BSc (Hons) Biology - SC300 (Under Review)
Optional Minor: Chemistry/ Environmental & Aquatic Sciences/ Plant Sciences/ Molecular Biology

1. Objectives

In this post genomic era, the Biological Sciences have acquired a pivotal role than ever before and cover a wide range of subject areas from biology of microorganisms, plants and animals to genetic manipulation. This multi-faceted discipline provides opportunity to students to sample the breadth of the subject. In the second year, a wider choice is introduced within the groups of courses to allow students to explore new areas of the subject and to opt for **any** of the following minor areas in Biology: (i) Environmental & Aquatic Sciences, (ii) Plant Sciences or (iii) Molecular Biology.

This Programme provides an opportunity to acquire a thorough foundation in theory and practice of Biological Sciences with a view to developing both critical ability and practical skills. The recognised degree in Biological Sciences provides opportunity for further studies/research at postgraduate level. Graduates from this Department can seek employment as Education, Scientific, Environmental or Technical Officer, etc. Adequate attention will also be paid towards the personal development of students in acquiring professional competence and a sense of community responsibility.

2. General Entry Requirements

As per General Entry Requirements for admission to the University for undergraduate degrees.

3. Programme Requirements

Credit in five subjects (School Certificate) including Mathematics.
Pass at GCE 'A' Level in Biology or equivalent.

4. Programme Duration

	Normal	**Maximum**
Degree:	6 Semesters (i.e. 3 years)	10 Semesters (i.e. 5 years)

5. Credits per Semester

Minimum 9, Maximum 24 (including retake modules), subject to regulation 4.

6. Minimum Credits Required for Award of Undergraduate Degree: 100

Breakdown as follows:

	Credits from			
	Core Taught Modules	**Project**	**Electives[a]**	**GEMs[b]**
Degree	63	10	Minimum 18	9

[a] A minimum of 15 credits to be obtained from either departmental electives **or** electives in one of the following optional minors: Chemistry, Environmental and Aquatic Sciences, Molecular Biology and Plant Sciences.

[b] GEMs: at least 9 credits to be taken within Years 1 and 2.

7. Assessment

Each module will be assessed over 100 marks (i.e. expressed as %) with details as follows (unless otherwise specified):

Assessment of a Biology module will be based on a written examination (of 2 to 3-hour duration, as specified) and/or on continuous assessment done during the semester. The continuous assessment will count for 10-30% of the overall percentage mark for the module, except for a programme where the structure makes for other specific provision(s). Continuous assessment may be based on laboratory work, and/or assignments and should include at least 1 class test.

A minimum of at least 30% should be attained in each of continuous assessment and written examination, with an overall total of 40% for a candidate to pass a module.

Modules will carry the weightings of 1, 3 or 5 depending on their status (Introductory, Intermediate or Advanced). Weighting for a particular module is indicated within parentheses in the module code.

Projects will carry 10 credits for degree award. They will be carried out normally in the area of specialisation.

Modules (if any) to be assessed jointly will be indicated to the students prior to the delivery of the modules.

8. List of Modules

A. <u>BIOLOGY CORE MODULES</u> (63 + 10 credits)

Code	Module Name	Hrs/Wk L+P	Credits
CSE 1010e(1)	Introduction to Information Technology	O.E.	3
BIOL 1101(1)	Molecular Biology and Biochemistry	2.5+1	3
BIOL 1102(1)	Diversity of Organisms	2.5+1	3
BIOL 1103(1)	Evolution and Taxonomy	2.5+1	3
BIOL 1104(1)	Environmental Biology	2.5+1	3
BIOL 1201(1)	Cell Biology & Genetics	2.5+1	3
BIOL 1202(1)	Ecology & Behaviour	2.5+1	3
BIOL 1203(1)	Physiology	2.5+1	3
BIOL 1204(1)	Microbiology	2.5+1	3
BIOL 2101(3)	Introduction to Bioinformatics	2.5+1	3
BIOL 2102(3)	Animal Diversity	2.5+1	3
BIOL 2103(3)	Plant Diversity	2.5+1	3
BIOL 2104(3)	Ecology & Marine Biology	2.5+1	3
BIOL 2201(3)	Developmental Biology & Genetics	2.5+1	3
BIOL 2202(3)	Animal Physiology I	2.5+1	3
BIOL 2203(3)	Bioenergetics & Plant Biochemistry	2.5+1	3
BIOL 2204(3)	Parasitology & Immunology	2.5+1	3
BIOL 3000(5)	Project	-	10
BIOL 3101(5)	Animal Physiology II	2.5+1	3
BIOL 3102(5)	Plant Growth & Development	2.5+1	3
BIOL 3201(5)	Immunology	2.5+1	3
BIOL 3202(5)	Environmental Management	2.5+1	3

B. <u>BIOLOGY ELECTIVES</u> (Not all modules may be on offer)

BIOL 1105(1)	Biostatistics	3+0	3
BIOL 1205(1)	Tools and Techniques in Biology I	1+4	3
BIOL 2105(3)	Plant Product Applications	2.5+1	3
BIOL 2106(3)	Animal Behaviour	2.5+1	3
BIOL 2205(3)	Tools & Techniques in Biology II	1+4	3
BIOL 2206(3)	Population Ecology	2.5+1	3
BIOL 3103(5)	Conservation Biology	2.5+1	3
BIOL 3203(5)	Endocrinology	2.5+1	3
BIOL 3204(5)	Molecular Biology of the Gene	2.5+1	3

C. OPTIONAL MINOR ELECTIVES: PLANT SCIENCES (Not all modules may be on offer)

BIOL 2105(3)	Plant Product Applications	2.5+1	3
BIOL 2107(3)	Plant Ecology	2.5+1	3
BIOL 2207(3)	Plant Biochemistry	2.5+1	3
BIOL 3105(5)	Plant Biotechnology	2.5+1	3
BIOL 3205(5)	Plant Pathology	2.5+1	3

D. OPTIONAL MINOR ELECTIVES: ENVIRONMENTAL & AQUATIC SCIENCES (Not all modules may be on offer)

BIOL 2108(3)	Environmental Monitoring	2.5+1	3
BIOL 2109(3)	Fisheries Biology and Management	2.5+1	3
BIOL 2208(3)	Oceanography	2.5+1	3
BIOL 2209(3)	Aquaculture	2.5+1	3
BIOL 2210(3)	Community Ecology	2.5+1	3
BIOL 3106(5)	Ecotoxicology	2.5+1	3
BIOL 3206(5)	Coastal Zone Management	2.5+1	3

E. OPTIONAL MINOR ELECTIVES: MOLECULAR BIOLOGY (Not all modules may be on offer)

BIOL 2110(3)	Structural Biochemistry	2.5+1	3
BIOL 2211(3)	Metabolism & Regulation	2.5+1	3
BIOL 3107(5)	Cellular & Molecular Parasitology	2.5+1	3
BIOL 3108(5)	Genomics	2.5+1	3
BIOL 3207(5)	Molecular Evolution	2.5+1	3
BIOL 3208(5)	Virology	2.5+1	3
BIOL 3209(5)	Bacteriology	2.5+1	3

9. Programme Plan - BSc (Hons) Biology

YEAR 1

Semester 1				Semester 2			
Code	**Module Name**	**Hrs/Wk L+P**	**Credits**	**Code**	**Module Name**	**Hrs/Wk L+P**	**Credits**
CORE				**CORE**			
CSE 1010e(1)	Introduction to IT	O.E.	3	BIOL 1201(1)	Cell Biology & Genetics	2.5+1	3
BIOL 1101(1)	Molecular Biology & Biochemistry	2.5+1	3	BIOL 1202(1)	Ecology & Behaviour	2.5+1	3
BIOL 1102(1)	Diversity of Organisms	2.5+1	3	BIOL 1203(1)	Physiology	2.5+1	3
BIOL 1103(1)	Evolution & Taxonomy	2.5+1	3	BIOL 1204(1)	Microbiology	2.5+1	3
BIOL 1104(1)	Environmental Biology	2.5+1	3				
ELECTIVE				**ELECTIVE**			
BIOL 1105(1)	Biostatistics	3+0	3	BIOL 1205(1)	Tools & Techniques in Biology I	1+4	3

YEAR 2

Semester 1				Semester 2			
Code	**Module Name**	**Hrs/Wk L+P**	**Credits**	**Code**	**Module Name**	**Hrs/Wk L+P**	**Credits**
CORE				**CORE**			
BIOL 2101(3)	Introduction to Bioinformatics	2.5+1	3	BIOL 2201(3)	Developmental Biology & Genetics	2.5+1	3
BIOL 2102(3)	Animal Diversity	2.5+1	3	BIOL 2202(3)	Animal Physiology I	2.5+1	3
BIOL 2103(3)	Plant Diversity	2.5+1	3	BIOL 2203(3)	Bioenergetics and Plant Biochemistry	2.5+1	3
BIOL 2104(3)	Ecology & Marine Biology	2.5+1	3	BIOL 2204(3)	Parasitology & Immunology	2.5+1	3
ELECTIVES				**ELECTIVES**			
BIOL 2105(3)	Plants Product Applications	2.5+1	3	BIOL 2205(3)	Tools & Techniques in Biology II	1+4	3
BIOL 2106(3)	Animal Behaviour	2.5+1	3	BIOL 2206(3)	Population Ecology	2.5+1	3

and/or modules to be chosen from any department

YEAR 3

Semester 1				Semester 2			
Code	**Module Name**	**Hrs/Wk L+P**	**Credits**	**Code**	**Module Name**	**Hrs/Wk L+P**	**Credits**
CORE				**CORE**			
BIOL 3000(5)	Project	-	-	BIOL 3000(5)	Project	-	10
BIOL 3101(5)	Animal Physiology II	2.5+1	3	BIOL 3201(5)	Immunology	2.5+1	3
BIOL 3102(5)	Plant Growth & Development	2.5+1	3	BIOL 3202(5)	Environmental Management	2.5+1	3
ELECTIVES				**ELECTIVES**			
BIOL 3103(5)	Conservation Biology	2.5+1	3	BIOL 3203(5)	Endocrinology	2.5+1	3
				BIOL 3204(5)	Molecular Biology of the Gene	2.5+1	3

and/or modules to be chosen from any other units/departments.

10. Programme Plan - BSc (Hons) Biology (Optional Minor: Plant Sciences)

YEAR 1

Semester 1				Semester 2			
Code	**Module Name**	**Hrs/Wk L+P**	**Credits**	**Code**	**Module Name**	**Hrs/Wk L+P**	**Credits**
CORE				**CORE**			
CSE 1010e(1)	Introduction to IT	O.E.	3	BIOL 1201(1)	Cell Biology & Genetics	2.5+1	3
BIOL 1101(1)	Molecular Biology & Biochemistry	2.5+1	3	BIOL 1202(1)	Ecology & Behaviour	2.5+1	3
BIOL 1102(1)	Diversity of Organisms	2.5+1	3	BIOL 1203(1)	Physiology	2.5+1	3
BIOL 1103(1)	Evolution & Taxonomy	2.5+1	3	BIOL 1204(1)	Microbiology	2.5+1	3
BIOL 1104(1)	Environmental Biology	2.5+1	3				
ELECTIVE				**ELECTIVE**			
BIOL 1105(1)	Biostatistics	3+0	3	BIOL 1205(1)	Tools & Techniques in Biology I	1+4	3

YEAR 2

Semester 1				Semester 2			
Code	**Module Name**	**Hrs/Wk L+P**	**Credits**	**Code**	**Module Name**	**Hrs/Wk L+P**	**Credits**
CORE				**CORE**			
BIOL 2101(3)	Introduction to Bioinformatics	2.5+1	3	BIOL 2201(3)	Developmental Biology & Genetics	2.5+1	3
BIOL 2102(3)	Animal Diversity	2.5+1	3	BIOL 2202(3)	Animal Physiology I	2.5+1	3
BIOL 2103(3)	Plant Diversity	2.5+1	3	BIOL 2203(3)	Bioenergetics and Plant Biochemistry	2.5+1	3
BIOL 2104(3)	Ecology & Marine Biology	2.5+1	3	BIOL 2204(3)	Parasitology & Immunology	2.5+1	3
ELECTIVES				**ELECTIVES**			
BIOL 2105(3)	Plants Product Applications	2.5+1	3	BIOL 2207(3)	Plant Biochemistry	2.5+1	3

BIOL 2107(3)	Plant Ecology	2.5+1	3

and/or modules to be chosen from any department

YEAR 3

Semester 1				Semester 2			
Code	**Module Name**	**Hrs/Wk L+P**	**Credits**	**Code**	**Module Name**	**Hrs/Wk L+P**	**Credits**
CORE				**CORE**			
BIOL 3000(5)	Project	-	-	BIOL 3000(5)	Project	-	10
BIOL 3101(5)	Animal Physiology II	2.5+1	3	BIOL 3201(5)	Immunology	2.5+1	3
BIOL 3102(5)	Plant Growth & Development	2.5+1	3	BIOL 3202(5)	Environmental Management	2.5+1	3
ELECTIVES				**ELECTIVES**			
BIOL 3105(5)	Plant Biotechnology	2.5+1	3	BIOL 3205(5)	Plant Pathology	2.5+1	3

and/or modules to be chosen from any department.

11. Programme Plan - BSc (Hons) Biology (Optional Minor: Environmental & Aquatic Sciences)

YEAR 1

Semester 1				Semester 2			
Code	**Module Name**	**Hrs/Wk L+P**	**Credits**	**Code**	**Module Name**	**Hrs/Wk L+P**	**Credits**
CORE				**CORE**			
CSE 1010e(1)	Introduction to IT	O.E.	3	BIOL 1201(1)	Cell Biology & Genetics	2.5+1	3
BIOL 1101(1)	Molecular Biology & Biochemistry	2.5+1	3	BIOL 1202(1)	Ecology & Behaviour	2.5+1	3
BIOL 1102(1)	Diversity of Organisms	2.5+1	3	BIOL 1203(1)	Physiology	2.5+1	3
BIOL 1103(1)	Evolution & Taxonomy	2.5+1	3	BIOL 1204(1)	Microbiology	2.5+1	3
BIOL 1104(1)	Environmental Biology	2.5+1	3				
ELECTIVE				**ELECTIVE**			
BIOL 1105(1)	Biostatistics	3+0	3	BIOL 1205(1)	Tools & Techniques in Biology I	1+4	3

YEAR 2

Semester 1				Semester 2			
Code	**Module Name**	**Hrs/Wk L+P**	**Credits**	**Code**	**Module Name**	**Hrs/Wk L+P**	**Credits**
CORE				**CORE**			
BIOL 2101(3)	Introduction to Bioinformatics	2.5+1	3	BIOL 2201(3)	Developmental Biology & Genetics	2.5+1	3
BIOL 2102(3)	Animal Diversity	2.5+1	3	BIOL 2202(3)	Animal Physiology I	2.5+1	3
BIOL 2103(3)	Plant Diversity	2.5+1	3	BIOL 2203(3)	Bioenergetics and Plant Biochemistry	2.5+1	3
BIOL 2104(3)	Ecology & Marine Biology	2.5+1	3	BIOL 2204(3)	Parasitology & Immunology	2.5+1	3
ELECTIVES				**ELECTIVES**			
BIOL 2108(3)	Environmental Monitoring	2.5+1	3	BIOL 2208(3)	Oceanography	2.5+1	3
BIOL 2109(3)	Fisheries Biology and Mgt	2.5+1	3	BIOL 2209(3)	Aquaculture	2.5+1	3
				BIOL 2210(3)	Community Ecology	2.5+1	3

and/or modules to be chosen from any department

YEAR 3

Semester 1				Semester 2			
Code	**Module Name**	**Hrs/Wk L+P**	**Credits**	**Code**	**Module Name**	**Hrs/Wk L+P**	**Credits**
CORE				**CORE**			
BIOL 3000(5)	Project	-	-	BIOL 3000(5)	Project	-	10
BIOL 3101(5)	Animal Physiology II	2.5+1	3	BIOL 3201(5)	Immunology	2.5+1	3
BIOL 3102(5)	Plant Growth & Development	2.5+1	3	BIOL 3202(5)	Environmental Management	2.5+1	3
ELECTIVES				**ELECTIVES**			

BIOL 3106(5)	Ecotoxicology	2.5+1	3	BIOL 3206(5)	Coastal Zone Management	2.5+1	3

and/or modules to be chosen from any department.

12. Programme Plan – BSc (Hons) Biology (Optional Minor: Molecular Biology)

YEAR 1

Semester 1				Semester 2			
Code	**Module Name**	**Hrs/Wk L+P**	**Credits**	**Code**	**Module Name**	**Hrs/Wk L+P**	**Credits**
CORE				**CORE**			
CSE 1010e(1)	Intro. to IT	O.E	3	BIOL 1201(1)	Cell Biology & Genetics	2.5+1	3
BIOL 1101(1)	Molecular Biology & Biochemistry	2.5+1	3	BIOL 1202(1)	Ecology & Behaviour	2.5+1	3
BIOL 1102(1)	Diversity of Organisms	2.5+1	3	BIOL 1203(1)	Physiology	2.5+1	3
BIOL 1103(1)	Evolution & Taxonomy	2.5+1	3	BIOL 1204(1)	Microbiology	2.5+1	3
BIOL 1104(1)	Environmental Biology	2.5+1	3				
ELECTIVE				**ELECTIVE**			
BIOL 1105(1)	Biostatistics	3+0	3	BIOL 1205(1)	Tools & Techniques in Biology I	1+4	3

YEAR 2

Semester 1				Semester 2			
Code	**Module Name**	**Hrs/Wk L+P**	**Credits**	**Code**	**Module Name**	**Hrs/Wk L+P**	**Credits**
CORE				**CORE**			
BIOL 2101(3)	Introduction to Bioinformatics	2.5+1	3	BIOL 2201(3)	Developmental Biology & Genetics	2.5+1	3
BIOL 2102(3)	Animal Diversity	2.5+1	3	BIOL 2202(3)	Animal Physiology I	2.5+1	3
BIOL 2103(3)	Plant Diversity	2.5+1	3	BIOL 2203(3)	Bioenergetics and Plant Biochemistry	2.5+1	3
BIOL 2104(3)	Ecology & Marine Biology	2.5+1	3	BIOL 2204(3)	Parasitology & Immunology	2.5+1	3
ELECTIVES				**ELECTIVES**			
BIOL 2110(3)	Structural Biochemistry	2.5+1	3	BIOL 2211(3)	Metabolism & Regulation	2.5+1	3

and/or modules to be chosen from any department

YEAR 3

Semester 1				Semester 2			
Code	**Module Name**	**Hrs/Wk L+P**	**Credits**	**Code**	**Module Name**	**Hrs/Wk L+P**	**Credits**
CORE				**CORE**			
BIOL 3000(5)	Project	-	-	BIOL 3000(5)	Project	-	10
BIOL 3101(5)	Animal Physiology II	2.5+1	3	BIOL 3201(5)	Immunology	2.5+1	3
BIOL 3102(5)	Plant Growth & Development	2.5+1	3	BIOL 3202(5)	Environmental Management	2.5+1	3
ELECTIVES				**ELECTIVES**			
BIOL 3107(5)	Cell & Molecular Parasitology	2.5+1	3	BIOL 3207(5)	Molecular Evolution	2.5+1	3
BIOL 3108(5)	Genomics	2.5+1	3	BIOL 3208(5)	Virology	2.5+1	3
				BIOL 3209(5)	Bacteriology	2.5+1	3

and/or modules to be chosen from any department.

13. Outline Syllabus

This outline syllabus is not prescriptive and is intended to serve as a guide only.

Note: Pre-requisite (PR); Pre-requirement (PQ).

BIOL 1101(1) - MOLECULAR BIOLOGY AND BIOCHEMISTRY

This module will introduce basic concepts of biochemistry including an introduction to biomolecules, enzyme kinetics and metabolic pathways. The strategy and experiments leading to the understanding of the structure and function of the genetic material will be discussed.

BIOL 1102(1) - DIVERSITY OF ORGANISMS
An overview of different phyla of animals and divisions of non vascular plants with emphasis on morphology, identifications, life histories, interrelationships and classification.

BIOL 1103(1) - EVOLUTION AND TAXONOMY
This module will explore the evidence for evolution and mechanisms of natural selection. The principles of classical and modern taxonomy will be investigated using examples from microbes, plants and animals.

BIOL 1104(1) - ENVIRONMENTAL BIOLOGY
This module will be an introduction to basic ecological concepts and will place particular emphasis on how humans and the other living organisms interact with each other and with the nonliving environment. Local and environmental issues will be used as examples to illustrate the impact of humans on its environment.

BIOL 1105(1) - BIOSTATISTICS
Topics relevant to biology are introduced. These include statistical methods and their applications in biology. Contingency tables; probit analysis and some non-parametric tests will be discussed amongst others.

BIOL 1201(1) - CELL BIOLOGY & GENETICS (PQ: BIOL 1101(1))
This module will cover the fundamental concepts of cell biology and genetics. Special attention will be given to cell organelles, cell membranes and cell cycles. The basic elements of Mendelian genetics with its ramifications in modern biology will be explored**.**

BIOL 1202(1) - ECOLOGY & BEHAVIOUR (PR: BIOL 1104(1))
A module dealing with animal and the environment. Topics covered include exploitation of resources, habitat selection, territorial behaviour, feeding behaviour, interactions between predators and prey; sexual selection and reproductive strategies, parental investment and mating systems; cooperation and conflict.

BIOL 1203(1) - PHYSIOLOGY (PQ: A-LEVEL BIOLOGY OR EQUIVALENT)
This module introduces the concepts and principles that provide a basis for the understanding of plant and animal physiology. In animal physiology, stress is laid on the functional strategies that have evolved within the bounds of chemical and physical possibility while in plant physiology topics covered include Mineral Nutrition in Plants, Plant-Water Relations, The Movement of Water and Solutes in Plants.

BIOL 1204(1) - MICROBIOLOGY
This module includes a historical perspective of microbiology and provides a fundamental understanding of the microbial world.

BIOL 1205(1) - TOOLS AND TECHNIQUES IN BIOLOGY I
In order to complement some of the core modules, this module aims at providing a comprehensive appraisal of laboratory techniques and their potential uses in biological sciences. Emphasis is laid on the use of standard procedures and good laboratory practice.

BIOL 2101(3) - INTRODUCTION TO BIOINFORMATICS
This module will focus on the strategies and methods used to derive information from the analysis of genomes, genes and proteins. The relationship among sequence, structure and function will be addressed**.**

BIOL 2102(3) - ANIMAL DIVERSITY

This module is an overview of the Animal Kingdom with examples from representative phyla. Focus will be on body plan, functional and comparative anatomy and life history strategies.

BIOL 2103(3) - PLANT DIVERSITY
This module is a comparative survey of vascular plants focusing on their morphology, anatomy, classification and phylogeny. Emphasis will be laid on living plant groups with some paleobotanical evidence presented.

BIOL 2104(3) - ECOLOGY & MARINE BIOLOGY
This module will include both a terrestrial and a marine component. The terrestrial part will focus mainly on the major terrestrial biomes of the world and the way biodiversity is distributed from the tropics to the poles. Island biogeography will be covered.
A range of marine environments will also be surveyed. Topics will include pelagic (plankton) and benthic communities; intertidal ecology and zonation of rocky, sandy and muddy shores; tropical communities such as coral reefs, mangroves and seagrasses.

BIOL 2105(3) - PLANT PRODUCT APPLICATIONS
This module deals with the application of botanical knowledge to the well being of mankind. It aims at presenting a comprehensive account dealing with plants of economic importance. Emphasis will be laid on the primary and secondary metabolites with reference to their exploitation in biotechnology.

BIOL 2106(3) - ANIMAL BEHAVIOUR
This module overviews the foundations of animal behaviour. Topics will include evolution and social behaviour; mechanisms underlying behaviour, animal perception, biological time-keeping, learning behaviour, communication and understanding complex behaviour.

BIOL 2107(3) - PLANT ECOLOGY
This module will cover topics such as the why and how of seed dispersal, the ecology of seed dormancy and soil seed banks, environmental influences on germination, intra- and inter-specific competition in plants, herbivory and keystone herbivores, plant defenses, nutritional symbiosis in plants, pollination and importance of pollinators, relation between vegetation and climate and the ecology of invasive plants.

BIOL 2108(3) - ENVIRONMENTAL MONITORING
Environmental management is based increasingly on monitoring work. The module focuses on environmental monitoring strategies, the types & purposes of monitoring programs, environmental standards, how to monitor air, water, soil & vegetation, use of environmental indicators, monitoring environmental progress, and on some case studies.

BIOL 2109(3) - FISHERIES BIOLOGY & MANAGEMENT
Capture and culture fisheries. Methods used in fisheries management. Modal progression analysis. Growth analysis. Simple methods of stock assessment: The Schaefer model. Reproductive biology: Gonado-somatic index and condition factor. The Mauritian fishery. Fishing technology. Use of fisheries data in national decision and policy making.

BIOL 2110(3) - STRUCTURAL BIOCHEMISTRY
This module will lay emphasis on biomolecules including carbohydrates, amino acids, proteins, lipids and nucleic acids and will overview the main secondary metabolite classes. Structure-function relationships will be stressed.

BIOL 2201(3) - DEVELOPMENTAL BIOLOGY & GENETICS (PQ: BIOL 1201(1))
Selected developmental processes are presented from a comparative perspective in “model” organisms of importance in research and teaching. Emphasis is on the generation of pattern

and form at the cellular and molecular levels, the mechanisms by which these changes are coordinated to produce tissues and organs and finally to generate complete animal form.

BIOL 2202(3) - ANIMAL PHYSIOLOGY I (PQ: BIOL 1201(1))
This module provides an overview of the vertebrate anatomical organization. It focuses on the understanding of how individual cells; tissues and organs are coordinated and integrated to different physiological functions of the organisms. Life support systems such as the cardiovascular, respiratory, alimentary and urinary systems are considered in this module.

BIOL 2203(3) - BIOENERGETICS & PLANT BIOCHEMISTRY
This module will focus on various aspects of plant bioenergetics and biochemistry including energy conservation in photosynthesis, photosynthetic electron transport and carbon assimilation and metabolism.

BIOL 2204(3) - PARASITOLOGY & IMMUNOLOGY
This module focuses on life cycle patterns, pathogenicity, diagnosis, treatment and prophylaxis of selected organisms (heminths and protozoans) affecting man and domesticated animals with emphasis on the ecological overtones of the host-parasite relationship. The structure & functions of immunoglobulins, antigenicity and immunogenicity and some mechanisms of non-specific immunity will also be covered.

BIOL 2205(3) - TOOLS AND TECHNIQUES IN BIOLOGY II
In order to complement some of the core modules, this module aims at providing a comprehensive appraisal of laboratory techniques and their potential uses in biological sciences. Emphasis is laid on the use of standard procedures and good laboratory practice.

BIOL 2206(3) - POPULATION ECOLOGY
This module includes the structure and dynamics of population systems, population demography, metapopulation structure, life-tables, competition, predation, dispersal, population stability and pest outbreaks. The theory of Population Viability Analyses (PVA) will be covered and examples of its application discussed.

BIOL 2207(3) - PLANT BIOCHEMISTRY
This module covers topics in structural biochemistry with special emphasis on plant molecules and their metabolism.

BIOL 2208(3) - OCEANOGRAPHY
This module provides an introduction to the fascinating world of oceanography. Using knowledge, which students have obtained from basic sciences, it explains concepts in ocean function. Topics covered include: Ocean productivity and methods for assessing primary productivity, tides, oceanography equipment, global positioning systems and the law of the sea.

BIOL 2209(3) - AQUACULTURE
Definition, objectives, history, present status and potential of aquaculture are considered. Aquaculture systems. Fish seed production technology. Hatchery management. Fry rearing and grow-out technology. Pond culture techniques. Farm construction and management. Farm economics. Coastal aquaculture, cage and pen culture, and environmental impacts of aquaculture practices are also covered to give a thorough understanding of the subject.

BIOL 2210(3) - COMMUNITY ECOLOGY
This module will start with simple species interactions and then explore community structure covering topics like importance values, biodiversity and ecosystem functions, ecotones and landscapes. Aspects of applied community ecology will be covered such as habitat destruction and the extinction debt, keystone effects and global change and resulting species interactions and distribution.

BIOL 2211(3) - METABOLISM & REGULATION
This module will deal with concepts of conformation and dynamics with particular reference to enzyme kinetics and biochemical regulation processes. Emphasis will be laid on reactions occurring during catabolism and anabolism. Topics including carbohydrate metabolism, lipid metabolism, amino acid metabolism and nucleic acid metabolism will be considered.

BIOL 3000(5) - PROJECT
The undergraduate research project is based on an approved topic.

BIOL 3101(5) - ANIMAL PHYSIOLOGY II (PQ: BIOL 2202(3))
This module completes Animal Physiology I, it deals with the understanding of the mechanisms that operate in living organisms at a higher level. It focuses on life cycle and regulatory systems. Reproduction and development, the nervous system, the endocrine and musculoskeletal systems are discussed in depth.

BIOL 3102(5) - PLANT GROWTH & DEVELOPMENT
In this module different aspects of plant growth will be dealt with. Topics to be covered include: phytohormones and growth regulators, tropism, photoperiodism, nastic movements, photomorphogenesis and seed dormancy and germination.

BIOL 3103(5) - CONSERVATION BIOLOGY
This module will first focus on the value of biodiversity and explore species extinction and review the current threats to both global and local biodiversity. The various strategies to conserve biodiversity will then be presented and discussed with ample reference to actual case studies. Aspects of restoration ecology will be covered. The module will end on international conventions and national legislation on biodiversity conservation.

BIOL 3105(5) - PLANT BIOTECHNOLOGY
A module dealing with techniques used in modern plant biotechnology and how this technology is used to modify and improve economically important plant species. Topics covered include tissue culture, clonal propagation, genetic manipulation of plants, genetics engineering in higher plants and production of commercially useful compounds amongst others.

BIOL 3106(5) - ECOTOXICOLOGY
Many of our activities have undesirable effects on the environment. The module deals with: main goals of ecotoxicology, major classes of contaminants, the concept of bioaccumulation, effects of toxicants at various levels of organization in the environment, marine ecotoxicology, risk from pollutants, and disaster response.

BIOL 3107(5)- CELLULAR & MOLECULAR PARASITOLOGY (PQ: BIOL 1101(1) and BIOL 2204(3))
This module will provide the transition from classical parasitology of veterinary and medical importance to modern parasite biology. Salient topics will offer in-depth studies of the most active areas of research in medical parasitology at cellular and molecular levels.

BIOL 3108(5) - GENOMICS
The global organisation, expression, regulation and evolution of genes will be considered. Special emphasis will be placed on tools available to study genomes.

BIOL 3201(5) - IMMUNOLOGY
This module will focus on some mechanisms involving antibody and cell mediated responses, the Major Histocompatibility Complex, complement activation, inflammation, hypersensitivity reactions, autoimmunity, amongst others.

BIOL 3202(5) - ENVIRONMENTAL MANAGEMENT
The module aims to provide a deep understanding of the principles and concepts as well as the tools and techniques of environmental management for sound sustainable development: Environmental change; Environmental monitoring and evaluation; Sustainable development; Ecosystem Approach (EA); Environmental Impact Assessment (EIA), Strategic Environmental Assessment (SEA); Environmental Management Systems (EMS); Integrated Coastal Zone Management (ICZM).

BIOL 3203(5) - ENDOCRINOLOGY
The module establishes basic concepts and will focus on major components including anatomical aspect of major endocrine glands and evolution of the endocrine system. The module will cover the general organisation of the vertebrate endocrine system, some aspects of endocrine and neuroendocrine system amongst others.

BIOL 3204(5) - MOLECULAR BIOLOGY OF THE GENE
This module builds on concepts covered in genetics and cell biology with a view to understand the functioning of the gene at the molecular level. Original papers on selected topics will be discussed.

BIOL 3205(5) - PLANT PATHOLOGY
A study of the microorganisms and the environmental factors that cause disease in plants; the mechanisms by which these factors induce disease in plants; the methods of disease prevention and control.

BIOL 3206(5) - COASTAL ZONE MANAGEMENT
This module deals with coastal resources and activities, tools and techniques of their management and case studies. Students will familiarise themselves with the complex management issues and the knowledge gained helps to formulate Integrated Coastal Zone Management Plans (ICZMP).

BIOL 3207(5) - MOLECULAR EVOLUTION
This module will address the processes of evolution at the molecular level. The major modern concepts in evolution will be covered.

BIOL 3208(5) - VIROLOGY
The major emphasis of this module will be on the basic mechanisms by which viruses infect or transform cells. The techniques and tools utilised in the study of viruses will be considered.

BIOL 3209(5) - BACTERIOLOGY
Basic and current concepts in bacteriology will be introduced. The symbiotic and parasitic associations of bacteria maintain with hosts will be examined. The relevance of bacteria in the environment will be covered.

CSE 1010e(1) - INTRODUCTION TO INFORMATION TECHNOLOGY
IT and Computers; Stepping in the Computer; Input and Output Devices; Secondary Storage; Programming; Systems Software; Applications Software; Systems Development; Computer Networks; The Internet; Computer Security; Software Utilities; Issues and Trends in IT.