B.S. Marine Science, with optional Marine Biology, Physical Marine Science, or Aquaculture Concentrations

Student Name:
ID number:

- To earn a Bachelor of Science degree in Marine Science students must complete 1) the CORE requirements for the major, 2) at least 15 credits of approved Marine Science Electives at 300+ level, 3) UM General Education requirements, and 4) a total of at least 120 credit hours.
- In order to graduate, students entering in Fall 2001 and later must have an overall **2.0 GPA** in courses required for the major in Marine Science, i.e., in CORE courses listed below, SMS Electives, and any additional courses required for the concentrations.
- Students may choose to declare a concentration.

The requirements for these concentrations are listed separately, but can affect choices in the CORE requirements.

Course Num	Course Title	Credits	Sem.	Grade
CORE requirements for all marine science majors				
Biology, Chemistry & Policy				
BIO 100	Basic Biology	4		
BMB 280	Introduction to Molecular and Cellular Biology	3		
CHY 121	Introduction to Chemistry	3		
CHY 123	Introduction to Chemistry Laboratory	1		
CHY 122	The Molecular Basis of Chemical Change	3		
CHY 124	The Molecular Basis of Chemical Change Laboratory	1		
INT 105	Environmental Policy	3		
NFA 117	Issues and Opportunities	1		PF
Math				
MAT 232	Principles of Statistical Inference	3		
Calculus (choose 1):				
MAT 126	Calculus I	4		
Physics (choose 1 pair):				
PHY 111	General Physics I AND	4		
PHY 112	General Physics II OR	4		
PHY 121	Physics for Engineers & Physical Scientists I AND	4		
PHY 122	Physics for Engineers & Phy Sci II	4		
Earth Science (choose 1)				
ERS 101	Introduction to Geology	4		
ERS 102	Environmental Geology of Maine	4		
ERS 109	Geology of Maine	3		
SMS 108	Beaches and coasts	3		
Marine Science Core				
SMS 100	Introduction to Ocean Science	3		
SMS 201	Biology of Marine Organisms (new sp 05, replaces BIO 2	3		
SMS 302	Oceanography	3		
SMS 402	Advanced Oceanography and Marine Biology	3		
Four Integrative Marine Science Courses				
SMS 203	Integrative Marine Science Seminar	2		
SMS 204	Integrative Marine Science: Chemistry & Physics	2		
SMS 303	IMS III: Integrative Marine Science	2		
SMS 304	IMS IV: Integrative Marine Science	2		
Senior Capstone experience (4 credits total)				
SMS 400	Capstone Experience in Marine Science	3		
SMS 404	Senior Capstone Seminar	1		
		total 61-62		

MARINE SCIENCE ELECTIVES: B.S. in Marine Science without concentration

All students must complete an additional 15 credits in SMS courses and appropriate INT courses at 300 level or higher. Please consult the course list below.

• Students may choose to declare a concentration --
the requirements for those concentrations follow separately, and will determine the choice of these 15 credits.

MARINE SCIENCE ELECTIVES LIST: 15 credits required.

• To be well-prepared for further study or employment, we strongly recommend students include courses that cover primary producers, vertebrate and invertebrate organisms, and marine ecology. Students are also encouraged to take Semester by the Sea courses at the Darling Marine Center in the Autumn of their junior or senior year.

• The optional Marine Biology and Physical Marine Science Concentrations require choosing from a specific group of electives, as well as additional courses. See the appropriate checksheet for those requirements.

			credits	**semester offered**
SMS	300	Marine Ecology	3	F
SMS	306	Field Marine Ecology	4	F
INT	308	Conservation & Ecology of Marine Mammals	3	S
SMS	321	Introduction to Fisheries Science	3	S
SMS	322	Biology of Marine Vertebrates	3	SO
SMS	325	Marine Geology	3	S
SMS	330	Descriptive Physical Oceanography	3	varies
SMS	333	Applied Meteorology	3	S
SMS	373	Algae in the Ecosystem: Phytoplankton and Seaweeds	4	S
SMS	410	Marine Physics	4	F
SMS	422	Biology of Fishes	3	FO
SMS	425	Applied Population Genetics	3	SO
SMS	450	Field Experience in Marine Sciences	1 to 4	F,S
SMS	460	Climate Change: Understanding the Forecast	3	F
SMS	475	Field Marine Ecology	4	F
SMS	350	**SBS**: Undergraduate Seminar	1	F
SMS	352	**SBS**: Marine Ecology	4	F
SMS	480	**SBS**: Biology of Marine Invertebrates	4	F
SMS	481	**SBS**: Design of Marine Organisms	4	F
SMS	482	**SBS**: Human Impacts on the Ocean	3	FO
SMS	490	**SBS**: Special Topics	1 to 4	F
INT	441	**SBS**: Maritime History & Archaeology of New England	3	F
INT	484	**SBS**: Intro. Systems Modeling for Bio Sciences	2	F
SMS	485	Compar. Animal Physiology (and Lab, SMS 486)	3+1	F
INT	475	Field Studies in Ecology	Arr.	varies
SMS	491	Problems in Marine Sciences	Arr.	F,S
SMS	497	Independent Study in Marine Science	1 to 4	F,S

REQUIRED GENERAL EDUCATION COURSES:

Human Values and Social Context (18 credits minimum)
18 credits required, including at least 3 credits from each sub-category. A 3-credit course that satisfies two sub-categories will constitute completion of both; however, the credits may only be counted once.

Western Cultural Tradition (INT 441 fits here)	Credits	Sem.	Grade
Social Contexts and Institutions			
Cultural Diversity and International Perspectives			
Population and the Environment (INT 105, SMS 100, SMS 108 and SMS 482 fit here)			
Artistic and Creative Expression			

Ethics (3 credits minimum): this requirement is separate from HVSC above, but students can choose a course that meets both the Ethics and a Human Values & Social context requirement and count the credits towards both.

Demonstrated Writing Competency
(ENG 101 and two additional writing intensive courses, one must be in the major)

ENG	101	College Composition	3		
SMS	203	Integrative Marine Science Seminar (credits counted on page 1)	0		
SMS	400	Capstone Experience in Marine Sciences (credits counted on page 1)	0		
other:					

FREE ELECTIVES	**Credits**	**Sem.**	**Grade**

ADVISING NOTES

• A total of at least 120 credit hours is required to graduate.

• Without declaring a concentration in Marine Biology or Physical Marine Science, the B.S. in Marine Science requires 76-77 credits in Major courses (including SMS electives), plus 21-24 General Education credits for a total of 98-101 credits. Thus, students easily have room within their free electives to complete a minor in another subject. Including a concentration adds roughly 10 credits to the major requirements, and still leaves considerable flexibility.

• The **Capstone Experience** for Marine Science majors is normally a research project conceived and completed by a student during senior year under the direction of a faculty member. The project may be field, laboratory, computer, or library research. According to University policy, the experience must (1) be significant, require innovation, show creativity, reflection, and synthesis of prior learning; (2) result in a thesis, report, or presentation demonstrating mastery of the subject matter; (3) have faculty-student interaction as an integral part; and (4) be at least 3 credits. In SMS, the project should be 4 credits (3 credits of SMS 400 and 1credit of SMS 404 Capstone Seminar), which may be split between two semesters. SMS 404 is offered both in the fall and spring semesters. Students must file a Capstone Project Description form with the SMS office before they begin their research.

• SMS 400 is also a **Writing Intensive** course in the major. This means students must have an opportunity to revise their writing in response to feedback from the instructor and a substantial portion of the final grade must be based on the quality of the written work. The Capstone Experience and Writing Intensive in the major may also be met by completing HON 498 and HON 499 Honors Directed Study and Honors Thesis.

• Students with strong Math skills (i.e., who do well in calculus) should consider taking the PHY 121/122 sequence when it is taught beginning in the spring semester by Paul Bernhardt -- he has received excellent reviews from many of our majors.

• Seniors with appropriate preparation might consider the following 500-level courses to count as Marine Science Electives: SMS 501 Biological Oceanography, SMS 520 Chemical Oceanography, SMS 545 Physiological Ecology, INT 563 Marine Benthic Ecology, or SMS 531 Coral Reefs

• The following courses are offered only in the Fall of Odd years: SMS 422

• The following courses are offered only in the Spring of Even years: SMS 322, SMS 425

• The following courses are offered only in the Fall of Even years:

• The folllowing courses are offered only in the Spring of Odd years: