

UNIVERSITY GRADUATE PROGRAMS

Silliman University
Dumaguete City

MASTER OF SCIENCE IN BIOLOGY

(Revised SY 2011 – 2012)

PHILOSOPHY AND OBJECTIVES

The new graduate program in Biology is designed to:

1. Provide exceptionally qualified students with research orientation within the general field of Biology
2. Prepare these students for careers as teachers and scientists, culminating in research activity suitable for a publishable thesis.
3. Enlarge, through research, the body of knowledge on Philippine Biology and disseminate this knowledge through publications and improved teaching, imbued with the values of Christian living, honesty and integrity in quest for truth.

ADMISSION TO GRADUATE STATUS

Applicants to the M.S. Biology program must meet the general requirements for admission to the Graduate School of the University, as set forth in the General Catalogue. A student seeking admission to the M.S. program should hold a bachelor's degree from an institution of recognized standing. Applicants who are non-biology majors, e.g. pre-meds, medical technologists, etc. will be required to enroll in certain undergraduate upper division biology courses until they complete a total of at least 36 units of undergraduate major courses. Their academic work should be substantially equivalent, in distribution of content and in scholastic achievement, to the requirements for a comparable degree at Silliman University.

In accordance with the research-oriented objectives of the M.S. program, the Biology Department shall admit the student to graduate status on the basis of promise of success in the study program and general topic of research, as judged primarily by (1) preliminary interview by a committee of three to be named by the Department Chair and (2) undergraduate academic records. After completion of the academic requirements of thirty units and prior to the thesis work, the student must take and pass the comprehensive written examination.

The examination will cover four recognized fields of biology: general biology (zoology and botany), Anatomy and Physiology, general genetics and embryology, and ecology shall be given a chance to retake the part of the examination they failed. They may not proceed to undertake the work if they fail the second time.

Six (6) graduate units in biology earned from other institutions may be credited towards the M.S. Biology degree at Silliman only if the students had successfully demonstrated competence in the discipline, as revealed by performance on items (1) and/or (2).

REQUIREMENTS FOR THE DEGREE

Only courses in which the students earn grades of 4.0 to 3.0 are counted in satisfaction of the requirements for the M.S. degree and courses for which the student received a grade less than 2.8 must be repeated. The student must maintain a 3.0 average to remain in graduate status.

The M.S. Biology requires at least two (2) years and must include no less than two semesters in residence.

The program will be planned on an individual basis, according to the student's needs and interest, and will include formal courses a research project leading to a thesis work. The latter shall be of depth and quality to meet the standards of the Department and the Graduate School. Emphasis is placed on findings from original investigation. A student in the M.S. Biology program must complete all requirements within 5 years, for full time students and no more than 6 years for part-time students, enrollment must be continuous. If a student fails to enroll in the succeeding semester, he/she must explain in writing the reason why he/she was unable to enroll and then the chair forms a committee to determine whether the student can still proceed with the program. A student who wishes to stop schooling for whatever reason, must file a leave of absence, signed and approved by the coordinator, the Chair and the Dean of the College of Arts and Sciences. In the event of failure to return after 2 years, from a leave of absence the student is required to repeat core subjects and after 5 years of absence, must repeat all core and major subjects. Refusal to repeat will mean the student is automatically dropped from M.S. Biology program.

At present there is no formal foreign language requirement for the M.S. in Biology degree.

The minimum course requirement for the degree is thirty-six (36) units, distributed as follows: Core courses, 9 units; Major courses, 12; electives, 9; Master's thesis, 6; total – 36 units.

CURRICULUM FOR THE M.S. IN BIOLOGY DEGREE

Core Courses:	Biology 101	Elements of Research and Biostatistics	3units
	Biology 102	Advanced Ecology	3units
	Biology 103	Principles of Systematics and Evolution	3units
Major Courses:	Biology 104	Population Biology	3units
	Biology 106	Tropical Vertebrate Biology	3units
	Biology 107	Biology of Vascular Plants	3units
	Biology 108	Marine Biology and Oceanography	3units
	Biology 109	Freshwater Biology	3units
Elective Courses: (minimum of 9 units required)			
	Biology 110	Seminar in Conservation Biology and Resources	3units
	Biology 111	Ecology of Parasitism	3units
	Biology 113	Herpetology	3units
	Biology 114	Ornithology	3units
	Biology 115	Mammalogy	3units
	Biology 116	Biology of Marine Plants	3units
	Biology 117	Biology of Marine Mammals	3units
	Biology 118	Microbial Ecology	3units
	Biology 119	Biochemical Ecology	3units
	Biology 120	Plant Pathology	3units
	Biology 121	Seminars in Contemporary Concepts in Biology	3units
Master's Thesis:	Biology 250		6units

Note: The student may, with the approval of his/her adviser and University Graduate Programs Dean, take elective courses and one of the other courses (a total of 9units) from other recognized institutions. Students who have decided on a field of major interest are urged to seek advice from staff members of the Biology Department in their field of interest. Prospective applicants to the Biology Department are invited to visit the campus for this purpose. Application forms for admission to graduate status may be obtained from the Office of the Dean, University Graduate Programs, Silliman University, 6200.

COURSE DESCRIPTION

Biology 101 ELEMENTS OF RESEARCH AND BIOSTATISTICS **3 units**

Application of the principles of scientific research to problems; Theoretical and practical introduction to organized investigations, including methods of data gathering, and analyses.

Prerequisite: Introductory statistics. Three hours lecture and student presentations. Project/thesis proposal to be presented in a quasi-colloquium.

Biology 102 ADVANCED ECOLOGY **3 units**

Examination of interrelationships between organisms and their environment; population and community level interactions; productivity and materials cycling, with application for resource conservation; contemporary methods in ecology. Prerequisite: General Parasitology and Introductory Statistics. Two hours lecture and one hour discussion. Original research required.

Biology 103 PRINCIPLES OF SYSTEMATICS AND EVOLUTION **3 units**

Principles and basis of classification, including phonetics and cladistics; nomenclature. Evidence for and mechanisms of organismic evolution; a discussion of pertinent Christian/non-scientific philosophies in the origin of life will be included. Prerequisite: General Zoology and Botany. Three hours lecture/discussions; museum surveys. Original systematic study of a group of organisms, preferably on Philippine species, required.

Biology 104 POPULATION BIOLOGY **3 units**

Properties of animal and plant aggregations, with emphasis on population and community ecology, population genetics and life histories; evolutionary mechanisms and models of speciation. Prerequisite: Genetics and Elementary Statistics. Three hours lecture/student discussion. Independent research required.

Biology 106 TROPICAL VERTEBRATE BIOLOGY **3 units**

Biology 107 BIOLOGY OF VASCULAR PLANTS **3 units**

Biology 108 MARINE BIOLOGY AND OCEANOGRAPHY **3 units**

Structure and function of marine ecosystems and life forms with emphasis on system ecology and synecology; principles of physiology and chemical oceanography including analytical techniques for physical-chemical determinations. Prerequisite: Zoology, Botany, General Chemistry; Invertebrate Biology is recommended. Three hours lecture/reports; field trips. Independent student project required.

Biology 109 FRESHWATER BIOLOGY **3 units**

Structure and function of lake and streams, including origin and formation, biotic composition and organization, and energetics; physico-chemical characteristics and drainage patterns; relevance to watershed management will be discussed. Prerequisite: Zoology, Botany, and General Physics. Three hours lecture/discussions; laboratory demonstrations and field trips. Independent project required.

Biology 110 SEMINAR IN CONSERVATION BIOLOGY AND RESOURCES **3 units**

Biology 111 ECOLOGY OF PARASITISM	3 units
An examination of parasitism as an ecological relationship between two species. Origins of parasitism, morphological and physiological adaptations of various parasitic stages to the biology of the host and the external environment will be considered. Prerequisite: General Parasitology or Invertebrate Biology. Three hours lecture/discussion; laboratory demonstrations. Independent project required.	
Biology 113 HERPETOLOGY	3 units
Biology 114 ORNITHOLOGY	3 units
Biology 115 MAMMALOGY	3 units
Biology 116 BIOLOGY OF MARINE PLANTS	3 units
Biology 117 BIOLOGY OF MARINE MAMMALS	3 units
Biology 118 MICROBIAL ECOLOGY	3 units
Understanding of microbial diversity, adaptations to various environs, role in biogeochemical cycling, interactions between microbes and other organisms; practical applications, including global impact of microbial life. Prerequisite: General Microbiology and Ecology. Three hours lecture/reports; lab demonstrations. Independent project required.	
Biology 119 BIOCHEMICAL ECOLOGY	3 units
Biology 120 PLANT PATHOLOGY	3 units
Introduction to the study of plant diseases, including diseases of natural and cultivated plant systems; principles of diseases of natural and cultivated plant systems; principles of disease control with emphasis on biological agents. Prerequisite: Botany and Microbiology. Three hours lecture/discussions; lab demonstrations. Independent project required.	
Biology 121 SEMINAR IN CONTEMPORARY CONCEPTS IN BIOLOGY	3 units
Informal discussions and student seminar presentations on biological concepts and scientific philosophy, including associated advances to biological research methods and investigations based on a critical review of contemporary literature. Prerequisite: consent of instructor. Three hours report and discussions. Written seminar report required.	