

## **Bachelor of Science (External) Degree Programmes**

Bachelor of Science (B.Sc.) (External) Degree Programmes were proposed and launched at Faculty of Applied Sciences, Rajarata University of Sri Lanka in year 2008. The following two degree programmes are delivered by the Faculty of Applied Sciences in collaboration with the Centre for Distance and Continuing Education (CDCE), Rajarata University of Sri Lanka.

- Bachelor of Science (External) in Biological Sciences
- Bachelor of Science (External) in Physical Sciences

## **Aims and Objectives of the B.Sc. External Degree Programmes**

- To provide opportunities for youth of the country to seek global and national employment by providing proficiency in a wide range of skills and techniques suitable for their careers in the fields of Botany, Zoology, Mathematics, Statistics, Physics and Information Technology.
- To make opportunities available for learning and to train a large pool of geographically dispersed students in Biological and Physical Sciences.
- To provide a high quality, interactive and a flexible learning programme so that students can learn at their own time, pace and place.
- To provide a well-trained workforce that establishes a quality culture in the country.
- To provide access to high quality study material in a stimulating and supportive environment.
- To provide opportunities for professionals to update their knowledge and develop their skills on the latest technologies and teaching methods.

## **Mode of delivery**

The instructions are in blended mode. Course materials are delivered through the Learning Management System (LMS) ie. Online and face-to-face discussion sessions and practical sessions are held at the Faculty of Applied Sciences, Rajarata University of Sri Lanka. Subject Matter Experts (SME) and Tutor-Mentors are available to facilitate the online and face to face learning including the practical sessions process.

## **Medium of Instruction**

English

## **Admission Requirements**

The admission of students to the B.Sc. (External) Degree programmes are carried out on the basis of the admission policy laid down by the Faculty Board, Faculty of Applied Sciences and the Senate of the Rajarata University of Sri Lanka.

In order to be eligible for admission to a program, a candidate should have offered at least two subjects from **Agriculture, Biology, Chemistry, Advanced Mathematics, Mathematics / Combined Mathematics and Physics** at the G.C.E. (A/L) examination.

In addition, candidates must also fulfill the following requirements:

1. Satisfy the minimum requirements for admission to the university as stipulated by the University Grants Commission
2. Have at least a **Credit Pass (C)** in English at the G.C.E.(O/L) Examination

## **Application for Registration**

Application for registration for the B.Sc. (External) Degree Programme in Biological Sciences / Physical Sciences shall be invited by notice in the Newspapers.

- A person who wishes to become a candidate for the B.Sc. (External) Degree programme in Biological Sciences / Physical Sciences shall make an application to the Senior Assistant Registrar (SAR)/ CDCE, when the programme is advertised.
- The application shall be on the prescribed form providing the information as he/she may be required to submit, including her/his qualifications for undertaking the courses of study.

## **Courses of Study**

The three year B.Sc. (External) Degree Programmes comprise of a total of six levels (semesters). An academic year will consist of two levels of study and one level of study will be of 6 months duration. The programs consist of a combination of courses drawn from the fields of Physics, Information Technology, Mathematics, Statistics, Botany and Zoology. Each course is a module of study normally completed within a level. A student enrolled for the degree programme may select courses from any combination of three fields of study, provided that he/she offers an average of 30 credits per year (10 credits per subject). On this basis the student has the flexibility of formulating his/her own programme of study and is expected to offer a minimum of 90 credits as well as minimum requirements specified in the student handbook in order to be eligible to obtain the B.Sc. (External) Degree in Biological / Physical Sciences.

## Available Courses for Degree Programme in Biological Sciences/ Physical Sciences

### *Compulsory Course for the B.Sc. (External) Degree Programme in Biology Sciences*

Year	Level	Credit Rating	Course Code	Course Title
1	1	0	CMP 1101	Basic Mathematics for Biological Sciences

### *Courses offered under the field of study Botany for the B.Sc. Degree Programme in Biological Sciences*

Year	Level	Credit Rating	Course Code	Course Title
1	1	2	BOT 1121	Plant Diversity – I
		2	BOT 1222	Plant Diversity – II
	2	2	BOT 1223	Plant Physiology
		2	BOT 1224	Plant Anatomy
2	3	2	BOT 2321	Economic Botany
		2	BOT 2322	Plant Systematics
	4	2	BOT 2423	General Microbiology
		1	BOT 2414	Molecular Biology
		2	BOT 2425	Statistics for Biology
		2	BOT 3521	Plant Pathology
3	5	2	BOT 3522	Postharvest Technology of Plant Products
		1	BOT 3513	Nitrogen Fixation
		2	BOT 3624	Soil Microbiology
	6	2	BOT 3625	Bioinformatics
		2	BOT 3626	Molecular Biotechnology
		2	BOT 3627	Industrial Microbiology
		<b>TOTAL = 30 CREDITS</b>		

***Courses offered under the field of study Zoology for the B.Sc. Degree Programme in Biological Sciences***

<b>Year</b>	<b>Level</b>	<b>Credit Rating</b>	<b>Course Code</b>	<b>Course Title</b>
1	1	2	ZOO 1121	Invertebrate Diversity
		1	ZOO 1112	Animal Histology
		2	ZOO 1123	Cell Biology and Biochemistry
		2	ZOO 1124	Genetics and Evolution
	2	2	ZOO 1225	Vertebrate Diversity
		2	ZOO 1226	Animal Physiology
2		ZOO 1227	Developmental Biology	
2	3	2	ZOO 2321	Fish Biology
		2	ZOO 2322	Animal Behavior
	4	1	ZOO 2413	General Entomology
		2	ZOO 2424	Ecology
3	5	2	ZOO 3521	Medical Entomology
		2	ZOO 3522	Biodiversity and Principles of Conservation
		2	ZOO 3523	Environmental Pollution
	6	2	ZOO 3624	Fisheries and Aquaculture Management
		2	ZOO 3625	Environmental Impact Assessment
<b>TOTAL = 30 CREDITS</b>				

***Courses offered under the field of study Physics for the B.Sc. Degree Programme in Biological Sciences/Physical Sciences***

<b>Year</b>	<b>Level</b>	<b>Credit rating</b>	<b>Course code</b>	<b>Course title</b>
1	1	3	PHY 1131	General and Thermal Physics
		1	PHY 1112	Waves and Vibrations
		2	PHY 1123	Practical Unit I
	2	2	PHY 1224	Modern Physics
		2	PHY 1225	Fundamentals of Electromagnetism
2	3	1	PHY 2311	Thermodynamics and Radiation
		1	PHY 2312	Electromagnetism
		2	PHY 2323	Electronics
		1	PHY 2314	Quantum Mechanics
	4	2	PHY 2425	Physical Optics
		1	PHY 2416	Atomic and Nuclear Physics
		2	PHY 2427	Practical Unit II
3	5	2	PHY 3521	Energy Resources
		3	PHY 3532	Structure and Properties of Materials
	6	2	PHY 3623	Physical Oceanography
		1	PHY 3614	Physical Geology
		2	PHY 3627	Medical Physics
<b>TOTAL = 30 CREDITS</b>				

***Courses offered under the field of study Information Technology for the B.Sc. Degree Programme in Biological Sciences/Physical Sciences***

<b>Year</b>	<b>Level</b>	<b>Credit rating</b>	<b>Course code</b>	<b>Course title</b>
1	1	2	INT 1121	Programming Concepts
		2	INT 1122	Introduction to Databases
	2	2	INT 1223	Introduction to Operating Systems
		2	INT 1224	Introduction to Computer Architecture
		2	INT 1225	Implementation of Database Applications
2	3	2	INT 2321	Data Structures and Algorithms
		4	INT 2342	Data Communications and Computer Networks
	4	2	INT 2423	Introduction to Simulation
		2	INT 2424	Image Processing and Analysis
3	5	3	INT 3531	Artificial Intelligence
		2	INT 3522	Document Markup Languages
	6	3	INT 3633	Human Computer Interactions
		2	INT 3624	Web page Construction
<b>TOTAL = 30 CREDITS</b>				

***Courses offered under the field of study Statistics for the B.Sc. Degree Programme in Biological Sciences/ Physical Sciences***

<b>Year</b>	<b>Level</b>	<b>Credit Rating</b>	<b>Course code</b>	<b>Course title</b>
1	1	2	STA 1121	Introduction to probability theory
		3	STA 1132	Introduction to statistics
	2	3	STA 1233	Applied statistics
		2	STA 1224	Introduction to statistical software
2	3	3	STA 2331	Statistical inference
		2	STA 2322	Data analysis using statistical packages
	4	3	STA 2433	Analysis of variance and design of experiments
		2	STA 2424	Non-parametric methods
3	5	2	STA 3521	Regression analysis
		3	STA 3532	Statistical quality control
		3	STA 3633	Stochastic process and applications
	6	2	STA 3624	Time series analysis and forecasting
<b>TOTAL = 30 CREDITS</b>				

***Courses offered under the field of study Mathematics for the B.Sc. Degree Programme in Physical Sciences***

<b>Year</b>	<b>Level</b>	<b>Credit rating</b>	<b>Course code</b>	<b>Course title</b>
1	1	3	MAT 1131	Abstract Algebra I
		2	MAT 1122	Differential Equations I
	2	2	MAT 1223	Linear Programming
		3	MAT 1234	Mathematical Analysis
2	3	3	MAT 2331	Abstract Algebra II
		2	MAT 2322	Modern Applied Mathematics
	4	3	MAT 2433	Discrete Mathematics
		2	MAT 2424	Computational Mathematics
3	5	3	MAT 3531	Differential Equations II
		2	MAT 3522	Spread Sheet Modelling
	6	3	MAT 3633	Advanced Computational Mathematics
		2	MAT 3624	Complex Analysis
<b>TOTAL = 30 CREDITS</b>				

### **Continuous Assessments and End Semester Examination**

Continuous assessments may include mid semester examination, tutorials, spot tests, practical sessions, assignments, quizzes, presentations, etc. Marks obtained for continuous assessments may be considered when determining the final grade as decided by the SME.

A student will be assessed at the end of each semester either by a theory paper or a practical examination or both, depending on the course.

### **Course fee**

Registration Fee : Rs. 3000/- (Rs. 1000/- each year)

Program Fees : Paid in yearly installments

Year 1 : Rs. 75,000 (or two installments of Rs. 45,000/- each)  
(Exclusive examination fee)

Year 2 : Rs. 75,000/- (or two installments of Rs. 45,000/- each)  
(Exclusive examination fee)

Year 3 : Rs. 75,000/- (or two installments of Rs. 45,000/- each)  
(exclusive examination fee)

Examination Fee : Rs. 21,000/- (Rs. 7,000/ per year)

**Total : Rs. 249,000,000/- (Rs. 294,000/- with installments)**