

**BSc (Hons) Biological Sciences (Option Biology)**

**BSc (Hons) Biological Sciences (Option Molecular and Cell Biology)**

**BSc (Hons) Biological Sciences (Option Ecology and Environmental Science)**

**(Under Review)**

## 1. CONTEXT AND OBJECTIVES

Biological sciences have undergone a profound expansion in knowledge base, scope and technologies as a result of recent ground-breaking research. The study of Life has entered a new era where it has evolved into a multidisciplinary subject that goes beyond frontiers of traditional scientific disciplines. Our understanding of Life has evolved through interactions between different branches of science: physics, chemistry and mathematics to explain the behaviour of cells, tissues and organisms through to that of ecosystems. This new era has significantly impacted society through applications in biotechnology, medicine, nutrition and healthcare, agriculture and food security, biodiversity conservation, environmental protection, climate change, and many other areas. Given this demonstrated impact, biological and associated sciences are priorities not only in Mauritius, but globally. In this context, the Department of Biosciences and Ocean Studies offers a versatile BSc (Hons) Biological Sciences degree that includes fundamental and applied topics spanning multiple disciplines. In the first year of study, a firm foundation is provided, followed by fundamental topics such as cell and molecular biology, genetics, physiology, biochemistry, diversity of organisms, evolution and ecology that are covered through core modules. Core topics are consolidated in the second and third year, and students can then choose to specialise either in Biology, or in Molecular and Cell Biology, or in Ecology and Environmental Science. In the final year, a research project plays a prominent role when the student is given the opportunity to answer a research question through laboratory and/or field-based investigations.

The objectives of this flexible BSc (Hons) Biological Sciences programme are achieved through module content, choice and delivery to:

1. provide the opportunity to graduates to be employable across diverse and specialised careers designated to be of national and global priority;
2. generate enthusiastic graduates who may consider further studies such as MSc and MPhil/PhD degrees to build higher level capacity.

## 2. LEARNING OUTCOMES

Upon completion of this programme, students should

1. have acquired fundamental knowledge in biological sciences, and specialised knowledge in the Option of their choice;
2. have mastered the subject jargon and developed skills to express their acquired knowledge in both written and oral form, with proper referencing of information sources;
3. have developed scientific problem-solving skills, critical thinking skills and technical/tactile aptitudes in biological and associated sciences;
4. be able to demonstrate creativity through design of experimental strategies in biological and associated sciences;
5. be able to critically appraise, evaluate and analyse data;
6. be able to critically appraise, evaluate and analyse scientific literature;
7. have the capacity to apply knowledge and skills acquired to real world contexts;
8. have developed their emotional intelligence to enable them to harness the team spirit and to efficiently work in diverse groups;

9. have acquired general employability skills such as, but not limited to: teamwork, self-management, problem-solving, application of numeracy and statistics, application of information technology, communication skills, respect and ethics.

### 3. TEACHING AND LEARNING METHODS

The programme adopts a blended teaching and learning approach. Course modules are delivered with a mix of face-to-face and online classes, self-study periods and innovative student-centred activities to encourage active rather than passive learning to achieve the above outcomes. Methods of teaching and learning include, but are not limited to: lectures, tutorials, laboratory/field/computer-based practicals, case studies, mini-projects, seminars, visits, debates, scientific paper appraisals, oral/poster presentations, audiovisual aids, quizzes, critical essays, role-playing, peer teaching.

### 4. ENTRY REQUIREMENTS

- **General Requirements**
  - As per General Entry Requirements for admission to the University for Undergraduate Degrees.
- **Programme (Specific) Requirements**
  - Credit at GCE 'O' Level in five subjects including Mathematics, Chemistry and Biology, and Pass at GCE 'A' Level in at least two (2) Science subjects or equivalent qualifications.
  - Students who do not hold a Pass in Biology at A Level will be required to register for and pass Foundation Module BOS 1001 Fundamentals of Biology.
  - All students are required to register for and pass Foundation Module BOS 1002 Chemistry for Biologists.

### 5. PROGRAMME DURATION

The programme is offered on a full-time basis.

	<b>Normal</b>	<b>Maximum</b>
Degree	3 years (6 semesters)	5 years (10 semesters)

### 6. MINIMUM LCCS CREDITS REQUIRED

For award of the BSc (Hons) Undergraduate degree, students must obtain at least 200 LCCS credits, including 132 LCCS credits from core modules, 48 LCCS credits from elective modules and 20 LCCS credits from the Final Year Research Project, as per table below. In addition, students must successfully complete the Foundation Module(s) (when applicable, as per Section 4).

Year	No. of Core Modules/LCCS Credits	No. of Elective Modules/LCCS Credits	Project	Total LCCS Credits	No. of Learning Hours
Year 1	10/72	-	-	72	2160
Year 2	6/48	4*/24	-	72	2160
Year 3	2/12	4*/24	1/20	56	1680
<b>TOTAL</b>	<b>18/132</b>	<b>8/48</b>	<b>1/20</b>	<b>200</b>	<b>6000</b>

\*BSc (Hons) Biological Sciences (Option Biology) should include at least 24 LCCS credits to be obtained from elective modules in Option Biology in Year 2 and at least 24 LCCS credits to be obtained from elective modules in Option Biology in Year 3.

\*BSc (Hons) Biological Sciences (Option Molecular and Cell Biology) should include at least 24 LCCS credits to be obtained from elective modules in Option Molecular and Cell Biology in Year 2 and at least 24 LCCS credits to be obtained from elective modules in Option Molecular and Cell Biology in Year 3.

\*BSc (Hons) Biological Sciences (Option Ecology and Environmental Science) should include at least 24 LCCS credits to be obtained from elective modules in Option Ecology and Environmental Science in Year 2 and at least 24 LCCS credits to be obtained from elective modules in Option Ecology and Environmental Science in Year 3.

Exit points for “Certificate in Biological Sciences” and for “Diploma in Biological Sciences” will be determined as per criteria below taken *in toto*, as stipulated by UoM General Regulations:

Criteria	Certificate in Biological Sciences	Diploma in Biological Sciences
1. Minimum total no. of LCCS credits	60	120
2. Minimum total no. of core LCCS credits prescribed in programme	38	76
3. Minimum number of programme core LCCS credits drawn from departmental core modules	28.5	57

#### LCCS Credits per semester

Minimum 6 LCCS credits per semester; Maximum 48 LCCS credits per semester

## 7. ASSESSMENT AND DEADLINES

### Assessment

Each module will carry 100 marks (expressed as %) and will be assessed as follows:

- Assessment for each module will be based on a written examination and continuous assessment unless otherwise specified. Written examinations for all semester modules, whether taught in Semester 1 or in Semester 2, will be carried out at the end of the Semester in which they are taught (unless otherwise stated). Assessment will be based on a written examination of 3-hour duration for modules bearing 12 LCCS credits and of 2-hour duration for modules bearing 6 LCCS credits. Continuous assessment will account for 40% of the overall percentage mark for all modules, except where otherwise specified. Continuous assessment may be based on laboratory/field work, and/or assignments and should include at least 1 class test. All students should keep a portfolio of all coursework.
- Foundation Modules BOS 1001 and BOS 1002 will be assessed solely by continuous assessment. Successful completion of these modules will result in a Grade S (Satisfactory). Students with Pass at A Level Biology may opt to take BOS 1001 as an audit module during their course of study. An audit module does not carry any LCCS credit or any grade but would appear in their transcript subject to satisfactory attendance.
- The Research Project, BIO 3000Y(5), will be assessed through a dissertation, an oral presentation and general performance throughout project duration.
- An overall total of 40% for combined Continuous Assessment and Written Examination components is required to pass a module without minimum thresholds within the individual continuous assessment and written examination.
- Weighting for a particular module is indicated within parentheses in the module code.

### Deadlines

BIO 3000Y(5) Research Project:

- (i) Students should abide by the UoM deadlines for submission of their project dissertation;

(ii) Students are expected to submit a complete draft of their project dissertation, together with the Turnitin Report, to their supervisor(s) at least four weeks prior to the UoM final submission deadline.

## 8. LIST OF MODULES

### A. Foundation Modules

Code	Module Name	HRS/YR
BOS 1001	Fundamentals of Biology	45
BOS 1002	Chemistry for Biologists	30

### B. Core Modules

Code	Module Name	Contact Hrs	Self-Study/Hrs	Other Learning Activities/Hrs	LCSS Credits
<b>Year 1</b>					
BIO 1101(1)	Biochemistry	30	60	90	6
BIO 1105(1)	Molecular Biology I	30	60	90	6
BIO 1106(1)	Environmental Science	30	60	90	6
BIO 1107(1)	Diversity of Organisms I	60	120	180	12
BIO 1108(1)	Ecology of Individuals	30	60	90	6
BIO 1201(1)	Cell Biology	30	60	90	6
BIO 1204(1)	Microbiology	30	60	90	6
BIO 1207(1)	Marine Biology	30	60	90	6
BIO 1209(1)	Physiology I	60	120	180	12
BOS 1201(1)	Research Methods	30	60	90	6
<b>Year 2</b>					
BIO 2103(3)	Genetics	30	60	90	6
BIO 2114(3)	Diversity of Organisms II	60	120	180	12
BOS 2101(3)	Biostatistics and Experimental Design	30	60	90	6
BIO 2203(3)	Molecular Biology II	30	60	90	6
BIO 2213(3)	Ecology of Populations	30	60	90	6
BIO 2214(3)	Physiology II	60	120	180	12
<b>Year 3</b>					
BIO 3103(5)	Plant Growth and Development	30	60	90	6
BIO 3202(5)	Developmental Biology	30	60	90	6
BIO 3000Y(5)	Research Project				20

**C. Option Biology – Elective Modules\***

Code	Module Name	Contact Hrs	Self-Study/Hrs	Other Learning Activities/Hrs	LCCS Credits
<b>Year 2</b>					
BIO 2105(3)	Advanced Microbiology	30	60	90	6
BIO 2106(3)	Cell and Molecular Nutrition	30	60	90	6
BIO 2107(3)	Biotechnology	30	60	90	6
BIO 2113(3)	Ichthyology	30	60	90	6
BIO 2206(3)	Immunology and Parasitology	30	60	90	6
BIO 2207(3)	Bioinformatics	30	60	90	6
BIO 2208(3)	Animal Behaviour	30	60	90	6
BIO 2209(3)	Ecology of Communities and Ecosystems	30	60	90	6
<b>Year 3</b>					
BIO 3102(5)	Endocrinology**	30	60	90	6
BIO 3101(5)	Nutrition in Health and Disease	30	60	90	6
BIO 3104(5)	Food and Industrial Microbiology	30	60	90	6
BIO 3105(5)	Ecotoxicology	30	60	90	6
BIO 3218(5)	Conservation Biology**	30	60	90	6
BIO 3201(5)	Plant Protection	30	60	90	6
BIO 3203(5)	Post-Harvest Technology	30	60	90	6

\* *Not all modules may be on offer;* \*\* *Compulsory elective*

**D. Option Molecular and Cell Biology – Elective Modules\***

Code	Module Name	Contact Hrs	Self-Study/Hrs	Other Learning Activities/Hrs	LCCS Credits
<b>Year 2</b>					
BIO 2105(3)	Advanced Microbiology	30	60	90	6
BIO 2106(3)	Cell and Molecular Nutrition	30	60	90	6
BIO 2107(3)	Biotechnology	30	60	90	6
BIO 2206(3)	Immunology and Parasitology	30	60	90	6
BIO 2207(3)	Bioinformatics	30	60	90	6
<b>Year 3</b>					
BIO 3112(5)	Mechanisms of Gene Expression**	30	60	90	6

BIO 3109(5)	Molecular Plant Pathology	30	60	90	6
BIO 3114(5)	Molecular Basis of Disease	30	60	90	6
BIO 3217(5)	Cell Signaling and Protein Sorting**	30	60	90	6
BIO 3209(5)	Forensic DNA Biology	30	60	90	6
BIO 3210(5)	Functional Genomics	30	60	90	6

*\* Not all modules may be on offer; \*\* Compulsory elective*

#### **E. Option Ecology and Environmental Science – Elective Modules\***

<b>Code</b>	<b>Module Name</b>	<b>Contact Hrs</b>	<b>Self-Study/Hrs</b>	<b>Other Learning Activities/Hrs</b>	<b>LCSS Credits</b>
<b>Year 2</b>					
BIO 2111(3)	Ecology of Invasive Species	30	60	90	6
BIO 2112(3)	Environmental Monitoring	30	60	90	6
BIO 2113(3)	Ichthyology	30	60	90	6
BIO 2209(3)	Ecology of Communities and Ecosystems	30	60	90	6
BIO 2211(3)	Tropical Marine Biology and Ecosystems	30	60	90	6
BIO 2212(3)	Fisheries Biology and Management	30	60	90	6
<b>Year 3</b>					
BIO 3113(5)	Coastal and Environmental Management**	30	60	90	6
BIO 3105(5)	Ecotoxicology	30	60	90	6
BIO 3107(5)	Global Change Biology	30	60	90	6
BIO 3108(5)	Sustainable Development	30	60	90	6
BIO 3218(5)	Conservation Biology**	30	60	90	6
BIO 3206(5)	Molecular Ecology and Evolution	30	60	90	6
BIO 3208(5)	Environmental Hazards and Disasters	30	60	90	6

*\* Not all modules may be on offer; \*\* Compulsory elective*

### **9. PROGRAMME PLAN**

Year 1: All students are offered two Foundation modules and ten core modules. Year 2: Students are offered two electives in their chosen Option per Semester and a total of six core modules. In Year 3, students are offered: a mandatory Research Project and one core and two elective modules per Semester. A detailed programme plan for each Option is provided in the following Table:

	<b>SC306 BSc (Hons) Biological Sciences (Option Biology)</b>	<b>SC306 BSc (Hons) Biological Sciences (Option Molecular and Cell Biology)</b>	<b>SC306 BSc (Hons) Biological Sciences (Option Ecology &amp; Environmental Science)</b>
<b>YR 1 SEM 1 CORE MODULES</b>	BIO 1101(1) Biochemistry BIO 1105(1) Molecular Biology I BIO 1106(1) Environmental Science BIO 1107(1) Diversity of Organisms I BIO 1108(1) Ecology of Individuals	BIO 1101(1) Biochemistry BIO 1105(1) Molecular Biology I BIO 1106(1) Environmental Science BIO 1107(1) Diversity of Organisms I BIO 1108(1) Ecology of Individuals	BIO 1101(1) Biochemistry BIO 1105(1) Molecular Biology I BIO 1106(1) Environmental Science BIO 1107(1) Diversity of Organisms I BIO 1108(1) Ecology of Individuals
<b>YR 1 SEM 2 CORE MODULES</b>	BIO 1201(1) Cell Biology BIO 1204(1) Microbiology BIO 1207(1) Marine Biology BIO 1209(1) Physiology I BOS 1201(1) Research Methods	BIO 1201(1) Cell Biology BIO 1204(1) Microbiology BIO 1207(1) Marine Biology BIO 1209(1) Physiology I BOS 1201(1) Research Methods	BIO 1201(1) Cell Biology BIO 1204(1) Microbiology BIO 1207(1) Marine Biology BIO 1209(1) Physiology I BOS 1201(1) Research Methods
<b>YR 2 SEM 1 CORE MODULES</b>	BIO 2103(3) Genetics BIO 2114(3) Diversity of Organisms II BOS 2101(3) Biostatistics & Experimental Design	BIO 2103(3) Genetics BIO 2114(3) Diversity of Organisms II BOS 2101(3) Biostatistics & Experimental Design	BIO 2103(3) Genetics BIO 2114(3) Diversity of Organisms II BOS 2101(3) Biostatistics & Experimental Design
<b>YR 2 SEM 1 ELECTIVE* MODULES</b>	BIO 2105(3) Advanced Microbiology BIO 2106(3) Cell & Molecular Nutrition BIO 2107(3) Biotechnology BIO 2113(3) Ichthyology	BIO 2105(3) Advanced Microbiology BIO 2106(3) Cell & Molecular Nutrition BIO 2107(3) Biotechnology	BIO 2111(3) Ecology of Invasive Species BIO 2112(3) Environmental Monitoring BIO 2113(3) Ichthyology
<b>YR 2 SEM 2 CORE MODULES</b>	BIO 2203(3) Molecular Biology II BIO 2213(3) Ecology of Populations BIO 2214(3) Physiology II	BIO 2203(3) Molecular Biology II BIO 2213(3) Ecology of Populations BIO 2214(3) Physiology II	BIO 2203(3) Molecular Biology II BIO 2213(3) Ecology of Populations BIO 2214(3) Physiology II
<b>YR 2 SEM 2 ELECTIVE* MODULES</b>	BIO 2206(3) Immunology & Parasitology BIO 2207(3) Bioinformatics BIO 2208(3) Animal Behaviour BIO 2209(3) Ecology of Communities & Ecosystems	BIO 2206(3) Immunology & Parasitology BIO 2207(3) Bioinformatics	BIO 2209(3) Ecology of Communities & Ecosystems BIO 2211(3) Tropical Marine Biology & Ecosystems BIO 2212(3) Fisheries Biology & Management
<b>YR 3 SEM 1 CORE MODULES</b>	BIO 3000Y(5) Project/Dissertation BIO 3103(5) Plant Growth & Development	BIO 3000Y(5) Project/Dissertation BIO 3103(5) Plant Growth & Development	BIO 3000Y(5) Project/Dissertation BIO 3103(5) Plant Growth & Development
<b>YR 3 SEM 1 ELECTIVE* MODULES</b>	BIO 3102(5) Endocrinology** & any other elective from: BIO 3101(5) Nutrition in Health and Disease BIO 3104(5) Food & Industrial Microbiology BIO 3105(5) Ecotoxicology	BIO 3112(5) Mechanisms of Gene Expression** & any other elective from: BIO 3109(5) Molecular Plant Pathology BIO 3114 (5) Molecular Basis of Disease	BIO 3113(5) Coastal & Environmental Management** & any other elective from: BIO 3105(5) Ecotoxicology BIO 3107(5) Global Change Biology BIO 3108(5) Sustainable Development
<b>YR 3 SEM 2 CORE MODULES</b>	BIO 3000Y(5) Research Project BIO 3202(5) Developmental Biology	BIO 3000Y(5) Research Project BIO 3202(5) Developmental Biology	BIO 3000Y(5) Research Project BIO 3202(5) Developmental Biology
<b>YR 3 SEM 2 ELECTIVE* MODULES</b>	BIO 3218(5) Conservation Biology** & any other elective from: BIO 3201(5) Plant Protection BIO 3203(5) Post-Harvest Technology	BIO 3217(5) Cell Signaling & Protein Sorting** & any other elective from: BIO 3209(5) Forensic DNA Biology BIO 3210(5) Functional Genomics	BIO 3218(5) Conservation Biology** & any other elective from: BIO 3206(5) Molecular Ecology & Evolution BIO 3208(5) Environmental Hazards & Disasters

\* Not all modules may be on offer; \*\*Compulsory elective

