MASTER OF SCIENCE IN MARINE BIOLOGY

(2012 – 2013 Curriculum Update)

All revisions/additions are shaded. Apart from changes in subject numbers: Advanced Invertebrate Biology to *Advanced Marine Invertebrate Biology;* Marine Methodology to Marine Methods; Marine Resource Management to *Integrated Natural Resource Management*; Systematics of Marine Organisms to *Principles of Systematics and Evolution.*

Added subject: MB 200, Residency (3) – three units in parenthesis.

Classification	Subject Number	Subject Description	Total Number of Units	Lecture		Laboratory	
				Units	Contact Hours	Units	Contact Hours
Core Subjects (12 units)	MB 101	Biological Oceanography	3	2	2	1	3
	MB 102	Physical Oceanography	3	2	2	1	3
	MB 103	Chemical Oceanography	3	2	2	1	3
	MB 105	Elements of Research	3	2	1	1	3
Major Subjects (9 units)	MB 111	Anatomy and Physiology of Marine Plants & Algae	3	2	2	1	3
	MB 112	Anatomy and Physiology of Marine Animals	3	2	2	1	3
	MB 113	Principles of Systematics and Evolution	3	2	2	1	3
Electives (9 units)	MB 121	Advanced Marine Invertebrate Biology	3	2	2	1	3
	MB 122	Genetics of Marine Organisms	3	2	2	1	3
	MB 123	Marine Methods	3	2	2	1	3
	MB 124	Marine Productivity	3	2	2	1	3
	MB 125	Fisheries Biology	3	2	2	1	3
	MB 126	Biology of Coral Reefs	3	2	2	1	3
	MB 127	Marine Microbiology	3	2	2	1	3
	MB 128	Ichthyology	3	2	2	1	3
	MB 129	Marine Mammalogy	3	2	2	1	3
	MB 130	Integrated Natural Resource Management	3	2	2	1	3
	MB 131	Marine Pollution	3	2	2	1	3
	MB 132	Marine Planktonology	3	2	2	1	3
	MB 133	Economics of Marine Ecosystems	3	2	2	1	3
	MB 134	Marine Toxicology	3	2	2	1	3
	MB 150	Seminar in Marine Biology	3	2	2	1	3
Residency	MB 275	Residency	(3)			3	9
Masters Thesis	MB 300	Masters Thesis	6			6	18

Coverage of Comprehensive Exams: Total number of topics = 6

(1) Elements of Research
(2) Biological Oceanography
(3) Physical Oceanography
(4) Biological Oceanography
(5) Systematics and Evolution
(6) Anatomy and Physiology of Marine Animals or Anatomy and Physiology of Marine Plants

COURSE DESCRIPTIONS

MB 101 Biological Oceanography (3 units)

- Biological systems and processes in the sea; the structure of marine ecosystems and the biological flow of energy and matter under various natural and man-made factors; major emphasis on systems ecology, synecology, population ecology, and physiological ecology.

MB 102 Physical Oceanography (3 units)

- Comparative descriptions and physical dynamics of the oceans; theories of energy transmissions and the resultant motions such as currents, waves, and tides; instrumentation in oceanographic investigations.

MB 103 Chemical Oceanography (3 units)

- Chemical constituents of seawater and the various analytical techniques used to determine their concentration: emphasis on salinity, major and minor elements, macro and micro- nutrients, dissolved and particulate organic and inorganic substances; equilibrium processes which qualitatively and quantitatively affect them.

MB 105 Elements of Research (3 units)

- Theoretical and practical introduction to organized investigations; correct method of gathering pertinent data and evaluations of results.

MB 111 Anatomy and Physiology of Marine Plants & Algae (3 units)

- Structure and function relationships of marine plants with emphasis on nutrition, respiration, osmoregulation, and excretion.

MB 112 Anatomy and Physiology of Marine Animals (3 units)

- Structure and function relationships of marine animals with emphasis on nutrition, respiration, osmoregulation, and excretion.

MB 113 Principles of Systematics and Evolution (3 units)
MB 121 Advanced Marine Invertebrate Biology (3 units)
MB 122 Genetics of Marine Organisms (3 units)

MB 123 Marine Methods (3 units)

- Methods and techniques in marine biological research or in oceanographic work.

MB 124 Marine Productivity (3 units)

- Principles of primary productivity with emphasis on photosynthesis, chemosynthesis, respiration, growth, biomass, chlorophyll and methods of measurement.

MB 125 Fisheries Biology (3 units)

- Biology, population dynamics and stock assessments of the living resources of the sea and man's interaction with them.

MB 126 Biology of Coral Reefs (3 units)

MB 127 Marine Microbiology (3 units)

- Marine microorganisms with emphasis on their role in the degradation and recycling of nutrients in the marine ecosystems and biotechnological applications of some important forms.

MB 128 Ichthyology (3 units)

- Biology of fishes with emphasis on classification, anatomy, life cycle, physiology and ecology; conservation and economic importance.

MB 129 Marine Mammalogy (3 units)
MB 130 Integrated Natural Resource Management (3 units)

MB 131 Marine Pollution (3 units)
- Types of marine pollutants: their sources, distribution and movement, measurements of the level of pollution and methods of control.

MB 132 Marine Planktonology (3 units)
- Biology of marine plankton, their importance in the economy of the sea with emphasis on their role in the food chain; sampling methodology, and preparation for biomass and productivity estimates.

MB 133 Economics of Marine Ecosystems (3 units)

MB 134 Marine Toxicology (3 units)
- Venomous and toxic marine organisms; chemical analysis of toxins, their physiological effects, and pharmacologic importance.

MB 150 Seminar in Marine Biology (3 units)
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