BSc (Hons) Biology (Minor: Forensic Science or Marine & Coastal Environmental Science)/MSc Biology – SC516 (Under Review)

1. Mission, Aims and Objectives

The new BSc (Hons)/ MSc course is a four year full-time programme that addresses an ever growing need for a highly skilled workforce with the possibility of exit at BSc (Hons) level. The course aims at providing students with a sound foundation in biology coupled with training in cutting edge bioscience areas, especially those relevant to the needs of our country. Students are encouraged to develop critical thinking and conduct research in different fields of Biosciences. Emphasis is also placed on personal development of students in the quest to acquire professional competence and a sense of responsibility within the community.

For the undergraduate programme students can choose electives from three offered lines of study: Biology, Forensic Science or Marine & Coastal Environmental Science. While the core modules provide students with a sound base in biological science, the elective modules focus on specific areas.

Biology Electives – The elective modules will cover specific topics in biology including animal and plant sciences, ecology, environmental biology, marine sciences, molecular biology and forensic science modules.

Minor Forensic Science – The core modules will ensure a good background in biology including basics in forensic biology, while the elective modules will cover selected topics in forensic science to provide students with a grounding in forensic evidence, crime scene procedures, expert witness and legal frame work, terrorism as well as drug abuse. The aim of this programme is to initiate training in forensic awareness and science. Graduates can seek employment in the fields of biology and forensic science including specialised laboratories.

Minor Marine & Coastal Environmental Science – The elective modules provide a basic understanding of how the marine & coastal ecosystems function and elaborate on the sustainable use and management of the marine & coastal environment and its resources. The many challenges of how to optimise resource yields without or with minimal compromise to the ecological integrity and to promote sustainable marine and coastal industry are dealt with. This programme gives an opportunity to acquire a basic foundation in Marine & Coastal Environmental Science with a view to developing skills for higher studies, research and entrepreneurship in the marine and coastal sectors.

The MSc programme allows a more in-depth study in applied biology and includes a research project. The course material is largely based on research papers and self-study.

Biology graduates can seek employment as Education, Scientific, Environmental and Research Officers in the public and private sectors as well as in the private seafood and marine industries.

2. General Entry Requirements for Admission to the University

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

3. Programme Requirements

Credit at GCE ‘O’ Level including Biology, Chemistry and Mathematics.
Pass at GCE 'A' Level in Biology or equivalent.
To enrol for the MSc programme , i.e. Year 4, as and when it is on offer, the student should satisfy all the requirements for the award of BSc (Hons) Biology or possess equivalent qualifications and should have a CPA of at least 50%.

Note: Students will have to indicate if they wish to proceed to the MSc Programme at the end

of their second year of study. Students enrolled for the MSc programme will be charged tuition fees.

4. Programme Duration

	Minimum	**Maximum**
BSc (Hons) Biology (Minor: Forensic Science and Marine and Coastal Environmental Science)	6 Semesters	10 Semesters
Postgraduate Diploma in Biology	8 semesters	12 semesters
MSc Biology	8½ semesters	12½ semesters

5. Credit System

15 Hours Lectures and/or Tutorials - 1 Credit
15 Hours of Practical Work – 0.5 Credit

6. Credits per Year

Minimum 18 credits
Maximum (including retake modules): 48 credits

7. Minimum Credits Required for Awards

BSc (Hons) Degree: **105**
Postgraduate Diploma: **132** (105 + 27)
MSc Degree: **142** (105 + 27 +10)

Breakdown of Programme as follows:

		Credits from			
		Core Modules	Elective Modules	Project	Total
BSc (Hons)	Year I	Four *(6 credits each)*+ Two*(3 credits each)*	Two *(3 credits each)*	--	36
	Year II	Four *(6 credits each)* *One (3 credits)*	Two *(3 credits each)*		33
	Year III	*Three (6 credits each)*+ Two*(3 credits each)*	Two *(3 credits each)*	6 credits	36
	Total	**81 credits**	**18 credits**	**6 credits**	**105**
MSc	Year IV	Three *(6 credits each)*+ One *(3 credits)*	Two *(3 credits each)*	10 credits	27+ 10 = **37**

Electives:
Biology- should include at least 18 credits from Biology, Forensic Science and Marine Environmental Science electives with a minimum of 12 credits from Biology electives and at least 6 credits from Year 1, 6 credits from Year 2 and 6 credits from Year 3.

Minor Forensic Science and Minor Marine and Coastal Environmental Science should include at least 18

credits from Forensic Science and Marine and Coastal Environmental Science electives respectively with at least 6 credits from Year 1, 6 credits from Year 2 and 6 credits from Year 3.

MSc and Postgraduate Diploma: should also include at least 6 credits from Year 4 Biology elective modules.

8. Assessment

Each module will carry 100 marks (i.e. expressed as %) and will be assessed as follows (unless otherwise specified):
Assessment will be based on a written examination of 3-hour duration for 6 credit modules and 2-hour for 3 credit modules. Written examinations for all modules, whether taught in semester 1 or in semester 2 or both, will be carried out at the end of the academic year (unless otherwise stated).
Except for a programme where the structure makes for other specific provision(s), for the BSc (Hons) programme, the continuous assessment will count for 25% of the overall percentage mark for the module, and for the postgraduate programme, the continuous assessment will count for 30% of the overall percentage mark for the module. Continuous assessment may be based on laboratory work, and/or assignments and should include at least 1 class test for 3 credit modules and 2 class tests for 6 credit modules.
Projects carry 6 credits for the BSc (Hons) degree. They will be carried out normally in the area of specialisation. MSc projects carry 10 credits.
An overall total of 40% for combined Continuous Assessment (CA) and Written Examination (WE) components is required to pass a module. Weighting for a particular module is indicated within parentheses in the module code.

9. Important Note

The rules as stipulated in this Programme Structure and Outline Syllabus will replace all other rules and regulations.

10. List of Modules

A. BIOLOGY CORE MODULES (81 credits BSc + 21 credits MSc = 102 credits)

Code	Module Name	Hrs/Year L+P/Visits	Credits
BIOL 1001Y(1)	Cell and Molecular Biology	75+30	6
BIOL 1002Y(1)	Evolution and Diversity of Organisms I	75+30	6
BIOL 1003Y(1)	Physiology and Biochemistry I	75+30	6
BIOL 1004Y(1)	Introduction to Environmental Science	75+30	6
BIOL 1005Y(1)	Research Methods and Skills for Biologists	37.5+15	3
CSE 1010e(1)	Introduction to IT	O.E.	3
BIOL 2001Y(3)	Evolution and Diversity of Organisms II	75+30	6
BIOL 2002Y(3)	Physiology and Biochemistry II	75+30	6
BIOL 2003Y(3)	Ecology and Environmental Monitoring	75+30	6
BIOL 2004Y(3)	Genetics and Bioinformatics	75+30	6
BIOL 2005Y(3)	Biostatistics	30+30	3
BIOL 3000Y(5)	Project		6
BIOL 3001Y(5)	Physiology and Biochemistry III	75+30	6
BIOL 3002Y(5)	Immunology, Parasitology & Applied Microbiology	75+30	6
BIOL 3003Y(5)	Conservation Biology & Environmental Management	75+30	6
BIOL 3004Y(5)	Developmental Biology	37.5+15	3
BIOL 3005Y(5)	Community and Ecosystem Ecology	37.5+15	3

BIOL 4000Y(5)	Project		10
BIOL 4001Y(5)	Cell Signalling & Advanced Developmental Biology	75+30	6
BIOL 4002Y(5)	Natural Resource Management	75+30	6
BIOL 4003Y(5)	Advanced Ecology & Conservation	75+30	6
BIOL 4004Y(5)	Genomics, Proteomics & Transcriptomics	37.5+15	3

B. BIOLOGY ELECTIVES

BIOL 1006Y(1)	Oceanography	37.5+15	3
BIOL 1007Y(1)	Pollution	37.5+15	3
BIOL 1008Y(1)	Mascarene Natural History	37.5+15	3
BIOL 2006Y(3)	Plant Biochemistry	37.5+15	3
BIOL 2007Y(3)	Functional Foods and Nutraceuticals	37.5+15	3
BIOL 2008Y(3)	Ethology	37.5+15	3
BIOL 2009Y(3)	Ecology of Invasive Species	37.5+15	3
BIOL 2010Y(3)	Aquaculture	37.5+15	3
BIOL 3006Y(5)	Food, Nutrition and Toxicology	37.5+15	3
BIOL 3007Y(5)	Mechanisms of Gene Expression	37.5+15	3
BIOL 3008Y(5)	Plant Pathology	37.5+15	3
BIOL 3009Y(5)	Ecotoxicology	37.5+15	3

C. FORENSIC SCIENCE ELECTIVES

FRSC 1001Y(1)	Introduction to Forensic Science and Crime Scene Investigation	40+10	3
FRSC 1003Y(1)	Chemical Principles for Forensic Science I	45+00	3
FRSC 2001Y(3)	Methods of Crime Detection I	35+20	3
FRSC 2002Y(3)	Methods of Crime Detection II	35+20	3
FRSC 3001Y(5)	Fires, Explosions, and Forensic Science in Court	45+00	3
FRSC 3002Y(5)	Forensic Biology and DNA Profiling	37.5+15	3

D. MARINE AND COASTAL ENVIRONMENTAL SCIENCE ELECTIVES

BIOL 1009Y(1)	Tropical Coastal Ecosystems	37.5+15	3
BIOL 1010Y(1)	Marine Biology	37.5+15	3
BIOL 2011Y(3)	Marine Biogeochemistry & Pollution	37.5+15	3
BIOL 2012Y(3)	Fish Diversity & Ecology	37.5+15	3
BIOL 2013Y(3)	Marine Resources and Biotechnology	37.5+15	3
BIOL 3010Y(5)	Coastal and Marine Management	37.5+15	3
BIOL 3011Y(5)	Fisheries Biology and Management	37.5+15	3
BIOL 3012Y(5)	Coastal Governance	37.5+15	3

E. MSc BIOLOGY ELECTIVES

BIOL 4005Y(5)	Advanced Bioinformatics and Nanotechnology	37.5+15	3
BIOL 4006Y(5)	Nutrigenomics	37.5+15	3
BIOL 4007Y(5)	Environmental Ethics & Bioethics	37.5+15	3
BIOL 4008Y(5)	Marine Environmental Protection	37.5+15	3
CHEM 4038Y(5)	Advanced Analytical Techniques	37.5+15	3
FRSC 3003Y(5)	Drugs of Abuse and Forensic Toxicology	37.5+15	3

NOTE: The list of modules is by no means exhaustive. Elective modules will be run subject to having a critical mass of students.

10. Programme Plan

A. Programme Plan – BSc (Hons) Biology

Year I

Code	Module Name	Hrs/Year L+P/Visits	Credits
CORE			
BIOL 1001Y(1)	Cell and Molecular Biology	75+30	6
BIOL 1002Y(1)	Evolution and Diversity of Organisms I	75+30	6
BIOL 1003Y(1)	Physiology and Biochemistry I	75+30	6
BIOL 1004Y(1)	Introduction to Environmental Science	75+30	6
BIOL 1005Y(1)	Research Methods and Skills for Biologists	37.5+15	3
CSE 1010e(1)	Introduction to IT	O.E.	3
ELECTIVES			
BIOL 1006Y(1)	Oceanography	37.5+15	3
BIOL 1007Y(1)	Pollution	37.5+15	3
BIOL 1008Y(1)	Mascarene Natural History	37.5+15	3

Year II

Code	Module Name	Hrs/Year L+P/Visits	Credits
CORE			
BIOL 2001Y(3)	Evolution and Diversity of Organisms II	75+30	6
BIOL 2002Y(3)	Physiology and Biochemistry II	75+30	6
BIOL 2003Y(3)	Ecology and Environmental Monitoring	75+30	6
BIOL 2004Y(3)	Genetics and Bioinformatics	75+30	6
BIOL 2005Y(3)	Biostatistics	30+30	3
ELECTIVES			
BIOL 2006Y(3)	Plant Biochemistry	37.5+15	3
BIOL 2007Y(3)	Functional Foods and Nutraceuticals	37.5+15	3
BIOL 2008Y(3)	Ethology	37.5+15	3
BIOL 2009Y(3)	Ecology of Invasive Species	37.5+15	3
BIOL 2010Y(3)	Aquaculture	37.5+15	3

Year III

Code	Module Name	Hrs/Year L+P/Visits	Credits
CORE			
BIOL 3000Y(5)	Project		6
BIOL 3001Y(5)	Physiology and Biochemistry III	75+30	6
BIOL 3002Y(5)	Immunology, Parasitology & Applied Microbiology	75+30	6
BIOL 3003Y(5)	Conservation Biology & Environmental Management	75+30	6
BIOL 3004Y(5)	Developmental Biology	37.5+15	3
BIOL 3005Y(5)	Community and Ecosystem Ecology	37.5+15	3
ELECTIVES			
BIOL 3006Y(5)	Food, Nutrition and Toxicology	37.5+15	3
BIOL 3007Y(5)	Mechanisms of Gene Expression	37.5+15	3
BIOL 3008Y(5)	Plant Pathology	37.5+15	3
BIOL 3009Y(5)	Ecotoxicology	37.5+15	3

B. Programme Plan – BSc (Hons) Biology (Minor: Forensic Science)

Year I

Code	Module Name	Hrs/Year L+P/Visits	Credits
CORE			
BIOL 1001Y(1)	Cell and Molecular Biology	75+30	6
BIOL 1002Y(1)	Evolution and Diversity of Organisms I	75+30	6
BIOL 1003Y(1)	Physiology and Biochemistry I	75+30	6
BIOL 1004Y(1)	Introduction to Environmental Science	75+30	6
BIOL 1005Y(1)	Research Methods and Skills for Biologists	37.5+15	3
CSE 1010e(1)	Introduction to IT	O.E.	3
ELECTIVES			
FRSC 1001Y(1)	Introduction to Forensic Science and Crime Scene Investigation	40+10	3
FRSC 1003Y(1)	Chemical Principles for Forensic Science I	45+00	3

Year II

Code	Module Name	Hrs/Year L+P/Visits	Credits
CORE			
BIOL 2001Y(3)	Evolution and Diversity of Organisms II	75+30	6
BIOL 2002Y(3)	Physiology and Biochemistry II	75+30	6
BIOL 2003Y(3)	Ecology and Environmental Monitoring	75+30	6
BIOL 2004Y(3)	Genetics and Bioinformatics	75+30	6
BIOL 2005Y(3)	Biostatistics	30+30	3
ELECTIVES			

FRSC 2001Y(3)	Methods of Crime Detection I	35+20	3
FRSC 2002Y(3)	Methods of Crime Detection II	35+20	3

Year III

Code	Module Name	Hrs/Year L+P/Visits	Credits
CORE			
BIOL 3000Y(5)	Project		6
BIOL 3001Y(5)	Physiology and Biochemistry III	75+30	6
BIOL 3002Y(5)	Immunology, Parasitology & Applied Microbiology	75+30	6
BIOL 3003Y(5)	Conservation Biology & Environmental Management	75+30	6
BIOL 3004Y(5)	Developmental Biology	37.5+15	3
BIOL 3005Y(5)	Community and Ecosystem Ecology	37.5+15	3
ELECTIVES			
FRSC 3001Y(5)	Fires, Explosions, and Forensic Science in Court	45+00	3
FRSC 3002Y(5)	Forensic Biology and DNA Profiling	37.5+15	3

C. Programme Plan – BSc (Hons) Biology (Minor: Marine and Coastal Environmental Science)

Year I

Code	Module Name	Hrs/Year L+P/Visits	Credits
CORE			
BIOL 1001Y(1)	Cell and Molecular Biology	75+30	6
BIOL 1002Y(1)	Evolution and Diversity of Organisms I	75+30	6
BIOL 1003Y(1)	Physiology and Biochemistry I	75+30	6
BIOL 1004Y(1)	Introduction to Environmental Science	75+30	6
BIOL 1005Y(1)	Research Methods and Skills for Biologists	37.5+15	3
CSE 1010e(1)	Introduction to IT	O.E.	3
ELECTIVES			
BIOL 1009Y(1)	Tropical Coastal Ecosystems	37.5+15	3
BIOL 1010Y(1)	Marine Biology	37.5+15	3

Year II

Code	Module Name	Hrs/Year L+P/Visits	Credits
CORE			
BIOL 2001Y(3)	Evolution and Diversity of Organisms II	75+30	6
BIOL 2002Y(3)	Physiology and Biochemistry II	75+30	6
BIOL 2003Y(3)	Ecology and Environmental Monitoring	75+30	6
BIOL 2004Y(3)	Genetics and Bioinformatics	75+30	6
BIOL 2005Y(3)	Biostatistics	30+30	3
ELECTIVES			
BIOL 2011Y(3)	Marine Biogeochemistry & Pollution	37.5+15	3
BIOL 2012Y(3)	Fish Diversity & Ecology	37.5+15	3
BIOL 2013Y(3)	Marine Resources and Biotechnology	37.5+15	3

Year III

Code	Module Name	Hrs/Year L+P/Visits	Credits
CORE			
BIOL 3000Y(5)	Project		6
BIOL 3001Y(5)	Physiology and Biochemistry III	75+30	6
BIOL 3002Y(5)	Immunology, Parasitology & Applied Microbiology	75+30	6
BIOL 3003Y(5)	Conservation Biology & Environmental Management	75+30	6
BIOL 3004Y(5)	Developmental Biology	37.5+15	3
BIOL 3005Y(5)	Community and Ecosystem Ecology	37.5+15	3
ELECTIVES			
BIOL 3010Y(5)	Coastal and Marine Management	37.5+15	3
BIOL 3011Y(5)	Fisheries Biology and Management	37.5+15	3
BIOL 3012Y(5)	Coastal Governance	37.5+15	3

D. Programme Plan – MSc Biology

Year IV

Code	Module Name	Hrs/Year L+P/Visits	Credits
CORE			
BIOL 4000Y(5)	Project		10
BIOL 4001Y(5)	Cell Signalling & Advanced Developmental Biology	75+30	6
BIOL 4002Y(5)	Natural Resource Management	75+30	6
BIOL 4003Y(5)	Advanced Ecology & Conservation	75+30	6
BIOL 4004Y(5)	Genomics, Proteomics & Transcriptomics	37.5+15	3
ELECTIVES			

BIOL 4005Y(5)	Advanced Bioinformatics and Nanotechnology	37.5+15	3
BIOL 4006Y(5)	Nutrigenomics	37.5+15	3
BIOL 4007Y(5)	Environmental Ethics & Bioethics	37.5+15	3
BIOL 4008Y(5)	Marine Environmental Protection	37.5+15	3
CHEM 4038Y(5)	Advanced Analytical Techniques	37.5+15	3
FRSC 3003Y(5)	Drugs of Abuse and Forensic Toxicology	37.5+15	3

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