Research in Biology and Conservation (SML) MEFB 719 MEFB 710 MEFB 711 Research in Biology and Conservation and Management MEFB 712 Fisheries Biology: Conservation and Management MEFB 713 Physiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry ZOOL 518 Comparative Morphology and Biology of Vertebrates ZOOL 542 Ornithology ZOOL 610 Principles of Aquiaculture ZOOL 625 Principles of Aquiaculture ZOOL 630 Evolution ZOOL 710 Sharks and Bony Fishes		the following:	
BIOL 706 BIOL 720 Plant-Animal Interactions BIOL 720	ANSC 701		
BIOL 720 Plant-Animal Interactions BMCB 605 Principles of Cell Biology BMS 503 General Microbiology 8 BMS 504 and General Microbiology Laboratory ESCI 501 Introduction to Oceanography GEN 713 Microbial Ecology and Evolution MARI 705 Introduction to Oceanography GEN 713 Microbial Ecology and Evolution MARI 705 Introduction to Applied Science Communication (SML) MEFB 505 Introduction to Applied Science Communication (SML) MEFB 506 Marine Parasitiology and Disease (SML) MEFB 508 Marine Ecosystem Research and Management (SML) MEFB 510 Field Ornithology (SML) MEFB 530 Evolution and Marine Diversity (SML) MEFB 530 Evolution and Marine Diversity (SML) MEFB 530 Locastlines in Crisis MEFB 625 Introduction to Marine Botany MEFB 626 Introduction to Marine Botany MEFB 628 Marine Invertebrate Evolution and Ecology MEFB 674 Ecology and Marine Environment (SML) MEFB 675 Marine Mammal Biology and Conservation MEFB 702 Sustainable Marine Fisheries (SML) MEFB 714 Field Animal Behavior (SML) MEFB 717 Lake Ecology MEFB 717 Lake Ecology MEFB 718 Sharks: Biology and Conservation (SML) MEFB 719 Research in Biology at the Shoals Marine Lab (SML) MEFB 75 Biological Oceanography (C) MEFB 75 Biological Oceanography (C) MEFB 772 Fisheries Biology: Conservation and Management MEFB 773 Physiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry ZOOL 518 Comparative Morphology and Biology of Vertebrates ZOOL 542 Ornithology ZOOL 610 Principles of Animal Physiology A 20OL 626 Principles of Animal Physiology Laboratory ZOOL 690 Evolution			
BMCB 605 Principles of Cell Biology BMS 503 General Microbiology & BMS 504 and General Microbiology Laboratory ESCI 501 Introduction to Oceanography GEN 713 Microbial Ecology and Evolution MARI 705 Introduction to Marine Policy: Understanding US Ocean, Coastal and Great Lakes Policy MEFB 505 Introduction to Applied Science Communication (SML) MEFB 506 Marine Parasitology and Disease (SML) MEFB 508 Marine Ecosystem Research and Management (SML) MEFB 509 Evolution and Marine Diversity (SML) MEFB 530 Evolution and Marine Diversity (SML) MEFB 535 Marine Mammal Biology (SML) MEFB 650 Introduction to Marine Botany MEFB 625 Introduction to Marine Botany MEFB 625 Introduction to Marine Botany MEFB 626 Marine Invertebrate Evolution and Ecology MEFB 674 Ecology and Marine Environment (SML) MEFB 675 Marine Mammal Biology and Conservation MEFB 702 Sustainable Marine Fisheries (SML) MEFB 714 Field Animal Behavior (SML) MEFB 717 Lake Ecology MEFB 718 Research in Biology and Conservation (SML) MEFB 741 Sharks: Biology and Conservation (SML) MEFB 751 Research in Biology at the Shoals Marine Lab (SML) MEFB 753 Physiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry ZOOL 518 Comparative Morphology and Biology of Vertebrates ZOOL 542 Ornithology ZOOL 625 Principles of Animal Physiology & ZOOL 660 Evolution ZOOL 710 Sharks and Bony Fishes			
BMS 503 8 BMS 504 8 BMS 504 and General Microbiology Laboratory ESCI 501 Introduction to Oceanography GEN 713 Microbial Ecology and Evolution MARI 705 Introduction to Marine Policy. Understanding US Ocean, Coastal and Great Lakes Policy MEFB 505 Introduction to Applied Science Communication (SML) MEFB 506 Marine Parasitology and Disease (SML) MEFB 508 Marine Ecosystem Research and Management (SML) MEFB 510 Field Ornithology (SML) MEFB 530 Evolution and Marine Diversity (SML) MEFB 535 Marine Mammal Biology (SML) MEFB 636 Merine Boso Marine Introduction to Marine Botany MEFB 628 Marine Introduction to Marine Botany MEFB 628 Marine Introduction to Marine Botany MEFB 675 Marine Mammal Biology and Conservation MEFB 702 Sustainable Marine Environment (SML) MEFB 702 MEFB 714 Field Animal Behavior (SML) MEFB 717 Lake Ecology MEFB 711 MEFB 711 MEFB 711 MEFB 751 Research in Biology and Conservation (SML) MEFB 751 Research in Biology at the Shoals Marine Lab (SML) MEFB 751 Research in Biology at the Shoals Marine Lab (SML) MEFB 752 Fisheries Biology: Conservation and Management MEFB 773 Physiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry ZOOL 518 Comparative Morphology and Biology of Vertebrates ZOOL 542 Ornithology ZOOL 625 Principles of Aquaculture ZOOL 626 ZOOL 670 ZOOL 710 Sharks and Bony Fishes			
BBMS 504 and General Microbiology Laboratory  ESCI 501 Introduction to Oceanography GEN 713 Microbial Ecology and Evolution  MARI 705 Introduction to Marine Policy: Understanding US Ocean, Coastal and Great Lakes Policy  MEFB 505 Introduction to Applied Science Communication (SML)  MEFB 506 Marine Parasitology and Disease (SML)  MEFB 508 Marine Ecosystem Research and Management (SML)  MEFB 510 Field Ornithology (SML)  MEFB 530 Evolution and Marine Diversity (SML)  MEFB 535 Marine Mammal Biology (SML)  MEFB 690 Coastlines in Crisis  MEFB 692 Introduction to Marine Botany  MEFB 625 Introduction to Marine Botany  MEFB 626 Marine Invertebrate Evolution and Ecology  MEFB 674 Ecology and Marine Environment (SML)  MEFB 675 Marine Mammal Biology and Conservation  MEFB 702 Sustainable Marine Fisheries (SML)  MEFB 711 Lake Ecology  MEFB 711 Sharks: Biology and Conservation (SML)  MEFB 711 Sharks: Biology and Conservation (SML)  MEFB 751 Research in Biology at the Shoals Marine Lab (SML)  MEFB 755 Biological Oceanography (C)  MEFB 772 Fisheries Biology: Conservation and Management  MEFB 773 Physiology of Fishes  NR 504 Freshwater Resources  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 625 Principles of Animal Physiology  and Animal Physiology Laboratory  ZOOL 690 Evolution  Sharks and Bony Fishes			
ESCI 501 Introduction to Oceanography GEN 713 Microbial Ecology and Evolution MARI 705 Introduction to Marine Policy. Understanding US Ocean, Coastal and Great Lakes Policy MEFB 505 Introduction to Applied Science Communication (SML) MEFB 506 Marine Parasitology and Disease (SML) MEFB 508 Marine Ecosystem Research and Management (SML) MEFB 509 Evolution and Marine Diversity (SML) MEFB 510 Field Ornithology (SML) MEFB 530 Evolution and Marine Diversity (SML) MEFB 535 Marine Mammal Biology (SML) MEFB 590 Coastlines in Crisis MEFB 625 Introduction to Marine Botany MEFB 626 Marine Invertebrate Evolution and Ecology MEFB 627 Lecology and Marine Environment (SML) MEFB 630 Marine Mammal Biology and Conservation MEFB 631 Marine Mammal Biology and Conservation MEFB 632 Marine Mammal Biology and Conservation MEFB 633 Marine Marine Fisheries (SML) MEFB 714 Field Animal Behavior (SML) MEFB 715 Lake Ecology MEFB 711 Sharks: Biology and Conservation (SML) MEFB 717 Aquatic Plants in Restoration/Management (C) MEFB 751 Research in Biology at the Shoals Marine Lab (SML) MEFB 751 Research in Biology at the Shoals Marine Lab (SML) MEFB 753 Biological Oceanography (C) MEFB 754 Anatomy and Function of Marine Vertebrates (SML) MEFB 775 Fisheries Biology. Conservation and Management MEFB 770 Watershed Water Quality Management MEFB 771 Mammalogy NR 744 Biogeochemistry ZOOL 518 Comparative Morphology and Biology of Vertebrates ZOOL 542 Ornithology ZOOL 625 Principles of Aquaculture ZOOL 626 Principles of Aquaculture ZOOL 627 Principles of Animal Physiology A ZOOL 628 Principles of Animal Physiology A ZOOL 629 Evolution Sharks and Bony Fishes			
GEN 713 Microbial Ecology and Evolution  MARI 705 Introduction to Marine Policy. Understanding US Ocean, Coastal and Great Lakes Policy  MEFB 505 Introduction to Applied Science Communication (SML)  MEFB 506 Marine Parasitology and Disease (SML)  MEFB 508 Marine Ecosystem Research and Management (SML)  MEFB 510 Field Ornithology (SML)  MEFB 530 Evolution and Marine Diversity (SML)  MEFB 535 Marine Mammal Biology (SML)  MEFB 636 Coastlines in Crisis  MEFB 625 Introduction to Marine Botany  MEFB 628 Marine Invertebrate Evolution and Ecology  MEFB 674 Ecology and Marine Environment (SML)  MEFB 675 Marine Mammal Biology and Conservation  MEFB 702 Sustainable Marine Fisheries (SML)  MEFB 714 Field Animal Behavior (SML)  MEFB 717 Lake Ecology  MEFB 718 Aquatic Plants in Restoration/Management (C)  MEFB 741 Sharks: Biology and Conservation (SML)  MEFB 751 Research in Biology at the Shoals Marine Lab (SML)  MEFB 752 Biological Oceanography (C)  MEFB 773 Physiology of Fishes  NR 504 Freshwater Resources  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 525 Principles of Aquaculture  ZOOL 626 Principles of Animal Physiology  and Animal Physiology Laboratory  ZOOL 690 Evolution  Sharks and Bony Fishes			
MARI 705 Introduction to Marine Policy: Understanding US Ocean, Coastal and Great Lakes Policy  MEFB 505 Introduction to Applied Science Communication (SML)  MEFB 506 Marine Parasitology and Disease (SML)  MEFB 508 Marine Ecosystem Research and Management (SML)  MEFB 510 Field Ornithology (SML)  MEFB 530 Evolution and Marine Diversity (SML)  MEFB 535 Marine Mammal Biology (SML)  MEFB 535 Marine Mammal Biology (SML)  MEFB 625 Introduction to Marine Botany  MEFB 628 Marine Invertebrate Evolution and Ecology  MEFB 674 Ecology and Marine Environment (SML)  MEFB 675 Marine Mammal Biology and Conservation  MEFB 702 Sustainable Marine Fisheries (SML)  MEFB 711 Field Animal Behavior (SML)  MEFB 717 Lake Ecology  MEFB 741 Sharks: Biology and Conservation (SML)  MEFB 751 Research in Biology at the Shoals Marine Lab (SML)  MEFB 755 Biological Oceanography (C)  MEFB 756 Fisheries Biology: Conservation and Management  MEFB 772 Fisheries Biology: Conservation and Management  MEFB 773 Physiology of Fishes  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 600 Evolution  Sharks and Bony Fishes			
MEFB 505 Introduction to Applied Science Communication (SML) MEFB 506 Marine Parasitology and Disease (SML) MEFB 508 Marine Ecosystem Research and Management (SML) MEFB 510 Field Ornithology (SML) MEFB 530 Evolution and Marine Diversity (SML) MEFB 535 Marine Mammal Biology (SML) MEFB 590 Coastlines in Crisis MEFB 625 Introduction to Marine Botany MEFB 628 Marine Invertebrate Evolution and Ecology MEFB 674 Ecology and Marine Environment (SML) MEFB 675 Marine Mammal Biology and Conservation MEFB 702 Sustainable Marine Fisheries (SML) MEFB 714 Field Animal Behavior (SML) MEFB 714 Sharks: Biology and Conservation (SML) MEFB 741 Sharks: Biology and Conservation (SML) MEFB 751 Research in Biology at the Shoals Marine Lab (SML) MEFB 751 Research in Biology at the Shoals Marine Lab (SML) MEFB 755 Biological Oceanography (C) MEFB 772 Fisheries Biology. Conservation and Management MEFB 773 Physiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry ZOOL 518 Comparative Morphology and Biology of Vertebrates ZOOL 625 Principles of Aquaculture ZOOL 625 Principles of Animal Physiology and Animal Physiology Laboratory ZOOL 690 Evolution	MARI 705		
MEFB 506 Marine Parasitology and Disease (SML) MEFB 508 Marine Ecosystem Research and Management (SML) MEFB 510 Field Ornithology (SML) MEFB 530 Evolution and Marine Diversity (SML) MEFB 535 Marine Mammal Biology (SML) MEFB 535 Marine Mammal Biology (SML) MEFB 590 Coastlines in Crisis MEFB 626 Introduction to Marine Botany MEFB 628 Marine Invertebrate Evolution and Ecology MEFB 674 Ecology and Marine Environment (SML) MEFB 675 Marine Mammal Biology and Conservation MEFB 702 Sustainable Marine Fisheries (SML) MEFB 714 Field Animal Behavior (SML) MEFB 717 Lake Ecology MEFB 711 Sharks: Biology and Conservation (SML) MEFB 741 Sharks: Biology and Conservation (SML) MEFB 751 Research in Biology at the Shoals Marine Lab (SML) MEFB 754 Anatomy and Function of Marine Vertebrates (SML) MEFB 755 Biological Oceanography (C) MEFB 772 Fisheries Biology: Conservation and Management MEFB 773 Physiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry ZOOL 518 Comparative Morphology and Biology of Vertebrates ZOOL 542 Ornithology ZOOL 610 Principles of Aquaculture ZOOL 625 Principles of Aquaculture ZOOL 626W and Animal Physiology Laboratory ZOOL 690 Evolution ZOOL 710 Sharks and Bony Fishes		Policy	
MEFB 508 Marine Ecosystem Research and Management (SML)  MEFB 510 Field Ornithology (SML)  MEFB 530 Evolution and Marine Diversity (SML)  MEFB 535 Marine Mammal Biology (SML)  MEFB 535 Marine Mammal Biology (SML)  MEFB 590 Coastlines in Crisis  MEFB 625 Introduction to Marine Botany  MEFB 628 Marine Invertebrate Evolution and Ecology  MEFB 674 Ecology and Marine Environment (SML)  MEFB 675 Marine Mammal Biology and Conservation  MEFB 702 Sustainable Marine Fisheries (SML)  MEFB 714 Field Animal Behavior (SML)  MEFB 717 Lake Ecology  MEFB 741 Sharks: Biology and Conservation (SML)  MEFB 741 Sharks: Biology and Conservation (SML)  MEFB 743 Aquatic Plants in Restoration/Management (C)  MEFB 754 Anatomy and Function of Marine Vertebrates (SML)  MEFB 755 Biological Oceanography (C)  MEFB 772 Fisheries Biology. Conservation and Management  MEFB 773 Physiology of Fishes  NR 504 Freshwater Resources  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 610 Principles of Aquaculture  ZOOL 625 Principles of Aquaculture  ZOOL 626W and Animal Physiology  ADOL 710 Sharks and Bony Fishes	MEFB 505	Introduction to Applied Science Communication (SML)	
MEFB 510 Field Ornithology (SML) MEFB 530 Evolution and Marine Diversity (SML) MEFB 535 Marine Mammal Biology (SML) MEFB 535 Marine Mammal Biology (SML) MEFB 590 Coastlines in Crisis MEFB 625 Introduction to Marine Botany MEFB 628 Marine Invertebrate Evolution and Ecology MEFB 674 Ecology and Marine Environment (SML) MEFB 675 Marine Mammal Biology and Conservation MEFB 702 Sustainable Marine Fisheries (SML) MEFB 714 Field Animal Behavior (SML) MEFB 717 Lake Ecology MEFB 717 Lake Ecology MEFB 741 Sharks: Biology and Conservation (SML) MEFB 741 Sharks: Biology at the Shoals Marine Lab (SML) MEFB 751 Research in Biology at the Shoals Marine Lab (SML) MEFB 754 Anatomy and Function of Marine Vertebrates (SML) MEFB 755 Biological Oceanography (C) MEFB 772 Fisheries Biology. Conservation and Management MEFB 773 Physiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry ZOOL 518 Comparative Morphology and Biology of Vertebrates ZOOL 542 Ornithology ZOOL 610 Principles of Aquaculture ZOOL 625 Principles of Animal Physiology & ZOOL 626W and Animal Physiology Laboratory ZOOL 690 Evolution ZOOL 710 Sharks and Bony Fishes	MEFB 506	Marine Parasitology and Disease (SML)	
MEFB 530 Evolution and Marine Diversity (SML)  MEFB 535 Marine Mammal Biology (SML)  MEFB 590 Coastlines in Crisis  MEFB 625 Introduction to Marine Botany  MEFB 628 Marine Invertebrate Evolution and Ecology  MEFB 674 Ecology and Marine Environment (SML)  MEFB 675 Marine Mammal Biology and Conservation  MEFB 702 Sustainable Marine Fisheries (SML)  MEFB 714 Field Animal Behavior (SML)  MEFB 717 Lake Ecology  MEFB 717 MEFB 717 Aquatic Plants in Restoration/Management (C)  MEFB 741 Sharks: Biology and Conservation (SML)  MEFB 741 Aquatic Plants in Restoration/Management (C)  MEFB 751 Research in Biology at the Shoals Marine Lab (SML)  MEFB 754 Anatomy and Function of Marine Vertebrates (SML)  MEFB 755 Biological Oceanography (C)  MEFB 772 Fisheries Biology. Conservation and Management  MEFB 773 Physiology of Fishes  NR 504 Freshwater Resources  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 610 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology  and Animal Physiology Laboratory  ZOOL 690 Evolution  Sharks and Bony Fishes	MEFB 508	Marine Ecosystem Research and Management (SML)	
MEFB 535 Marine Mammal Biology (SML)  MEFB 590 Coastlines in Crisis  MEFB 625 Introduction to Marine Botany  MEFB 628 Marine Invertebrate Evolution and Ecology  MEFB 674 Ecology and Marine Environment (SML)  MEFB 675 Marine Mammal Biology and Conservation  MEFB 702 Sustainable Marine Fisheries (SML)  MEFB 714 Field Animal Behavior (SML)  MEFB 717 Lake Ecology  MEFB 718 Sharks: Biology and Conservation (SML)  MEFB 741 Sharks: Biology and Conservation (SML)  MEFB 741 Aquatic Plants in Restoration/Management (C)  MEFB 751 Research in Biology at the Shoals Marine Lab (SML)  MEFB 754 Anatomy and Function of Marine Vertebrates (SML)  MEFB 755 Biological Oceanography (C)  MEFB 772 Fisheries Biology: Conservation and Management  MEFB 773 Physiology of Fishes  NR 504 Freshwater Resources  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 610 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology  & ZOOL 626W and Animal Physiology Laboratory  ZOOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes			
MEFB 590 Coastlines in Crisis  MEFB 625 Introduction to Marine Botany  MEFB 628 Marine Invertebrate Evolution and Ecology  MEFB 674 Ecology and Marine Environment (SML)  MEFB 675 Marine Mammal Biology and Conservation  MEFB 702 Sustainable Marine Fisheries (SML)  MEFB 714 Field Animal Behavior (SML)  MEFB 717 Lake Ecology  MEFB 717 Aquatic Plants in Restoration/Management (C)  MEFB 741 Sharks: Biology and Conservation (SML)  MEFB 747 Aquatic Plants in Restoration/Management (C)  MEFB 751 Research in Biology at the Shoals Marine Lab (SML)  MEFB 754 Anatomy and Function of Marine Vertebrates (SML)  MEFB 755 Biological Oceanography (C)  MEFB 772 Fisheries Biology. Conservation and Management  MEFB 773 Physiology of Fishes  NR 504 Freshwater Resources  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 610 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology  & ZOOL 626W and Animal Physiology Laboratory  ZOOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes			
MEFB 625 Introduction to Marine Botany MEFB 628 Marine Invertebrate Evolution and Ecology MEFB 674 Ecology and Marine Environment (SML) MEFB 675 Marine Mammal Biology and Conservation MEFB 702 Sustainable Marine Fisheries (SML) MEFB 714 Field Animal Behavior (SML) MEFB 717 Lake Ecology MEFB 717 Lake Ecology MEFB 741 Sharks: Biology and Conservation (SML) MEFB 747 Aquatic Plants in Restoration/Management (C) MEFB 751 Research in Biology at the Shoals Marine Lab (SML) MEFB 754 Anatomy and Function of Marine Vertebrates (SML) MEFB 755 Biological Oceanography (C) MEFB 772 Fisheries Biology: Conservation and Management MEFB 773 Physiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry ZOOL 518 Comparative Morphology and Biology of Vertebrates ZOOL 542 Ornithology ZOOL 610 Principles of Aquaculture ZOOL 625 Principles of Animal Physiology & ZOOL 626W and Animal Physiology Laboratory ZOOL 690 Evolution ZOOL 710 Sharks and Bony Fishes			
MEFB 628 Marine Invertebrate Evolution and Ecology  MEFB 674 Ecology and Marine Environment (SML)  MEFB 675 Marine Mammal Biology and Conservation  MEFB 702 Sustainable Marine Fisheries (SML)  MEFB 714 Field Animal Behavior (SML)  MEFB 717 Lake Ecology  MEFB 741 Sharks: Biology and Conservation (SML)  MEFB 747 Aquatic Plants in Restoration/Management (C)  MEFB 751 Research in Biology at the Shoals Marine Lab (SML)  MEFB 754 Anatomy and Function of Marine Vertebrates (SML)  MEFB 755 Biological Oceanography (C)  MEFB 772 Fisheries Biology: Conservation and Management  MEFB 773 Physiology of Fishes  NR 504 Freshwater Resources  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 625 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology  & ZOOL 626W and Animal Physiology Laboratory  ZOOL 590 Evolution  Sharks and Bony Fishes			
MEFB 674 Ecology and Marine Environment (SML)  MEFB 675 Marine Mammal Biology and Conservation  MEFB 702 Sustainable Marine Fisheries (SML)  MEFB 714 Field Animal Behavior (SML)  MEFB 717 Lake Ecology  MEFB 741 Sharks: Biology and Conservation (SML)  MEFB 747 Aquatic Plants in Restoration/Management (C)  MEFB 751 Research in Biology at the Shoals Marine Lab (SML)  MEFB 754 Anatomy and Function of Marine Vertebrates (SML)  MEFB 755 Biological Oceanography (C)  MEFB 772 Fisheries Biology: Conservation and Management  MEFB 773 Physiology of Fishes  NR 504 Freshwater Resources  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 625 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology  ADOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes			
MEFB 675 Marine Mammal Biology and Conservation  MEFB 702 Sustainable Marine Fisheries (SML)  MEFB 714 Field Animal Behavior (SML)  MEFB 717 Lake Ecology  MEFB 741 Sharks: Biology and Conservation (SML)  MEFB 747 Aquatic Plants in Restoration/Management (C)  MEFB 751 Research in Biology at the Shoals Marine Lab (SML)  MEFB 754 Anatomy and Function of Marine Vertebrates (SML)  MEFB 755 Biological Oceanography (C)  MEFB 772 Fisheries Biology: Conservation and Management  MEFB 773 Physiology of Fishes  NR 504 Freshwater Resources  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 625 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology  ADOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes			
MEFB 702 Sustainable Marine Fisheries (SML) MEFB 714 Field Animal Behavior (SML) MEFB 717 Lake Ecology MEFB 741 Sharks: Biology and Conservation (SML) MEFB 747 Aquatic Plants in Restoration/Management (C) MEFB 751 Research in Biology at the Shoals Marine Lab (SML) MEFB 754 Anatomy and Function of Marine Vertebrates (SML) MEFB 755 Biological Oceanography (C) MEFB 772 Fisheries Biology: Conservation and Management MEFB 773 Physiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry ZOOL 518 Comparative Morphology and Biology of Vertebrates ZOOL 542 Ornithology ZOOL 610 Principles of Aquaculture ZOOL 625 Principles of Animal Physiology XOOL 690 Evolution ZOOL 710 Sharks and Bony Fishes			
MEFB 714 Field Animal Behavior (SML)  MEFB 717 Lake Ecology  MEFB 741 Sharks: Biology and Conservation (SML)  MEFB 747 Aquatic Plants in Restoration/Management (C)  MEFB 751 Research in Biology at the Shoals Marine Lab (SML)  MEFB 754 Anatomy and Function of Marine Vertebrates (SML)  MEFB 755 Biological Oceanography (C)  MEFB 772 Fisheries Biology: Conservation and Management  MEFB 773 Physiology of Fishes  NR 504 Freshwater Resources  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 610 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology  & ZOOL 626W and Animal Physiology Laboratory  ZOOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes			
MEFB 717 Lake Ecology  MEFB 741 Sharks: Biology and Conservation (SML)  MEFB 747 Aquatic Plants in Restoration/Management (C)  MEFB 751 Research in Biology at the Shoals Marine Lab (SML)  MEFB 754 Anatomy and Function of Marine Vertebrates (SML)  MEFB 755 Biological Oceanography (C)  MEFB 772 Fisheries Biology. Conservation and Management  MEFB 773 Physiology of Fishes  NR 504 Freshwater Resources  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 610 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology  & ZOOL 626W and Animal Physiology Laboratory  ZOOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes			
MEFB 741 Sharks: Biology and Conservation (SML)  MEFB 747 Aquatic Plants in Restoration/Management (C)  MEFB 751 Research in Biology at the Shoals Marine Lab (SML)  MEFB 754 Anatomy and Function of Marine Vertebrates (SML)  MEFB 755 Biological Oceanography (C)  MEFB 772 Fisheries Biology: Conservation and Management  MEFB 773 Physiology of Fishes  NR 504 Freshwater Resources  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 610 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology  & ZOOL 626W and Animal Physiology Laboratory  ZOOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes			
MEFB 747 Aquatic Plants in Restoration/Management (C) MEFB 751 Research in Biology at the Shoals Marine Lab (SML) MEFB 754 Anatomy and Function of Marine Vertebrates (SML) MEFB 755 Biological Oceanography (C) MEFB 772 Fisheries Biology: Conservation and Management MEFB 773 Physiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry ZOOL 518 Comparative Morphology and Biology of Vertebrates ZOOL 542 Ornithology ZOOL 610 Principles of Aquaculture ZOOL 625 Principles of Animal Physiology 8 ZOOL 626W and Animal Physiology Laboratory ZOOL 690 Evolution ZOOL 710 Sharks and Bony Fishes			
MEFB 751 Research in Biology at the Shoals Marine Lab (SML)  MEFB 754 Anatomy and Function of Marine Vertebrates (SML)  MEFB 755 Biological Oceanography (C)  MEFB 772 Fisheries Biology. Conservation and Management  MEFB 773 Physiology of Fishes  NR 504 Freshwater Resources  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 610 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology  & ZOOL 626W and Animal Physiology Laboratory  ZOOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes	MEFB 747		
MEFB 755 Biological Oceanography (C)  MEFB 772 Fisheries Biology. Conservation and Management  MEFB 773 Physiology of Fishes  NR 504 Freshwater Resources  NR 703 Watershed Water Quality Management  NR 712 Mammalogy  NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 610 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology  & ZOOL 626W and Animal Physiology Laboratory  ZOOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes	MEFB 751		
MEFB 772 Fisheries Biology. Conservation and Management MEFB 773 Physiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry ZOOL 518 Comparative Morphology and Biology of Vertebrates ZOOL 542 Ornithology ZOOL 610 Principles of Aquaculture ZOOL 625 Principles of Animal Physiology 8 ZOOL 626W and Animal Physiology Laboratory ZOOL 690 Evolution ZOOL 710 Sharks and Bony Fishes	MEFB 754	Anatomy and Function of Marine Vertebrates (SML)	
MEFB 773 Physiology of Fishes NR 504 Freshwater Resources NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry ZOOL 518 Comparative Morphology and Biology of Vertebrates ZOOL 542 Ornithology ZOOL 610 Principles of Aquaculture ZOOL 625 Principles of Animal Physiology 8 ZOOL 626W and Animal Physiology Laboratory ZOOL 690 Evolution ZOOL 710 Sharks and Bony Fishes	MEFB 755		
NR 504 Freshwater Resources NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 610 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology 8 ZOOL 626W and Animal Physiology Laboratory  ZOOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes	MEFB 772	Fisheries Biology: Conservation and Management	
NR 703 Watershed Water Quality Management NR 712 Mammalogy NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 610 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology & ZOOL 626W and Animal Physiology Laboratory  ZOOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes	MEFB 773	Physiology of Fishes	
NR 712 Mammalogy NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 610 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology 8 ZOOL 626W and Animal Physiology Laboratory  ZOOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes	NR 504	Freshwater Resources	
NR 744 Biogeochemistry  ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 610 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology  & ZOOL 626W and Animal Physiology Laboratory  ZOOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes	NR 703	Watershed Water Quality Management	
ZOOL 518 Comparative Morphology and Biology of Vertebrates  ZOOL 542 Ornithology  ZOOL 610 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology  & ZOOL 626W and Animal Physiology Laboratory  ZOOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes	NR 712	Mammalogy	
ZOOL 542 Ornithology ZOOL 610 Principles of Aquaculture ZOOL 625 Principles of Animal Physiology & ZOOL 626W and Animal Physiology Laboratory ZOOL 690 Evolution ZOOL 710 Sharks and Bony Fishes	NR 744	Biogeochemistry	
ZOOL 610 Principles of Aquaculture  ZOOL 625 Principles of Animal Physiology & ZOOL 626W and Animal Physiology Laboratory  ZOOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes			
ZOOL 625 Principles of Animal Physiology & ZOOL 626W and Animal Physiology Laboratory ZOOL 690 Evolution ZOOL 710 Sharks and Bony Fishes			
& ZOOL 626W and Animal Physiology Laboratory  ZOOL 690 Evolution  ZOOL 710 Sharks and Bony Fishes			
ZOOL 690 Evolution ZOOL 710 Sharks and Bony Fishes			
ZOOL 710 Sharks and Bony Fishes			
·			
ZOOL 708 Stream Ecology (C)			
ZOOL 733W Behavioral Ecology (C)			

ZO	OL 736	Genes and Behavior (C)
ZO	OL 740	Acoustic Ecology (C)
ZO	OL 777W	Neuroethology (C)
Researc	ch and Special Projects	2
Select f	from the following Cou	urses:
BIC	OL 795	Independent Investigations in Biology
BM	/IS 795	Investigations in Biomedical Science
BIC	OL 799H	Honors Senior Thesis (C)
ME	EFB 403	Investigative Marine Biology Laboratory (SML)
ME	EFB 730	Underwater Research (SML)
ME	EFB 751	Research in Biology at the Shoals Marine Lab (SML)
ME	EFB 795	Independent Investigations in Marine, Estuarine, and Freshwater Biology
TEC	CH 797	Undergraduate Ocean Research Project (C) <sup>3</sup>
ME	EFB 799H	Honors Senior Thesis in Marine, Estuarine, and Freshwater Biology (C)

- A single course cannot be used for both a core requirement and an elective (e.g., ZOOL 542 cannot be used to fulfill the animal survey requirement and as an elective).
- Primary focus of the project must be Marine, Estuarine and/or Freshwater. A 600, 695, 795, or 799 experience may substitute for one elective with academic advisor approval, but only if taken for at least four credits. These four credits may be spread over multiple semesters if they are consecutive and with the same faculty mentor.
- <sup>3</sup> This class requires enrollment in both fall and spring sections, 2 credits/semester for a total of 4 credits.

# **Capstone Experience**

As part of the University of New Hampshire's Discovery Program requirements, all students must complete a capstone experience during their senior year (after earning at least 90 credits). The capstone experience for students majoring in MEFB consists of BOTH (1) an approved individual experience AND (2) the successful completion of the BIOL 780 Capstone Companion Course. Students will not be approved for graduation until capstone certification has been granted.

#### 1) The individual experience

The individual experience may be satisfied through various forms of experiential learning (e.g., Honors thesis, mentored research project, internship) or a course denoted with a "(C)" in the courses listed above. The individual experience must fulfill at least one of the University's capstone criteria:

- · synthesizes and applies disciplinary knowledge and skills
- · fosters reflection on undergraduate learning and experience
- · demonstrates emerging professional competencies
- applies, analyzes, and/or interprets research, data, or artistic expression
- explores areas of interest based on the integration of the prior learning

Before beginning *any* capstone individual experience, students must submit a completed capstone approval form to their Program Coordinator.

Students can obtain this form on the Department's Capstone page or from their Program Coordinator. Here they will describe their proposed individual experience and how it fulfills at least one of the University's capstone criteria listed above. If the student is selecting a "C" course for their individual experience, they should obtain the course syllabus from the instructor for information about the course's content and learning objectives.

133

#### 2) Enrollment in BIOL 780 Capstone Companion Course

Students will also be required to enroll in BIOL 780 (1 cr.) during the semester of their individual experience. BIOL 780 is offered every Fall and Spring semester.

- If the individual experience is a two-semester thesis, BIOL 780 should be taken during the second semester.
- If the individual experience occurs during the summer (e.g., internship), BIOL 780 should be taken during the Fall semester that immediately follows.
- Note: Because BIOL 780 is not offered during the summer, students
  cannot complete their individual experience during the summer and
  graduate during that same September. Summer experiences could only
  be used as individual capstone experiences if completed the summer
  before the student's senior year.

# Degree Plan

# **Sample Degree Plan**

This sample degree plan serves as a general guide; students collaborate with their academic advisor to develop a personalized degree plan to meet their academic goals and program requirements.

First Year		
Fall		Credits
MEFB 401	Marine Estuarine and Freshwater Biology: Freshmen Seminar	1
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 403	General Chemistry I	4
ENGL 401	First-Year Writing	4
Discovery Course		4
	Credits	17
Spring		
BIOL 411	Introductory Biology: Molecular and Cellular	4
CHEM 404	General Chemistry II	4
BIOL 528	Applied Biostatistics I	4
<b>Discovery Course</b>		4
	Credits	16
Second Year		
Fall		
MEFB 503	Introduction to Marine Biology	3
CHEM 545	Organic Chemistry	5
& CHEM 546	and Organic Chemistry Laboratory	
BIOL 541W	Ecology	4
Discovery Course		4
	Credits	16
Spring		
BIOL 633	Data Analysis for Life Science	4
BMCB 658	General Biochemistry	3
GEN 604	Principles of Genetics	4
<b>Discovery Course</b>		4
	Credits	15

#### Fall **MEFB 625** Introduction to Marine Botany 5 **MEFB 747** Aquatic Plants in Restoration/Management 4 4 **MEFB 717** Lake Ecology **PHYS 401** Introduction to Physics I 4 4 **Discovery Course Credits** 21 **Spring** Principles of Genetics **GEN 604** 4 ZOOL 625 Principles of Animal Physiology 5 & ZOOL 626 **PHYS 402** Introduction to Physics II 4 **Animal Survey Course** 4 Credits 17 Fourth Year Fall **MEFB 755 Biological Oceanography** 3 4 Major Elective Major Elective 4 Capstone 4 Credits 15 Spring Major Elective 4 **Discovery Course** 4 4 Elective Elective 4 Credits 16

# **Student Learning Outcomes**

**Third Year** 

# Program Learning Outcomes Students will be able to:

**Total Credits** 

- Show the ability to synthesize diverse sources of information and communicate it effectively.
- Demonstrate a broad understanding of the unique characteristics, as well as the similarities, governing freshwater, estuarine and marine systems
- Have a broad understanding of biology from the molecular to the ecosystem with a particular appreciation for the abiotic and biotic factors relating to diverse aquatic ecosystems.
- Demonstrate the ability to describe basic principles of scientific inquiry and the importance of scientific study for understanding the natural world.
- Demonstrate the ability to design and experiment, collect data, analyze and graph it appropriately, and summarize the significant findings.
- Demonstrate an ability to critically and objectively evaluate data, develop hypotheses, plus interpret biological experiments and studies.
- Demonstrate an ability to communicate clearly and explicitly, both orally and in writing, following conventional scientific formats.

4 Marine, Estuarine and Freshwater Biology Major (B.S.)
Demonstrate a broad understanding of major groups of prokaryotic and eukaryotic aquatic life.