

# P R O S P E C T U S

2023/2024



**Faculty of Applied Sciences**  
UNIVERSITY OF SRI JAYEWARDENEPURA, SRI LANKA

# A Journey through Time

The Faculty of Applied Sciences of the University of Sri Jayewardenepura was established in 1961 and is the second oldest faculty at the University. With a rich history, a large and diverse student body, a highly qualified academic staff, and a broad range of courses, the faculty plays a crucial role in shaping the country's future of science and technology.

It was initially established as a Faculty of Science and offered programs in core science disciplines. Then, the faculty expanded with new and revolutionary ideas and introduced new courses covering applied aspects of science into its curriculum. Additionally, opening the gates of the Physics and Mathematics Departments to Bioscience students marked a significant step forward, and the Faculty of Science was converted to the first Faculty of Applied Sciences of the country in 1973.

The faculty hosts approximately 3,000 students and provides a supportive and dynamic learning environment that encourages both classroom learning and practical experiences, including industrial placements, work shadowing, and field trips. These opportunities help students become familiar with workplace culture and expectations. Further, the faculty is blessed with a highly qualified academic staff comprising over 150 members, who are active researchers and leaders in their respective fields.

The faculty offers a wide range of undergraduate and postgraduate programs. The undergraduate program offers degrees in Chemistry, Industrial Chemistry, Polymer Science and Technology, Biology, Food Science

and Technology, Plant Biotechnology, Microbiology, Plant Biology, Zoology, Aquatic Resource Management, Environmental Management & Forestry, Mathematics, Genetics and Molecular Biology, Physics, Statistics, Computer Science, Sport Science and Management and Polymer Science and Industrial Management under eleven departments and three units.

The faculty offers ten postgraduate courses in addition to the undergraduate courses, which are available in various subjects and are both exciting and constructive. The faculty's research initiatives and collaborations further enhance its reputation as a leading institution for applied sciences in Sri Lanka and beyond.

Many alumni hold significant positions in academia, government, and industry, contributing to the country's development. The faculty is optimistic that this year's students will excel academically and make meaningful contributions to society as proud graduates.



## **Professor Upul Subasinghe**

**Dean, Faculty of Applied Sciences, University of Sri Jayewardenepura**

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It gives me great joy to welcome you to the University of Sri Jayewardenepura.

You have reached yet another important milestone in your life and I would first like to congratulate you on gaining admission to a state university. I am sure that you are overjoyed to see the results of your immense dedication and hard work.

The University of Sri Jayewardenepura (USJ) guided by its vision and mission has been an outstanding institution of higher education in Sri Lanka with a long history. Devoted to producing well rounded graduates equipped with the knowledge, skills and experience who can excel in a demanding, fast paced environment, USJ takes pride in being the largest University in Sri Lanka in terms of students numbers, being the home to more than 15,000 undergraduate students. Comprised of eleven faculties providing higher education in a multitude of study areas, USJ provides higher education through a highly qualified academic staff who has obtained their relevant qualifications from world renowned institutions.

Established as the second faculty of the University, the Faculty of Applied Sciences (FAS), offers top ranked

academic programmes in various fields through eleven departments. Keeping up with the newest trends in the world of science, FAS possess the infrastructure facilities such as full-fledged lecture halls and state of the art laboratories to provide you with an all-inclusive education experience and to prepare you to succeed in your respective careers. The curriculum of the degree programmes offered by the Faculty of Applied Sciences meets and often exceeds the expectations of the relevant industries as it is ever evolving and keeping up with newly discovered knowledge and dynamic nature of the industries.

As Nelson Mandela once said, “education is the most powerful weapon which you can use to change the world”. Hence, the University and the Faculty will be providing you with all that is necessary to help you reach great heights in your respective careers and personal lives. I hope you will grab this opportunity to become a well-rounded individual with knowledge, skills and experience who will provide and exceptional service to your motherland and the world. While congratulating you once again for your achievements thus far, I wish you the best of luck for all your academic endeavours and I hope you will have a wonderful undergraduate experience at the University of Sri Jayewardenepura.

*The Faculty of Applied Sciences  
of the University of Sri Jayewardenepura  
is committed to excellence in  
teaching, research and in enriching  
its students in many facets of life*



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# Undergraduate Courses Degree Programmes





# AMT

## Applied Mathematics

*Offered by the Department of Mathematics*

*“Applied Mathematics is a blend of Mathematical Sciences and Specialized knowledge which describes professional speciality for practical problems”*

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### **B.Sc. Degree with Applied Mathematics**

**Course Code: AMT**

**Duration: Three years**

**Subject Combinations: Refer pages 000-000**

#### ***For whom?***

Students from physical science stream who have a potential to deal with applications of mathematics with sharp logical and critical thinking and willing to undertake challenges.

#### ***Career opportunities***

With the advancement of technology and development of various industries, a tendency to apply improved mathematical tools and techniques to gain significant results has cropped up. Moreover, new application areas are being discovered day by day which require subject oriented knowledge to handle the application procedures. At present/ Thus, currently professionals with applied mathematical background and skills are at a high demand worldwide, especially in the fields of engineering, technical and industrial sectors and also in research institutes.

### *Course overview*

The Applied Mathematics course is a combination of mathematical science, applications and knowledge. An opportunity to study Applied Mathematics will develop a professional specialty in an undergraduate to work on real world problems by formulating and studying mathematical models. It will pave the path to develop a successful career, well-adapted to the present industrialized world and also will give an excellent opportunity for individuals to serve the society using their knowledge and skills. Mathematics improves a person's logical thinking while skills in Applied Mathematics will enable him/her to face a practical situation successfully.

### *Course structure*

Applied Mathematics B.Sc. is offered as one of the three subjects for BSc Degree in a permitted subject combination for physical science students. Applied Mathematics course units are categorized in to “core” and “optional” course units. The core course units are designed to provide students with a solid foundation of fundamental concepts and essential techniques of Applied Mathematics as well as to introduce them to different fields of the subject. All the course units in the first two years of the program are core units. A broad selection of optional course units is offered in the third year to allow students the opportunity to pursue courses that cater their subject interests and career ambitions. The success of modern mathematical concepts, techniques and software had given rise to the involvement of knowledge in computational mathematics in practical applications of mathematics.

The department offers practical components along with Applied Mathematics courses together with an access to a well-equipped computer laboratory.

## **B.Sc. Honours Degree in Applied Mathematics**

**Duration: 4 years**

### *For whom?*

Focused on students who are willing to develop an expertise skill in handling Applied Mathematical knowledge to solve practical problems in real world scenarios.

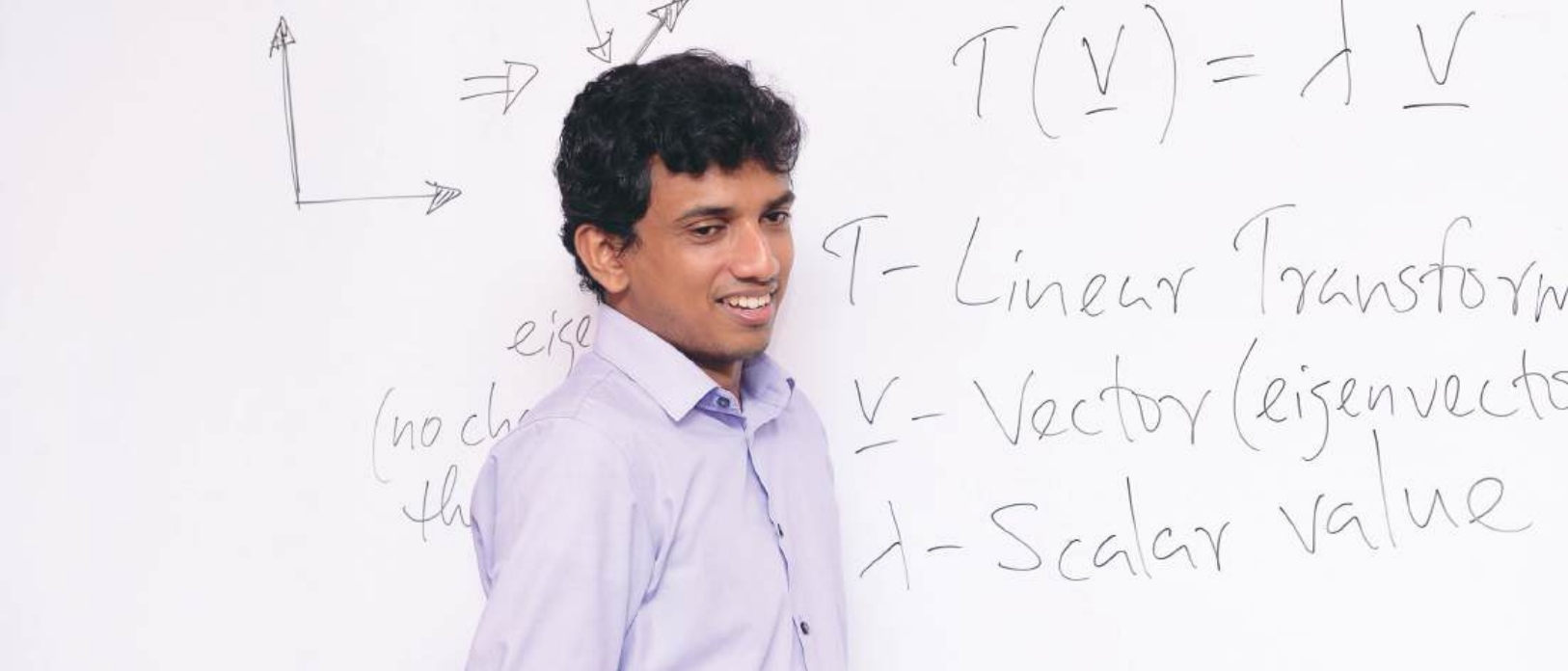
### *Career opportunities*

A Honours Degree in Applied Mathematics enables graduates to find employment as professionals in any industry. Such as science and technological institutes, academic and research institutes, engineering field or any other field which requires the use of a practical application of mathematical techniques.

### *Course overview*

The Honours degree is aimed at offering undergraduates with thorough theoretical and practical knowledge relevant to the subject. Students will not only learn but also feel mathematics through the exposure that they receive through the program. Honours degree students are also provided with the benefit of experiencing practical sessions along with some course units in a well equipped computer laboratory.





### **Course Structure**

The course units in the Honours degree program are designed to provide students with an in depth knowledge in both classical and modern topics of Applied Mathematics ranging from Quantum Mechanics to Actuarial Sciences. In addition the students are offered courses in related fields such as Statistics, Computer Science and Programming that are designed not only to emphasize the power of Applied Mathematics to the student but also to develop their skills in the respective fields that are of essential importance for their future careers. To develop student's soft skills, the department has integrated presentations and practical components as methods of assessments to most courses. The industrial internship and the related project that is

offered during the final semester of the program allow students to realize the applicability of their acquired knowledge, and develops their finer skills that would help them to overcome the challenges they will have to face when working with real world problems.

### **Selection**

Promising students are selected for the B.Sc. Honours Degree in Applied Mathematics at the end of the second year based on their performance in Applied Mathematics courses with an acceptable level of performance on the other two subjects.

### **For further information please contact:**

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Head/Department of Mathematics  
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# Applied Mathematics

## B.Sc. Degree Course Units

Each student should take course units having minimum cumulative credit value of 27.0

### FIRST YEAR

#### Semester I

AMT 111 2.0	Analytical Geometry	c
AMT 112 2.0	Mathematical Statistics I	c
AMT 113 1.0	Financial Mathematics	c

#### Semester II

AMT 121 2.0	Classical Mechanics	c
AMT 122 2.0	Computational Mathematics	c
AMT 123 1.0	Mathematical Modeling I	c

### SECOND YEAR

#### Semester I

AMT 211 2.0	Design and Analysis of Algorithms	c
AMT 212 2.0	Mathematical Statistics II	c
AMT 213 1.0	Introduction to Geometrical Transformations	c

#### Semester II

AMT 221 2.0	Mathematical Computing	c
AMT 222 2.0	Fluid Dynamics	c
AMT 223 1.0	Discrete Mathematics	c

### THIRD YEAR

#### Semester I

AMT 311 2.0	Applicable Mathematics	o
AMT 312 2.0	Actuarial Science	o
AMT 313 1.0	Computational Discrete Mathematics	o

## Course Type

-c-  
Core

-o-  
Optional for  
those doing  
Mathematics

Course Type			
-c- Core	AMT 314 1.0	Teaching and Learning Methodologies in Mathematics	o
	AMT 317 1.0	Fuzzy Logic and Wavelet Analysis	o
	<b>Semester II</b>		
-o- Optional for those doing Mathematics	AMT 321 2.0	Mathematical Modeling II	o
	AMT 322 2.0	Quantum Mechanics	o
	AMT 323 1.0	Operational Research I	o <sup>#</sup>
	AMT 324 2.0	Mathematics Teaching for Active Learning	o
	AMT 325 2.0	Regression Analysis	o
-o <sup>#</sup> - Optional for those doing Applied Mathematics, but those who are doing Management Science are not allowed to do this course unit			
	<b>Honours Degree Course Units</b>		
	<b>PART I</b>		
	<b>Semester I</b>		
	AMT 311 2.0	Applicable Mathematics	c
	AMT 312 2.0	Actuarial Science	c
	AMT 313 1.0	Computational Discrete Mathematics	c
	AMT 351 2.0	Cryptography	c
	AMT 352 2.0	Non Linear Differential Equations and Dynamical Systems	c
	AMT 353 2.0	Computer Algebra	c
	AMT 354 2.0	Accounting and Finance	c
	AMT 355 2.0	Seminar and Report Writing	c
	AMT 356 2.0	Probability Theory 1	o
	<b>Semester II</b>		
	AMT 321 2.0	Mathematical Modeling II	c
	AMT 322 2.0	Quantum Mechanics	c
	AMT 323 1.0	Operational Research I	o <sup>#</sup>
	AMT 325 2.0	Regression Analysis	o
	AMT 326 1.0	Production Control (based on MAN 326 1.0 Production Control)	o
	AMT 376 2.0	Rotational Systems	c

AMT 377 2.0	Computational Statistics	c
AMT 378 2.0	Data Analysis and Preparation of Reports	c
AMT 379 2.0	Object Oriented Programming	o*
AMT 380 2.0	Probability Theory II	o
AMT 390 2.0	Statistical Quality Control	c

## PART II

### Semester I

AMT 451 3.0	Advanced Numerical Techniques	c
AMT 452 3.0	Optimization (based on MAT 453 3.0 Optimization)	c
AMT 453 2.0	Applied Mathematical Techniques	c
AMT 454 2.0	Graph Theory with Applications	c
AMT 455 2.0	Operational Research II	o <sup>#</sup>
AMT 456 2.0	Industrial Management (based on ASP 434 2.0 Industrial Management)	o
AMT 457 2.0	An Introduction to Answer Set Prolog (based on MAT 358 2.0 An Introduction to Answer Set Prolog)	o
AMT 458 2.0	Applied Optimal Control	o
AMT 459 2.0	Mathematics of Machine Learning	o

### Semester II

AMT 476 8.0	Industrial Training	c
AMT 499 8.0	Project	c

## Course Type

-c-  
Core

-o-  
Optional for those  
doing Mathematics

-o\*-  
Optional for those  
doing Applied  
Mathematics;  
Those who have  
done CSC, ICT or  
EES as a subject in  
the first or second  
year are not  
allowed to do this  
course

-o<sup>#</sup>-  
Optional for those  
doing Applied  
Mathematics but  
those who have  
done Management  
Science in first  
two years are not  
allowed to do this  
course.





# ARM

## Aquatic Resources Management

*Offered by the Department of Zoology*

*“Aquatic Resource Management is a multi-disciplinary field of study pertaining to the planning, development and sustainable utilization of aquatic resources”*

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**B.Sc. Degree Programme with Aquatic Resources Management**

**Course code: ARM**

**Duration: 3 Years**

**Subject combinations: Refer pages 156-161**

***For whom?***

For students from biological sciences streams who are interested in pursuing careers in Aquatic Resources Management.

***Career opportunities***

Sri Lanka is an island nation with rich endemic biodiversity within aquatic environments and abundant resources in fisheries. In spite of the advent of the 21st century, the wealth of our aquatic resources is relatively unknown compared to the resources available within terrestrial environments. In order to maximize the potential of our island nation in aquatic resources, it is important that a pool of talent is developed who are equipped with specialist and applied knowledge in Aquatic Resources Management. Therefore, due to the board spectrum



opportunities, students can engage with prospects of joining government ministries, private organizations, fisheries based industries, consultancy firms engaging in aquatic resources management, ornamental fish based businesses with an export orientation as well as providing opportunity for entrepreneurship.

#### *Course overview*

The subject, Aquatic Resources Management, aims to provide the all-round development of a student with specialist knowledge of aquatic environments namely fresh, brackish and marine ecosystems. The impartation of specialist knowledge in aquatic ecosystems is covered by a diverse range of topics, including Aquatic Diversity, Planning, Conservation, and Sustainable Utilization of Aquatic Resources, Aquaculture and Fisheries, applications in GIS and

Aquatic Modeling. Outside of the key subject areas, students are equipped with communication and problem solving skills, team work and perseverance and leadership qualities to ensure their career readiness to secure a future within the 21 century workforce.

#### *Course structure*

Aquatic Resources Management will contribute one third of the B.Sc. degree program within the framework of a permitted subject combination. Students are required to take course units equaling or exceeding a cumulative credit value of 27.0 points. Course units are classified as compulsory, core and optional course units and the course units are designed to provide the student with specialist knowledge and skills required in contemporary Aquatic Resources Management.

## **B.Sc. Honours Degree Programme in Aquatic Resources Management**

**Duration: 4 Years**

### ***Career opportunities***

The career opportunities available for graduates of the Special Degree Program in Aquatic Resources Management, will be centered on academia, government ministries and agencies, consultancy firms and as well as practicing their trade as researchers in a diverse range of hierarchical positions undertaking in depth studies on contemporary research topics with the objectives of bridging gaps in knowledge and deciphering cryptic areas in Aquatic Resources Management.

### ***Course overview***

The B.Sc. Honours Degree in Aquatic Resources Management aims to prepare a new breed of experts with marketable and transferable skills in contemporary applied Aquatic Resources Management. The programme imparts a higher level of specialist knowledge and practical training and is ideally suited for students with aspirations for graduate studies and further research training.

The core strengths of the Honours Degree Program are the coverage of specialist knowledge, both in-depth and with a wide spectrum of horizontal topics, the provision of a higher degree of practical skills which are transferable beyond the learning environment, higher levels of analytical and communication skills and in whole, a well rounded education program suited for research endeavors or higher studies under

specialist topics. The final year research project is of core significance to the Honours Degree Programme advances a student's capacity to undertake research endeavors, develops core analytical skills, expands communication, networking and language skills and to pursue careers in academia

### ***Selection***

Selection of students for the Honours Degree Programme is based on the student's performance in the first two years of the academic program and the intake is based on student number and staff availability.

### ***Instruction and assessment***

The impartation of education to students enrolled in General and Honours Degree programmes, will be conducted by an eminent group of lecturers, with proven track records in academia and research. The teaching environment within the Department of Zoology consists of lectures, laboratory practicals, field studies and project assignments which ensures all-round development of students in specialist knowledge and practical training. The modes of assessment include end-of-semester examinations, practical tests, presentations and reports.

### ***For further information please contact:***

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# Aquatic Resources Management

## B.Sc. Degree Course Units

Each student should take course units having minimum cumulative credit value of 27.0

### FIRST YEAR

#### Semester I

ARM 101 1.0	Basic Limnology	c
ARM 102 1.0	Oceanography	c
ARM 103 1.0	Aquatic Microbiology and Water Quality	c
ARM 104 1.0	Basic Mathematics (Based on MAT 104 1.0)	c**
ARM 105 1.0	Ichthyology	c
ARM 106 1.0	Laboratory and Field Work	a

#### Semester II

ARM 107 1.0	Ecology of Plankton and Benthos	c
ARM 108 1.0	Aquatic Vegetation	c
ARM 109 1.0	Aquatic Invertebrates	c
ARM 110 1.0	Water Chemistry	c
ARM 111 1.0	Laboratory and Field Work	a
ARM 112 1.0	Water Safety and Basic Lifesaving Skills	o*

### SECOND YEAR

#### Semester I

ARM 201 2.0	Principles in Aquaculture and Aquaculture Engineering	c
ARM 202 2.0	Marine Fisheries Management	c
ARM 203 1.0	Laboratory and Field Work	a

#### Semester II

ARM 205 2.0	Culture Methods of Finfish and Shellfish	c
ARM 206 1.0	Inland Fisheries	c
ARM 207 1.0	Fish Genetics	c
ARM 208 1.0	Laboratory and Field Work	a

## Course Type

-c-  
Core

-o-  
Optional for those  
doing Aquatic  
Science

-a-  
Compulsory

\_\*\_  
Examination grade  
is not counted for  
GPA.

\_\*\*\_  
Compulsory  
with a pass (D+);  
Grade will not be  
considered for  
GPA



Course Type	THIRD YEAR		
	<b>Semester I</b>		
-c- Core	ARM 301 2.0	Surface and Ground Water Ecology	o
	ARM 302 2.0	Fundamentals of GIS	o
	ARM 303 1.0	Wetland Management	o
-o- Optional for those doing Aquatic Science	ARM 305 1.0	Ornamental Fish Culture	o
	ARM 306 1.0	Water Pollution and Legislations in Water Resources Management	o
	ARM 307 1.0	Laboratory and Field Work	a
	ARM 308 2.0	Aquatic Toxicology	o
	STA 349 2.0	Introductory Statistics	c
-a- Compulsory	<b>Semester II</b>		
	ARM 304 2.0	Nutrition (Based on ZOO 327 2.0)	o
	ARM 309 2.0	Marine and Coastal Ecology	o
	ARM 310 1.0	Ecophysiology	o
	ARM 311 1.0	Integrated Watershed Management	o
	ARM 312 1.0	Aquatic Vertebrate Conservation	o
	ARM 313 2.0	Industrial Training	o
	ARM 314 1.0	Laboratory and Field Work	a
<b>B.Sc. Honours Degree Aquatic Resources Management Course Units</b>			
	<b>Part I</b>		
	<b>Semester I</b>		
	ARM 301 2.0	Surface and Ground Water Ecology	c
	ARM 302 2.0	Fundamentals of GIS	c
	ARM 303 1.0	Wetland Management	c
	ARM 305 1.0	Ornamental Fish Culture	c
	ARM 306 1.0	Water Pollution and Legislations in Water Resources Management	c
	ARM 308 2.0	Aquatic Toxicology	c
	ARM 315 1.0	Coastal Zone Management	c
	ARM 317 1.0	EIA Methodologies	c
	ARM 324 2.0	Laboratory and Field Work	a
	STA 349 2.0	Introductory Statistics	c

### Semester II

ARM 304 2.0	Nutrition (Based on ZOO 327 2.0)	c
ARM 309 2.0	Marine and Coastal Ecology	c
ARM 310 1.0	Ecophysiology	c
ARM 311 1.0	Intergrated Watershed Management	c
ARM 312 1.0	Aquatic Vertebrates Conservation	c
ARM 313 2.0	Industrial Training	c
ARM 319 2.0	Research Methodology	c
ARM 322 2.0	Current Topics in Aquatic Resources Management	a
ARM 325 2.0	Laboratory, Field Work and Museum Work	a

### Part II

#### Semester I

ARM 401 2.0	Advanced Limnology	c
ARM 402 2.0	Pond and Hatchery Management Practices in Aquaculture	c
ARM 403 2.0	Marine Biotechnology	c
ARM 404 1.0	Fish Post-harvest Technology	c
ARM 405 1.0	Aquatic Biomonitoring	c
ARM 406 1.0	Reviwe of Literature	a
ARM 407 1.0	Legislations in Fisheries Management	c
ARM 419 3.0	Special Topics in Aquatic Resource Management	a
ARM 415 2.0	Marine Resources Management	o
STA 499 2.0	Statistical Methods	o

#### Semester II

ARM 408 8.0	Research Project (Semester I & II)	a
ARM 410 2.0	Fish Population Dynamics	c
ARM 411 2.0	Diseases of Cultured Fish and Shrimp Species	c
ARM 412 1.0	Soil and Geology in Aquatic Systems	c
ARM 413 2.0	Aquatic Wildlife Conservation	o
ARM 414 2.0	Fisheries Economics and Marketing	o
ARM 420 2.0	Microbial Ecology	c

### Course Type

-c-  
Core

-o-  
Optional for those  
doing Aquatic  
Science

-a-  
Compulsory



# BIO Biology

## *Offered by the Departments of Zoology and Botany*

*“Biology is a fundamental and applied science which is centered on the structure, function, interactions, evolution and taxonomy of biological organisms”*

### **B.Sc. Degree Programme with Biology**

**Course code: BIO**

**Duration: 3 Years**

**Subject combinations: Refer pages 156-161**

#### ***For whom?***

For students from biological sciences streams who are interested in pursuing careers in fundamental biology.

#### ***Career opportunities***

Sri Lanka boasts a rich endemic biodiversity and reasonable diversity in ecosystems, within which

there is a wealth of fauna and flora and bioactive compounds, which serve as invaluable remedies for a host of infectious and non-communicable diseases. In order to harness the potential of our island nation in biodiversity and biological resources for conservation, eco-tourism and bioprospecting endeavors as well as for the appreciation of biology it is important that a pool of talent is developed who are equipped with specialist and applied knowledge in fundamental biology. Therefore, by the provision of skilled graduates in contemporary Applied Biology, the Departments of Botany and Zoology, contribute towards national development through its alumni.

scope in Biology is reasonably broad in its spectrum off employment opportunities with prospects of joining government ministries, private organizations, eco-tourism ventures, conservation organizations, ecological establishments, museums, universities and secondary schools, as well as providing opportunity for entrepreneurship.

### *Course overview*

The specialist subject, Biology, aims to instill in students, an appreciation for plant and animal sciences, especially in relation to the acquisition, integration and application of specialist knowledge in contemporary biology, in order to ensure the holistic development of the undergraduate community. The development of a student's appreciation of fundamental biology is molded through the impartation of relevant and timely topics in contemporary applied biology, including, Genetics and Molecular Biology, Insect Pest Management, Plant Propagation and Horticulture Human Nutrition, Natural Resources and their Management, Ecology and Biological Statistics. Outside of the key subject areas, students are equipped with communication and problem solving skills, teams work and perseverance and leadership qualities to ensure their career readiness to secure a future within the 21st century workforce.

### *Course structure*

Biology will contribute one third of the B.Sc. degree program within the framework of a permitted subject combination. Students are required to take course units equaling or exceeding a cumulative credit value of 27.0 points. Course units are classified as

compulsory, core and optional course units and the course units are designed to provide the student with specialist knowledge and skills required in contemporary Biology.

## **B.Sc. Honours Degree Programme in Biology**

**Duration: 4 years**

### *Career opporrunities*

The career opportunities available for graduates of the Special Degree Program in Biology will be centered on academia, consultancies at government and non-government agencies, and as researchers in a diverse range of positions.

### *Course overview*

The B.Sc. Degree in Biology aims to provide a group of experts with required skills in applied Biology. The program imparts a higher level of specialist knowledge and practical training and is ideally suited for students with aspiration for graduate studies and further research training.

The core strengths of the Honours Degree Program are coverage of specialist knowledge, the provision of a higher degree of practical skills which are transferable beyond the learning environment, higher levels of analytical and communication skills and in whole, a well rounded education program suited for research endeavors or higher studies under specialist topics. The final year research projects is of major significance to the Honours Degree Program because it advances a student's capacity to undertake research





endeavors, develops core analytical skills and expands communication, networking and language skills.

### ***Selection***

Selection of students for the Honours Degree Program is based on the student's performance in the first two years of the academic program.

### ***Instruction and assessment***

The impartation of education to students in B.Sc. programme and Honours Degree programs will be conducted by an eminent group of lecturers, with proven track records in academia and research. The teaching environment within the Departments of Botany and Zoology consists of lectures, laboratory practicals, field studies and project assignments which ensure all-round development of students in specialist knowledge and practical training. The modes of

assessment include end-of-semester examinations, practical tests, presentations and reports.

### ***For further information please contact:***

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# Biology

## B.Sc. Degree Course Units

### FIRST YEAR

#### Semester I

BIO 101 1.0	Biology of Cell (Based on ZOO 128 1.0)	c
BIO 108 2.0	Diversity of Life on Earth	c
BIO 109 1.0	Organization and Evolution (Based on ZOO 126 1.0)	c
BIO 121 1.0	Laboratory and Field Work	a

#### Semester II

BIO 104 2.0	Plant form and Function	c
BIO 110 1.0	Biological Statistics	c
BIO 111 1.0	Principles of Ecology	c
BIO 122 1.0	Laboratory and Field Work	a

### SECOND YEAR

#### Semester I

BIO 201 1.0	Parasitology (Based on ZOO 219 1.0)	c
BIO 202 1.0	Microbiology	c
BIO 208 2.0	Animal form and Function (Based on ZOO 230 1.0)	c
BIO 221 1.0	Laboratory and Field Work	a

#### Semester II

BIO 207 1.0	Genetics <sup>#</sup>	c
BIO 209 1.0	Fundamentals of Environmental Science <sup>##</sup> (Based on ZOO 129 1.0)	c
BIO 210 1.0	Host Microbial Interactions	c
BIO 211 1.0	Animal Developmental Biology (Based on ZOO 228 1.0)	c
BIO 223 1.0	Plant Developmental Biology	c
BIO 222 1.0	Laboratory and Field Work	a

## Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional

-#-  
Not offered for  
students who are  
following Genetics  
and Molecular  
Biology as a subject.

-##-  
Only the students  
following Genetics  
and Molecular  
Biology as a subject  
can take this course

-###-  
Students who have  
followed Genetics  
and Molecular  
Biology as a subject  
in the first two years  
are not allowed to  
take this course

Course Type	THIRD YEAR		
-a- Compulsory	Semester I		
	BIO 315 2.0	Horticulture and Landscaping	o
	BIO 330 1.0	Molecular Biology*	o
-c- Core	BIO 334 1.0	Plant Tissue Culture (based on PBT 322 1.0)	o
	BIO 343 2.0	Fisheries and Aquaculture	o
	BIO 344 2.0	Biotechnology <sup>###</sup>	o
-o- Optional	BIO 345 2.0	Bioinformatics <sup>###</sup>	o
	BIO 346 1.0	Bioethics	o
	BIO 352 2.0	Plant Pathology	o
-#- Not offered for students who are following Genetics and Molecular Biology as a subject.	BIO 321 1.0	Laboratory and Field Work	a
	BIO 348 2.0	Industrial Training	o
	Semester II		
-##- Only the students following Genetics and Molecular Biology as a subject can take this course	BIO 308 2.0	Nutrition (based on ZOO 327 2.0)	o
	BIO 310 2.0	Economic Botany and Plantation Crop Resources	o
	BIO 353 1.0	Animal Behavior	o
-###- Students who have followed Genetics and Molecular Biology as a subject in the first two years are not allowed to take this course	BIO 354 1.0	Microbial Ecology	o
	BIO 355 1.0	Immunology <sup>###</sup>	o
	BIO 322 1.0	Laboratory and Field Work	a
B .Sc. Honours Degree Course Units			
Honours Part I			
	Semester I		
	BIO 315 2.0	Horticulture and Landscaping	o
	BIO 326 1.0	Environmental Toxicology	o
	BIO 334 1.0	Plant Tissue Culture	o
	BIO 335 2.0	Special Topics in Biology*	o
	BIO 343 2.0	Fisheries and Aquaculture	o
	BIO 344 2.0	Biotechnology <sup>###</sup> (based on GMB 311.2)	o
	BIO 345 1.0	Bioinformatics <sup>###</sup>	o
	BIO 346 1.0	Bioethics	o

BIO 352 2.0	Plant Pathology	o
BIO 357 1.0	Tropical Diseases	o
BIO 391 2.0	Laboratory and Field Work (Animal Dissections + Museum Techniques)	a

### Semester II

BIO 308 2.0	Nutrition (based on ZOO 327 2.0)	o
BIO 310 2.0	Economic Botany and Plantation Crop Resources	o
BIO 320 2.0	Research Methodology	o
BIO 323 1.0	Environmental Impact Assessment	o
BIO 325 2.0	Industrial Biotechnology	o
BIO 337 3.0	Current Topics in Biology*	c
BIO 348 2.0	Industrial Training	c
BIO 353 1.0	Animal Behavior	o
BIO 354 1.0	Microbial Ecology	o
BIO 355 1.0	Immunology <sup>###</sup>	o
BIO 356 1.0	Green Technology	o
BIO 360 1.0	Nanobiology (based on PBT/MBL 393 1.0)	o
BIO 361 2.0	Neurobiology (Based on GMB 408 2.0)	o
BIO 393 2.0	Laboratory and Field Work	a

### Honours Part II

#### Semester I

BIO 402 2.0	Wildlife Conservation & Management (Based on ZOO 408 2.0)	o
BIO 412 1.0	Product Development and Marketing Management (Based on PBT 494 1.0)	o
BIO 421 1.0	Recent Trends in Ethnobotany	o
BIO 423 2.0	Virology	o
BIO 427 2.0	Post-Harvest Technology (Based on PBL 490 2.0)	o
BIO 433 2.0	Cell and Tissue Culture	o
BIO 434 2.0	Cell Signaling	o
BIO 435 2.0	Herbal Technology	o
BIO 436 2.0	GIS & Mapping	o
BIO 445 2.0	Arthropod Vectors of Human Diseases (Based on ZOO 409 2.0)	o

### Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional

-#-  
Not offered for  
students who are  
following Genetics  
and Molecular  
Biology as a subject.

-##-  
Only the students  
following Genetics  
and Molecular  
Biology as a subject  
can take this course

-###-  
Students who have  
followed Genetics  
and Molecular  
Biology as a subject  
in the first two years  
are not allowed to  
take this course

## Course Type

-a-

Compulsory

-c-

Core

-o-

Optional

-#-

Not offered for students who are following Genetics and Molecular Biology as a subject.

-##-

Only the students following Genetics and Molecular Biology as a subject can take this course

-###-

Students who have followed Genetics and Molecular Biology as a subject in the first two years are not allowed to take this course

BIO 450 2.0

Applications in Immunology

o

## Semester II

BIO 408 1.0

Literature Survey

c

BIO 415 8.0

Research Project

c

BIO 426 1.0

Natural Resources and their Management

o

BIO 429 2.0

Advanced Applied Microbiology (Based on PBL 492 2.0)

o

BIO 441 2.0

Molecular Systematics (Based on ZOO 426 2.0)

o

BIO 451 2.0

Drug Designing (Based on GMB 422 2.0)

o





# CHE Chemistry

## *Offered by the Department of Chemistry*

*“Chemistry is a branch of natural science that deals with properties of molecules, their chemical reactions and laws that describe molecular interactions. Chemistry is a central science and has interactions with many other subjects”*

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### **B.Sc. Degree Programme with Chemistry**

**Course code: CHE**

**Duration: 3 Years**

**Subject combinations: Refer pages 156-161**

#### ***For whom?***

Students from both biological and physical science streams who are interested in pursuing careers related to a wide range of chemical disciplines in order to

address the important problems that lie at the interface of chemistry and closely related subjects. The intake is limited to a maximum of 400 students per academic year.

#### ***Career opportunities***

Chemistry is central to all sciences and is important to scientists and professionals such as doctors, biologists, engineers, physicians, pharmacists, nurses, and science teachers. There is a high demand for chemists

in public sector organizations, and manufacturing and service industries in the private sector. The gained experience will take you on to many diverse and rewarding career pathways.

### ***Course overview***

Courses incorporate the most recent advances in the discipline and provide students with a strong foundation in the fundamentals of chemistry. More specialized optional courses which cover a wide range of topics to suit their future goals are offered. Courses in chemistry are designed to meet the needs of the country along with transferable skills such as communication, problem solving, team work, self-direction, leadership and to prepare the students to seek employment with confidence.

### ***Course structure***

At the undergraduate level, a three year course is offered to the general degree students who offer other subject disciplines for the degree. All chemistry students follow all the first year and second year course units. These include compulsory and core units, which are designed to provide students with essential knowledge and skills that are required to specialize in chemistry as well as to other students who require a solid chemistry foundation in related disciplines. Based on their performance at the end of the second year, some are selected to follow the honours degree programme.

General degree students in their third (final) year, have a range of optional courses in more applied areas of the subject to choose from. The compulsory practical class comprises of 3 hour classes for 10 weeks lasting a total of 90 hours laboratory work for each year, which involves the three main branches of chemistry (Organic, Inorganic, and Physical). The practical is intended to provide students with hands on experience in analytical, technical, instrumental and problem solving skills required in many career pathways.

## **B.Sc. Honours Degree Programme in Chemistry**

**Duration: 4 Years**

### ***For whom?***

This degree is designed for those who wish to gain an in depth knowledge, skills and broader perspective in chemistry as demanded by the industry and academia.

### ***Career opportunities***

The B.Sc. Honours Degree in Chemistry, offered by the Department of Chemistry is aimed at training professionals in the field of chemistry with insight, skills, advanced and updated knowledge. The strong foundation laid by the Honours degree would enable the students to acquire postgraduate qualifications from recognized universities which would lead the



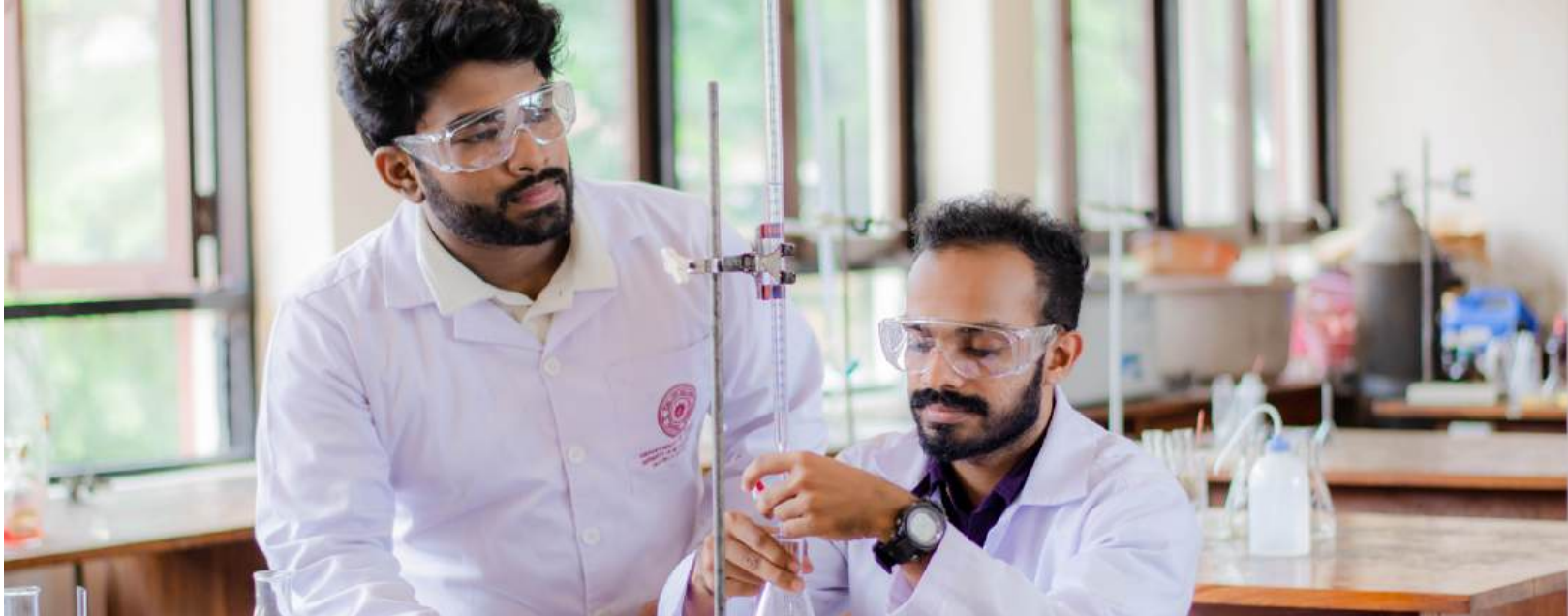
career path in academia in universities and research institutes in Sri Lanka.

### ***Course overview***

B.Sc. Honours degree courses are carefully designed to meet the demands of specialized industries and postgraduate institutions. The courses are a combination of theory and practical with integrated soft skills to make students confident in following their chosen career paths. The students following the special degree programme in chemistry are well trained to join any university worldwide as graduate assistants in pursuing doctoral studies.

### ***Course structure***

The Chemistry Honours Degree students in their third year follow advanced courses in the core subject areas, while the fourth year students have wider choice of specialized optional courses, some of which relate to applications of chemistry in industry. Students are required to carry out a research project in their final year. It helps students to sharpen their scientific reasoning, research and analytical skills, and prepare them to take up research work in academic careers. A dissertation is submitted for assessment at the end of the year, which is evaluated after an oral presentation followed by a viva voce examination. The



special degree students also undergo a short industrial placement during the course. The industry-based assignment/training project in the fourth year allow students to get hands-on experience in applying the theoretical concepts that they learnt in the class room while providing an invaluable opportunity to further strengthen their work ready skills and team work.

### ***Selection policy***

Selection of students to follow the B.Sc. Honours Degree in Chemistry is based on student performance in the first two academic years. The intake is typically limited to maximum of 30 students.

### ***Mode of Instruction and Assessment***

The modules include lectures, tutorials, laboratory

practicals, industrial visits and individual and group projects/assignments. These are assessed through end-of-semester written examinations, practical tests, presentations and reports. There is an emphasis on analysis of real problems to reinforce learning. This provides the tools required for group and individual projects. For the practical class, assessments will include attendance, record book and a practical exams held separately for Organic, Inorganic, and Physical Chemistry. A minimum of 80% attendance will be an essential requirement for completing the practical component.

### ***For Further Information, please contact;***

Prof. Champa D Jayaweera  
Head/Department of Chemistry  
E mail: [dangolle@sjp.ac.lk](mailto:dangolle@sjp.ac.lk)

# Chemistry

## B.Sc. Degree Course Units

Each student should take course units having a minimum cumulative credit value of 27.0

### FIRST YEAR

#### Semester I

CHE 106 1.0	Structure and Properties of Matter	c
CHE 108 1.0	Organic Chemistry I	c
CHE 110 1.0	Concepts in Inorganic Chemistry I	c
CHE 112 1.0	Main Group and Transition elements	c
CHE 107 2.0	Chemistry Practical Module 1 (Semester I and II)	a

#### Semester II

CHE 103 1.0	Chemical Thermodynamics	c
CHE 109 1.0	Organic Chemistry II	c
CHE 102 2.0	Introduction to Analytical Chemistry	c
CHE 107 2.0	Chemistry Practical Module 1 (Semester I and II)	a

### SECOND YEAR

#### Semester I

CHE 205 1.0	Chemistry of Heterocyclic and Bioorganic Compounds	c
CHE 207 1.0	Phase Equilibria and Surface Chemistry	c
CHE 208 1.0	Quantum Chemistry	c
CHE 211 1.0	Concepts in Inorganic Chemistry II	c
CHE 209 2.0	Chemistry Practical Module 2 (Semester I and II)	a

#### Semester II

CHE 202 1.0	Chemistry of Coordination Compounds	c
CHE 203 1.0	Organic Spectroscopy	c
CHE 204 1.0	Electrochemistry	c
CHE 206 1.0	Chemical Kinetics	c
CHE 209 2.0	Chemistry Practical Module 2 (Semester I and II)	a

## Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional



Course Type	
-a- Compulsory	
-c- Core	
-o- Optional	
-*- This course is not open for students who follow Environmental Management and Forestry as a subject	
-#- This course is not open for students who follow Polymer as a subject	
-- This course is not open for students who follow Food Science as a subject	
<b>THIRD YEAR</b>	
<b>Semester I</b>	
CHE 303 1.0	Laboratory Safety and Security o
CHE 309 1.0	Environmental Chemistry o*
CHE 319 1.0	Metal Complexes in Catalysis o
CHE 336 1.0	Polymer Chemistry and Technology o#
CHE 337 1.0	Instrumental Analysis I o
CHE 338 1.0	Instrumental Analysis II o
CHE 344 1.0	Food Chemistry o~
CHE 315 2.0	Chemistry Practical Module 3 (Semester I and II) a
<b>Semester II</b>	
CHE 301 1.0	Nuclear Chemistry and Applications o
CHE 302 1.0	Industrial Utilization of Plant Materials o
CHE 312 1.0	Basic Chemical Engineering o
CHE 330 1.0	Structure and Function of Biomolecules o
CHE 333 1.0	Quality Control and Assurance o
CHE 340 1.0	Introduction to Molecular Modeling and Designing o
CHE 341 1.0	Colloids and Nanochemistry o
CHE 345 1.0	Industrial Organic Chemistry o
CHE 315 2.0	Chemistry Practical Module 3 (Semester I and II) a

## B.Sc. Honours Degree Course Units

### THIRD YEAR

#### Semester I

CHE 350 0.0	Mathematics for chemistry	c
CHE 359 1.0	Symmetry & Group Theory	c
CHE 360 1.0	Advanced Electrochemistry	c
CHE 363 1.0	Statistical Thermodynamics	c
CHE 365 1.0	Diffraction Methods in Chemistry	c
CHE 366 1.0	Organotransition metal chemistry	c
CHE 368 1.0	Bio-inorganic Chemistry	c
CHE 377 1.0	Modern Chromatographic Techniques	c
CHE 378 1.0	Advanced Analytical Chemistry	c
CHE 379 1.0	Chemistry of Biological compounds	c
CHE 381 2.0	Synthetic Organic Chemistry	c
CHE 383 1.0	Organic Reaction Mechanisms	c
CHE 374 2.0	Inorganic Chemistry Practical (Semester I and II)	a
CHE 375 2.0	Organic Chemistry Practical (Semester I and II)	a
CHE 376 2.0	Physical Chemistry Practical (Semester I and II)	a

#### Semester II

CHE 352 1.0	Spectroscopic Methods in Inorganic Chemistry	c
CHE 353 1.0	Structural Chemistry	c
CHE 354 1.0	Inorganic Reaction Mechanisms	c
CHE 358 1.0	Advanced Organic Spectroscopy	c
CHE 361 1.0	Advanced Chemical Kinetics	c
CHE 362 1.0	Advanced Quantum Chemistry	c
CHE 367 1.0	Advanced Coordination Chemistry	c
CHE 369 1.0	Molecular Photochemistry	c
CHE 371 1.0	Biochemistry	c
CHE 382 1.0	Polynuclear Aromatic HC and Heterocyclic Compounds	c
CHE 384 1.0	Natural Product Chemistry	c
CHE 385 1.0	Asymmetric Organic Synthesis	c
CHE 374 2.0	Inorganic Chemistry Practical (Semester I and II)	a
CHE 375 2.0	Organic Chemistry Practical (Semester I and II)	a
CHE 376 2.0	Physical Chemistry Practical (Semester I and II)	a

## Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional

## Course Type

-a- Compulsory

-c- Core

-o- Optional

-#-

This course is not open for students who follow Polymer as a subject.

-\*-

This course is not open for students who follow Environmental Management and Forestry as a subject.

-+-

Students who have followed Management as a subject in the first two years are not allowed to follow this course.

-##-

Students who have followed Food Science as a subject in the first two years are not allowed to follow this course.

.\_\*\*.\_

Mandatory course for students who have not followed Food Science as a subject in the first two years.

-.++-

Students who have followed Forestry and Environmental Science as a subject in the first two years are not allowed to follow this course.

-\$-

Mandatory course for students who have not followed Forestry and Environmental Science as a subject in the first two years.

## FOURTH YEAR

### Semester I

CHE 451 1.0	Inorganic Materials	o
CHE 452 1.0	Chemistry of Natural Waters	o
CHE 456 1.0	Polymer Chemistry	O#*
CHE 457 1.0	Molecular Spectroscopy	c
CHE 458 1.0	Advance Surface Chemistry	c
CHE 460 1.0	Industrial Management	O+
CHE 459 1.0	Advanced Chemical Thermodynamics	c
CHE 462 2.0	Food Chemistry and Technology	O##**
CHE 474 1.0	Physical Chemistry of Polymers	O#
CHE 483 1.0	Polymer Blends and Composites	o
CHE 484 1.0	Polymer Coating and Paint Industry	o
CHE 486 1.0	Nanochemistry	o
CHE 492 1.0	Molecular Modeling and Computational Chemistry	c
CHE 493 1.0	Technological aspects in modern research	o
CHE 499 2.0	Advanced Physical Organic Chemistry	c
CHE 490 8.0	Research Project (Semester I and II)	a

### Semester II

CHE 401 1.0	New Trends in Organic Synthesis	o
CHE 454 1.0	Medicinal Chemistry	o
CHE 461 1.0	Basic Chemical Engineering	c
CHE 464 1.0	Polymer Technology	O#
CHE 465 1.0	Biophysical Chemistry	o
CHE 466 1.0	Chemistry of plant products and their applications in industry	o
CHE 470 1.0	Environmental chemistry	O++\$
CHE 476 1.0	Solid State Chemistry	c
CHE 476 1.0	Solid State Chemistry	c
CHE 481 1.0	Surface Techniques and Dynamic Surfaces	c
CHE 485 1.0	Quality Control and Assurance	o
CHE 491 1.0	Supramolecular Chemistry	o

		Course Type	
CHE 495 1.0	Principles and practices of optical and electron microscopy	o	-a-
CHE 498 1.0	Atmospheric Chemistry	o	Compulsory
CHE 490 8.0	Research Project (Semester I and II)	a	-c-
			Core
			-o-
			Optional



# CSC Computer Science

## *Offered by the Department of Computer Science*

*“Computer science deals with an integral part of modern society which drives the advances of other disciplines at an exponential rate”*

### **B.Sc. Degree Programme with Computer Science**

**Course Code: CSC**

**Duration: 3 Years**

**Subject Combinations: Refer pages 156-161**

#### ***For whom?***

Students from physical science stream who are interested in pursuing careers related to Computer Science. The intake is limited to a maximum of 120 students in an academic year.

#### ***Career opportunities***

A Computer Science degree opens doors to diverse career opportunities both in Sri Lanka and internationally. Graduates can work at top companies like Dialog Axiata, Mobitel, and other leading software firms, taking on roles such as Software Engineers, DevOps specialists, Business Analysts, and QA Automation Engineers. Additionally, industries like banking, insurance, electronics, and government sectors, both locally and globally, offer employment in software development, systems support, and management. This degree equips you with the skills

needed to excel in various technical and managerial roles across multiple industries.

A B.Sc. Honours Degree in Computer Science is highly valued by employers as it demonstrates advanced skills, knowledge, and achievement. Graduates with this degree are well-prepared for the job market, with strong prospects for securing high-ranking positions. Companies like computer manufacturers and software firms actively seek specialists for roles such as Lecturer, Assistant Project Manager, Software Engineer, and Business Analyst.

In addition to industry roles, the degree offers opportunities in academia, allowing graduates to pursue careers at universities and institutes as educators and researchers. It also provides a solid foundation for further studies in Master's and Ph.D. programs, including opportunities for education abroad. This degree equips students with the expertise to excel in various fields and make meaningful contributions both locally and internationally.

### *Course overview*

Learning Computer Science is about understanding computer systems at a deeper level. This includes both software and all its related hardware. The computers and software are among most complex products ever created by humans. Designing and using them

effectively presents immense challenge. This course concentrates on creating links between theory and practice. It covers a wide variety of software and hardware technologies and their applications. Students are introduced to a range of modern programming paradigms, including procedural programming, object oriented, visual and logic programming. Other disciplines such as software engineering, net centric computing and intelligent computing are also covered. The syllabus offered by the department covers a vast area of the subject and is revised regularly to include the most recent developments in the industry.

### *Course structure*

Computer Science will constitute one third of the B.Sc. (General) degree program in allowed subject combinations. Students are required to take core course units in CSC having a minimum cumulative credit value of 27.0. These course units are designed to provide students with essential knowledge in theory, practice and skills that are required in computing industry.

### *Mode of instruction and assessment*

Students enrolled in general degree program in Computer Science will be taught by an academic staff with well-established track records. The medium of instruction is English. The course units include; lectures, assignments, individual and group projects



and laboratory practical. They are assessed through continuous assessments, end-of-semester written examinations, practical examinations, presentations and reports.

## **B.Sc. Honours Degree Programme in Computer Science**

**Course Code: CSC**

**Duration: 4 Years**

### ***For whom***

Students who follow Computer Science as a subject for B.Sc. (General) degree program are selected for the special degree.

### ***Career opportunities***

Employers recognize a Honours Degree as proof of additional skills, knowledge and achievement. In the present job market, Computer Science graduates are better placed than many others to obtain employment. The passion pursued in the final year will enable the students to guarantee high positions in the industry. Computer manufacturers and software houses, for example, recruit specialists to develop software solutions. Some of the current designations of Computer Science graduates are Lecturer, Assistant Project Manager, Software Engineer and Business Analyst etc.

The degree also prepares the students for further study in Master's and Ph.D. programs and opens up the possibility to have an exciting research career, helping communities to solve complex problems.

### ***Course overview***

The Computer Science Honours degree is designed for those who want to mark out as high achievers by gaining advanced skills and greater depth of knowledge in Computer Science which will widen the employability and career options in the industry and academia.

At the final year, students are required to carry out a research project and industrial placement scheme which exposes the students to the industrial and computing environment.

### ***Course structure***

During third year (Part I) students need to obtain minimum of 30.0 credits from Part I courses, out of which 27.0 credits from core course units and 3.0 credits from optional units. In fourth year (Part II) students are required to offer course units having a minimum cumulative credit value of 30.0 from Part II courses.

### ***Selection criteria***

The selection is based on student performances in the first two academic years. Students are required to maintain a high GPA value in Computer Science and a good overall GPA. Also they need to maintain good attendance records (80%). The students intake typically depends on the resources available during the time of selection.

### *Mode of instruction and assessment*

Students enrolled in Honours Degree programme in Computer Science will be taught by an academic staff with good track records. The medium of instructions is English. The course units include; lectures, assignments, individual and group projects and laboratory practicals. They are assessed through continuous assessments, end of semester written exams, practical examinations, presentations and reports.

### **For further information please contact:**

*Dr. P. Ravindra De Silva*  
*Head/ Department of Computer Science*  
*Email: ravi@sjp.ac.lk*

# Computer Science

## Course Type

-c-  
Core

-o-  
Optional for those  
doing Computer  
Science

## B.Sc. Degree Course Units

Each student should take course units having a minimum cumulative credit value of 27.0

### FIRST YEAR

#### Semester I

CSC 106 1.5	Computer System Organization	c
CSC 107 2.0	Introduction to Computer Programming	c
CSC 108 1.5	Software Engineering I	c

#### Semester II

CSC 110 2.0	Objected Oriented Programming	c
CSC 111 1.0	Computer Programming - Laboratory	c
CSC 112 2.0	Software Engineering II	c

### SECOND YEAR

#### Semester I

CSC 201 2.0	Data Structures and Algorithms I	c
CSC 203 1.5	Computer System Architecture	c
CSC 207 1.5	Knowledge Representation	c

#### Semester II

CSC 208 2.0	Operating Systems	c
CSC 209 2.0	Database Management Systems	c
CSC 210 1.0	Computer Graphics	c

### THIRD YEAR

#### Semester I

CSC 312 2.0	Visual Computing	c
CSC 313 1.5	Service Oriented Computing	o
CSC 319 1.5	Machine Learning I	c
CSC 378 1.5	Computer Security	o

Semester II

CSC 309 1.5	Expert Systems	o
CSC 310 2.0	Project	o
CSC 315 1.5	Net Centric Computing	c
CSC 316 2.0	Artificial Intelligence	c
CSC 317 1.5	Human Computer Interaction	o
CSC 361 2.0	Swarm Intelligence	o
CSC 365 2.0	Software Quality Assurance	o

B.Sc. Honours Degree Course Units

Each student should take course units having a minimum cumulative credit value of 30.0 from both PART I and PART II

PART I

Semester I

CSC 312 2.0	Visual Computing	c
CSC 313 1.5	Service Oriented Computing	c
CSC 314 1.5	Rapid Application Development	o
CSC 369 2.0	Machine Learning I	c
CSC 353 2.0	Theory of Computation	c
CSC 357 2.0	Data Structures and Algorithms II	c
CSC 362 1.5	Seminar I	c
CSC 363 1.5	Research Methodologies and Scientific Communication	c
CSC 378 1.5	Computer Security	c
CSC 381 2.0	Programming and Data Analysis with R (based on STA 326 2.0)	o

Semester II

CSC 309 1.5	Expert Systems	o
CSC 315 1.5	Net Centric Computing	c
CSC 316 2.0	Artificial Intelligence	c
CSC 317 1.5	Human Computer Interaction	o
CSC 352 2.0	Modeling and Simulation	o

Course Type

-C-
Core
-O-
Optional for those doing Computer Science

## Course Type

-c-  
Core

-o-  
Optional for those  
doing Computer  
Science

CSC 355 2.0	Operations Research	c
CSC 361 2.0	Swarm Intelligence	o
CSC 364 1.5	Seminar II	c
CSC 365 2.0	Software Quality Assurance	c
CSC 375 2.0	Machine Learning II	c
CSC 376 1.5	Embedded Systems and Internet of Things	o
CSC 377 2.0	Theory of Programming Languages	c
CSC 386 1.0	Introduction to Microprocessors (based on PHY 309 1.0)	o
CSC 387 1.0	Optimization (based on MAT 323 1.0)	o
CSC 395 1.0	Mathematical Modeling I (based on MAT 324 1.0)	o

## PART II

### Semester I

CSC 452 2.0	Geometric Modeling	o
CSC 453 2.0	Intelligent Systems	o
CSC 457 2.0	Distributed Systems	o
CSC 459 2.0	Fuzzy Theory	o
CSC 460 2.0	Miscellaneous Topics in Computing Science	o
CSC 461 8.0	Project (Semester I and II)	c
CSC 462 2.0	Digital Image Processing	o
CSC 463 2.0	Data Warehousing, Data Mining and Information Retrieval	o
CSC 464 2.0	Computational Biology	o
CSC 465 2.0	Robotics	o
CSC 467 2.0	Evolutionary Computing	o
CSC 468 2.0	Advanced Database Systems	o
CSC 469 2.0	Mobile Computing	o

### Semester II

CSC 451 8.0	Industrial Training	c
CSC 461 8.0	Research Project (Semester I and II)	c



# ECN Economics

## *Offered by the Resource Economics Unit*

*“Economics is the science that analyzes the production, distribution, and consumption of goods and services”*

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### **B.Sc. Degree Programme with Economics**

**Course Code: ECN**

**Duration: 3 Years**

**Subject combinations : Refer pages 156-161**

#### ***For whom?***

The Economics programme is designed for mathematically competent students who follow the subject areas of statistics and mathematics and wish to experience a broader fundamental exposure in Economics or who want to become professional economists.

#### ***Course overview***

Economics course units offered will provide an important opportunity for the students to gain a solid understanding in principles of economics along with applied areas related to natural resources, environment and industries.

This course of study provides a stimulating setting for the students to gain a solid understanding of economic applications useful in providing guidance for decision making under resource scarcity.





### ***Course structure***

Economics course units focus on the study of basic and advanced courses of theoretical economics such as Micro and Macro Economics and applied areas including Environmental economics, Industrial Economics, Project Planning and Analysis, Agricultural and Health Economics, and Resource Economics. From a total of 30 credits, minimum of 27 credits must be completed at the end of 3rd year to complete the degree. These include compulsory and optional course units.

The Department of Economics of the Faculty of Humanities and Social Sciences provides the expertise and support in conducting the basic and advanced courses on economics. Major part of the applied courses will be conducted by the lecturers from the Department of Forestry and Environmental Science.

### ***Mode of instruction and assessment***

The teaching method of Economics is a blend of theory and practice. To ensure that students are acquiring the required knowledge and competencies, end of semester examinations, presentations and written reports will be held. Guest lectures and field visits are also given due importance throughout the semester.

Students who have successfully completed their general degree with a minimum GPA of 2.5 at the end of their third year B.Sc programme, can enter for the B.Sc. (Honours) Degree in Applied Sciences (Specialised in Economics) offered by the Resource Economics Unit. Students will be able to study advanced courses on applied economics under this programme and to complete their internship under economics, finance and statistics related institutions in both government and private sectors.

### ***For further information please contact:***

Prof. U.A.D. Prasanthi Gunawardena  
Coordinator/Resource Economics Unit  
Email – [coordinator.econ@sjp.ac.lk](mailto:coordinator.econ@sjp.ac.lk)

# Economics

## B.Sc. Degree Course Units

Each student should take course units having a cumulative credit value of 27.0.

Total credits - Compulsory credits - 23 : Optional credits - A minimum of 04 credits are required to be selected out of 07 credits

### FIRST YEAR

#### Semester I

ECN 101 3.0	Principles of Microeconomics	c
ECN 102 2.0	Managerial Economics	c

#### Semester II

ECN 103 3.0	Principles of Macroeconomics	c
ECN 104 2.0	Environmental Economics	c

### SECOND YEAR

#### Semester I

ECN 201 3.0	Intermediate Microeconomics	c
ECN 202 2.0	Industrial Economics	c

#### Semester II

ECN 203 3.0	Intermediate Macroeconomics	c
ECN 204 2.0	Advanced Resource Economics	c

### THIRD YEAR

#### Semester I

ECN 301 3.0	Advanced Microeconomics	c
ECN 302 2.0	Agricultural Economics	c

#### Semester II

ECN 303 2.0	Advanced Econometrics	c
ECN 304 2.0	Project Planning and Analysis	o
ECN 305 1.0	Health Economics	o
ECN 307 1.0	Internship Training	o <sup>‡</sup>

## Course Type

-c-

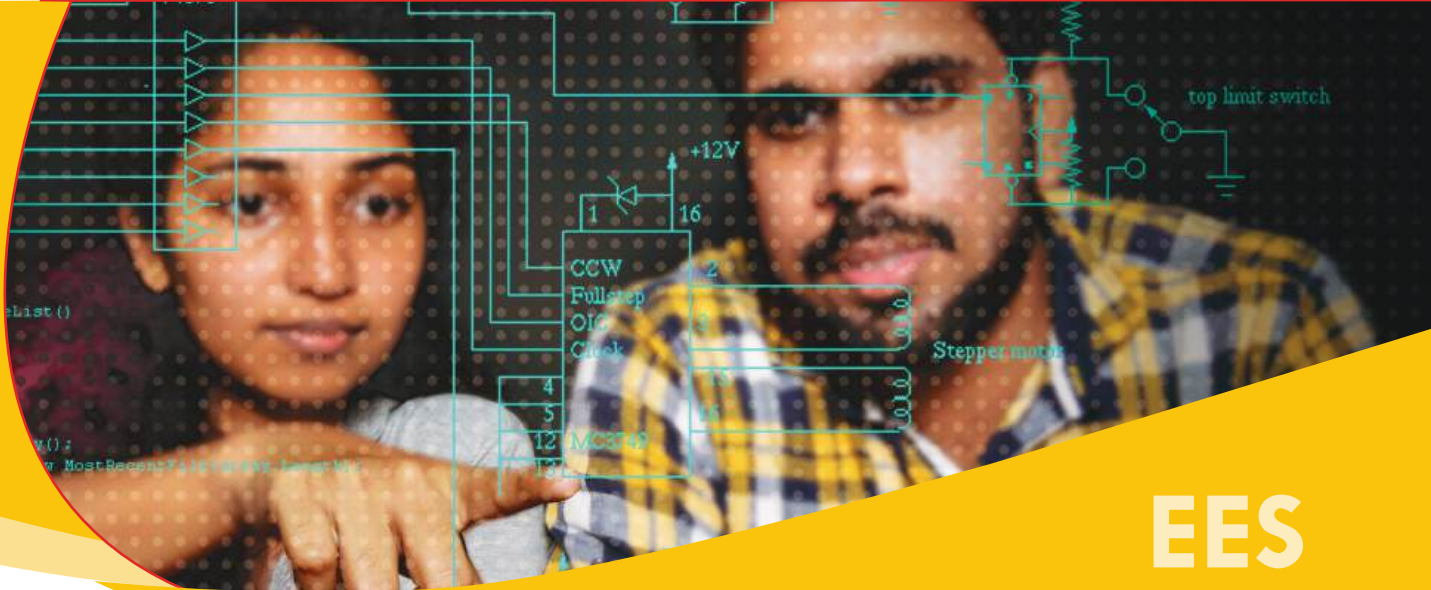
Core course units

-o-

Optional course units

-‡-

A student may register for only one Internship Training/ Industrial Training course unit offered by any one Department.



# EES

## Electronic and Embedded Systems

### *Offered by the Department of Physics*

*“The Electronic and Embedded Systems course can best be described as a successful attempt to fulfill the national needs for advancements in the field of electronics, robotics and internet of things.”*

#### **B.Sc. Degree Programme with Electronics and Embedded Systems**

**Course Code: EES**

**Duration: 3 Years**

**Subject Combinations: Please see pages 156-161**

#### ***For whom?***

This proposed course is geared towards physical stream students interested in pursuing careers in

Physics and Electronics and Embedded Systems. Consideration will be given to the students who are selected by the University Grant Commission (UGC). It is expected that Electronics and Embedded Systems combined with Physics and Mathematics provide an innovative combination in order to graduate with essential knowledge, specific expertise and skills related to national needs. The intake is limited to a maximum of 30 students per academic year.



### *Career opportunities*

The majority of students who are completing the B.Sc. General degree tend to seek job opportunities in academia as well as in industry. Therefore, a general degree program which is focused on producing graduates with more practical knowledge will certainly be of high demand. Also, with the rapid development of technology, automation, internet of things, and robotics applications are integrated in to our lives in forms of telecommunication, health

systems, entertainment, security, etc. Therefore, the emerging employment trends seek for graduates with knowledge in Electronics and Embedded Systems to develop automation, robotics and internet of things projects. The proposed Electronics and Embedded Systems course will be structured in a way that the students will gain knowledge in demanding fields thus opening new avenues of employment for science graduates.

### *Course overview*

The developed curriculum of the Electronics and Embedded Systems program is structured to provide the prospective students a solid foundation of theory and practical in Physics, Electronics and Mathematics during their first two academic years. Therefore, the students to follow this undergraduate subject should select the combination containing Physics, Mathematics, and Electronics and Embedded Systems. The third year of study is emphasized more on the application of oriented courses, thus included course units in Embedded Electronics, Internet-of-Things (IOT), Robotics, Instrumentation and Automation.

### *Course structure*

The Electronics and Embedded Systems Course is designed as a three year degree course which will focus on laboratory practical sessions while covering undergraduate level Physics and Mathematics. The students are required to take course units in Electronics and Embedded Systems with a minimum cumulative credit value of 27.0 during the three years. The course units comprise of 'compulsory', 'core', 'non-core' and 'optional' subjects so that the students are provided with the Electronics and Embedded Systems stream while allowing some level of flexibility to pursue optional interest.

### *For further information, please contact;*

Mr. R.A.D.D. Dharmasiri  
Course coordinator  
Department of Physics  
University of Sri Jayewardenepura, Nugegoda  
E mail: dhanu@sjp.ac.lk



# Electronic and Embedded Systems

## B.Sc. Degree Course Units

Each student should take course units having a minimum cumulative credit value of 27.0

### FIRST YEAR

#### Semester I

EES 111 2.0	Fundamentals of C Programming	c
EES 112 2.0	Probability and Statistics (based on STA 349 2.0 Introductory Statistics)	c
EES 118 1.0	Electronics and Embedded Systems Lab	a

#### Semester II

EES 121 2.0	Embedded Linux Systems	c
EES 123 1.0	Seminar	c
EES 106 1.0	Electrical Machines	c
EES 128 1.0	Circuit Simulations and Design Lab	a

### SECOND YEAR

#### Semester I

EES 201 1.0	Sensors and Actuators	c
EES 209 1.0	Computer Integrated Control Systems	c
EES 212 1.0	Embedded Systems Mini Challenge	a
EES 213 2.0	Statistical Methods (based on STA 360 2.0 Statistical Methods)	c

#### Semester II

EES 206 2.0	Advanced Analog and Digital Electronics	c
EES 207 2.0	Data Acquisition and Signal Processing	c
EES 208 1.0	Data Acquisition and Signal Processing Lab	a

### THIRD YEAR

#### Semester I

EES 313 2.0	Microprocessors and Microcontrollers	c
EES 302 1.0	Circuit Fault Diagnostics	c
EES 303 1.0	Embedded Systems Development Lab	a
EES 308 1.0	Introduction to Programmable Logic Controllers	o
EES 314 2.0	Project (Sem I and Sem II)	o

## Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional

-#-  
Those who are  
doing Electronics  
and Embedded  
Systems as a subject  
must take PHY  
311 1.0 Computer  
Hardware and  
Networking course  
instead of PHY 309  
1.0 Introduction to  
Microprocessors



Course Type	Semester II		
-a- Compulsory	EES 304 2.0	Introduction to Internet of Things and Robotics	c
	EES 305 1.0	Internet of Things and Robotics Lab	a
	EES 315 1.0	Embedded Database Systems	o
	EES 316 1.0	Introduction to Machine Learning	o
-c- Core	EES 311 1.0	Mobile Application Development	o
	EES 317 1.0	Hackathon on Embedded Systems	o
-o- Optional			
-#- Those who are doing Electronics and Embedded Systems as a subject must take PHY 311 1.0 Computer Hardware and Networking course instead of PHY 309 1.0 Introduction to Microprocessors			



# EMF

## Environmental Management and Forestry

*Offered by the Department of Forestry and Environmental Science*

*“Environment Management involves making the environment healthier by protecting the environment and related resources and promoting sound ecology and management practices”*

**B.Sc. Degree Programme with Environmental Management and Forestry**

**Course code: EMF**

**Duration: 3 Years**

**Subject combinations: Refer pages 156-161**

***For whom?***

Students from both biological and physical science streams who are interested in pursuing careers related to environment or natural resource management

and forestry. The intake is limited to maximum of 80 students in an academic year.

***Career opportunities***

With the environment becoming an essential component in decision making, there is a rising demand for competent graduates in environment related professions. The course in Environmental Management and Forestry will take you towards diverse and rewarding careers in government ministries, non-governmental organizations,



environmental and business consultancies, public sector organizations, and manufacturing and service industries in the private sector.

### *Course overview*

The concept of sustainable development, which aims to harmonize the economic, social and environmental dimensions of development strategy, has now become a key aspect of policy making by governments throughout the world. As such, an indepth knowledge in environment, natural resources and their management is likely to provide one with an added advantage in the modern competitive career market. Environment Management and Forestry course is aimed at equipping students with knowledge and skills in arrange of key disciplines related to forestry and environment, along with employability skills such as communication, problem solving team work, self-direction and leadership.

The study of Environmental Management is not just about progressing you way towards obtaining a degree, It is more importantly about providing you with a solid base in fields of forestry and environment, and enabling you to make the right choice in the best interest of the society and environment. With such a solid foundation, graduates will be able to develop and implement best practice strategies for natural resources management in the public and private sectors.

### *Course structure*

Environmental Management and Forestry will constitute one third of the B.Sc. (General) degree program in a permitted subject combination. Students are required to take course units in EMF having a minimum cumulative credit value of 27.0. These include compulsory, core, and elective course units. Compulsory, and core course units are designed to

provide students with essential knowledge and skills that are required in forestry and environmental management. The industry-based assignment/training project in the third year allows students to apply the concepts they have learned in the class room while providing an invaluable opportunity to further strengthen their work-ready skills.

## **B.Sc. Honours Degree in Environmental Management and Forestry**

**Duration: 4 Years**

### ***For whom?***

The B.Sc. Honours Degree is aimed at preparing a new breed of experts in the field of forestry and experts in the field of forestry and environment with insight, skills, knowledge and ability to appreciate all aspects in decision making for sustainable management of natural resources.

### ***Course overview***

The core curriculum is designed to provide students with in-depth knowledge, skills and a broader perspective of forestry and environmental management that is demanded by the industry. The final year research project helps students to sharpen their scientific reasoning, research and analytical skills and make them prepare to take up research and academic careers. The degree is recognized by many universities in Europe, U.S. and Australia, thereby providing an ideal framework to obtain research

positions and PhD studentships abroad.

### ***Selection Policy***

Selection of students to follow the B.Sc. Honours Degree in Environmental Management and Forestry is based on student's performance in the first two academic years. The intake is typically limited to a maximum of 12 students to ensure a personalized attention guidance to each student.

### ***Mode of Instruction and assessment***

Students enrolled in both B.Sc. General and Honours Degree programs will be taught by an academic staff with an established track record, who appreciate the necessity of an integrated approach for the management and use of the world's environmental resources. The modules include lecturers, tutorials, laboratory practicals, field classes and individual and group projects/ assignments. These are assessed through end-of-semester written examinations, practical tests, presentations and reports. There is an emphasis on the analysis of real problems, with practical case studies to reinforce learning. This provides the tools required for the group and individual projects.

### ***For further information please contact:***

Prof. Daham Jayawardana  
Head, Department of Forestry and  
Environmental Science  
*Email: dfes@sci.sjp.ac.lk*  
*Phone: 0112 804685*

# Environmental Management and Forestry

Course Type	<b>B.Sc. Degree Course Units</b>		
-a- Compulsory	Each student should take course units having a minimum cumulative credit value of 27.0		
-c- Core	<b>FIRST YEAR</b>		
-n- Optional for those not doing Forestry	<b>Semester I</b>		
	EMF 101 1.0	Ecological Principles	c
	EMF 103 1.0	Forest Mensuration and Inventory	c
	EMF 106 1.0	Principles and Practice of Silviculture	c
	EMF 113 1.0	Practical Module in Silviculture, Ecology and Forest Mensuration	a
-o- Optional for those doing Forestry	EMF 115 1.0	Key Skills for Resource Managers	c
	<b>Semester II</b>		
	EMF 102 1.0	Environmental Chemistry	c
	EMF 108 1.0	Forest Biology	c
	EMF 114 1.0	General Geology and Soil Science	c
<b>SECOND YEAR</b>	EMF 116 1.0	Practical Module in Environmental Chemistry and Forest Biology	a
	EMF 117 1.0	Principles of Wildlife Ecology	c
	<b>Semester I</b>		
	EMF 201 1.0	Tropical Forest Ecology	c
	EMF 213 1.0	Surveying, Natural Resource Mapping and GIS	c
	EMF 214 1.0	Practical Module in Surveying, Mapping, GIS and Soil Science, Forest Tree Improvement	a
	EMF 220 1.0	Wastewater Management	c
	EMF 221 1.0	Environmental Pollution and its Control	c
	<b>Semester II</b>		
	EMF 216 2.0	Wood Science and Forest Based Industries	c
	EMF 218 1.0	Tree Diversity and Systematics	c
	EMF 219 1.0	Practical Module in Wood Science and Plant Systematics	a
	EMF 222 1.0	Principles in Hydrology and Climatology	c



### THIRD YEAR

#### Semester I

EMF 313 2.0	Field / Factory Assignment (Semester I & II)	a
EMF 314 1.0	Forest and Environmental Policies and Laws	c
EMF 315 1.0	Environmental and Social Impact Assessment	c
EMF 316 1.0	Corporate Environmental Management	o
EMF 317 1.0	Resource and Environmental Economics	c
EMF 319 1.0	Water Resource Management	c
EMF 321 1.0	Wildlife Conservation and Management	c
EMF 323 1.0	Forest Tree Improvement	c

#### Semester II

EMF 307 1.0	Forest Management	c
EMF 311 1.0	Agroforestry and Social Forestry	c
EMF 313 2.0	Filed/ Factory Assignment (Semester I & II)	a
EMF 318 1.0	Forest Pathology and Entomology	o
EMF 319 1.0	Water Resource Management	c
EMF 322 1.0	Land Use Planning and Management	o
EMF 330 1.0	Ecotourism Planning and Management	o
EMF 331 1.0	Project Planning and Analysis	s
EMF 333 1.0	Applications of GIS in Resource Management	o
EMF 370 1.0	Integrated Resource Management	o

### B.Sc. Honours Degree Course Units

#### Part I

##### Semester I

EMF 313 2.0	Field/Factory Assignment (Semester I & II)	a
EMF 314 1.0	Forest and Environmental Policies and Laws	c
EMF 315 1.0	Environmental and Social Impact Assessment	c
EMF 316 1.0	Corporate Environmental Management	c
EMF 317 1.0	Resource and Environmental Economics	c

### Course Type

-a-  
Compulsory

-c-  
Core

-n-  
Optional for those  
not doing Forestry

-o-  
Optional for those  
doing Forestry

-s-  
Optional for all  
students in the  
faculty; Those  
who are doing  
economics as a  
subject are not  
allowed to do this  
course unit.



Course Type			
-a- Compulsory	EMF 319 1.0	Water Resource Management	c
	EMF 321 1.0	Wildlife Conversation and Management	c
	EMF 323 1.0	Forest Tree Improvement	c
	EMF 351 1.0	Conservation Biology	c
	EMF 352 1.0	Wood Structure, Identification and Timber Grading	c
-c- Core	EMF 354 1.0	Tree Physiology	a
	EMF 356 1.0	Seminars on Special Topics I	a
	EMF 367 1.0	Chemistry and Industrial Utilization of Plant Products (Based on CHE 302 1.0)	o
-n- Optional for those not doing Forestry	EMF 366 1.0	Rural Sociology	c
	<b>Semester II</b>		
-o- Optional for those doing Forestry	EMF 307 1.0	Forest Management	c
	EMF 311 1.0	Agroforestry and Social Forestry	c
-s- Optional for all students in the faculty; Those who are doing economics as a subject are not allowed to do this course unit.	EMF 313 2.0	Field/Factory Assignment (Semester I & II)	a
	EMF 318 1.0	Forest Pathology and Entomology	o
	EMF 322 1.0	Land Use Planning and Management	c
	EMF 330 1.0	Ecotourism Planning and Management	c
	EMF 331 1.0	Project Planning and Analysis (Previously EMF 364 1.0)	s
	EMF 353 1.0	Environmental Microbiology	c
	EMF 357 1.0	Research Methodology	c
	EMF 358 1.0	Advanced Silviculture	c
	EMF 359 1.0	Advanced Resource Economics	c
	EMF 361 1.0	Indigenous Knowledge in Natural Resource Management	c
	EMF 362 1.0	Green Business Development	o
	EMF 365 1.0	Seminars on Special Topics II	a
	EMF 369 1.0	Cleaner Production and Green Technology (previously Cleaner Production and Industrial Ecology)	c
	EMF 370 1.0	Integrated Resource Management	c
	EMF 371 1.0	Urban Forestry	o

## Part II

### Semester I

EMF 451 1.0	An Ecosystem Approach to Forest Management	c
EMF 453 1.0	Plant Systematics	c
EMF 455 1.0	Forest Harvesting and Sawmilling	c
EMF 456 2.0	Seminars on Special Topics I	a
EMF 457 8.0	Research Project (Semester I & II)	a
EMF 461 2.0	Advances in Environmental Pollution Control	c
EMF 463 1.0	Environmental Epidemiology and Toxicology	c
EMF 467 1.0	Soil and Soil Conservation	c
EMF 468 1.0	Remote Sensing, GIS and Mapping	c
EMF 469 1.0	Operational Research in Environmental Management	c
EMF 474 1.0	Protected Area Management	c
EMF 477 1.0	Bioethics	o
EMF 478 1.0	Disaster Management	o
EMF 481 1.0	Ecohydrology	c

### Semester II

EMF 454 2.0	Assignment on Forest Management Plan Preparation	c
EMF 457 8.0	Research Project (Semester I & II)	a
EMF 458 1.0	Wood Based Composites	c
EMF 459 1.0	Forestry for Rural Development	c
EMF 471 1.0	Energy and Environment	o
EMF 472 1.0	Land Reclamation and Soil Remediation	c
EMF 475 1.0	Economic Instruments in Environmental Management	o
EMF 476 2.0	Seminars on Special Topics II	a
EMF 480 2.0	Environmental Modeling	c

## Course Type

-a-
Compulsory
-c-
Core
-n-
Optional for those not doing Forestry
-o-
Optional for those doing Forestry



# FST

## Food Science & Technology

*Offered by the Department of Food Science and Technology*

*“Food Science is the study of physical, biological and chemical components of food and the concepts of food processing. Food Technology is the application of the above for preservation and safe use of food”*

**B.Sc. Honours Degree Programme in Food Science and Technology**

**Course Code: FST**

**Duration: 4 years**

***For whom?***

Biological Science students who are selected by University Grants Commission (UGC) through a special window. The intake is limited to maximum of

70 students per academic year.

***Opportunities***

There is big demand for FST graduates in food ingredient manufacture, food plant equipment and packaging manufacture, food service, government administration/food legislation/food technology, public analysts in laboratories, environmental health department, trading standards and departments, journalism/information service, research/education

institutes and associations, overseas locations (food sector) and consulting (local and international).

### ***Course overview***

The B.Sc. Honours Degree in Food Science and Technology has been designed to enable the prospective FST graduates to be able to demonstrate excellence in their future professions through transferring the knowledge and practical skills related to all subjects and facilitating to apply both theoretical knowledge and related practical skills appropriately in different situations. It is also expected that they will develop their technical competencies in order to meet any challenging situation in the food industry. The abilities and skills expected to transfer to the SJP FST graduates through the degree programme include intellectual skills, practical skills, research skills, generic skills, numeracy skills, communication skills with special emphasis on scientific communication and technology skills (ICT), interpersonal team work skills, self management and professional development skills.

### ***Course structure***

Students are required to take course units in FST having a cumulative credit value of 120. These include compulsory, core and elective course units. In addition, the students are also offered non-credit base course units throughout the course. Compulsory and core course units are designed to provide students with the knowledge essential in working in the field of

Food Science and Food Science Technology. The in-plant training programme which focuses on real world industrial exposure (in fourth year first semester) and graduate research project (in fourth year second semester) are two vital components to facilitate our undergrads in getting hands on experience and in applying the concepts they learned in the classroom into practices and research.

### ***Mode of instruction and assessment***

Students enrolled in both general and special degree programmes will be taught by an academic staff with well-established track record. The medium of instruction is English. The course units include; lectures, assignments, individual and group projects, field classes and laboratory practicals. They are assessed through end-of-semester written examinations, practical examinations, presentations and reports.

### **B.Sc. Degree Programme with Food Science**

**Course Code: FSC**

**Duration: 3 Years**

**Subject Combination: Refer pages 147-153**

### ***For whom?***

This course is for students from the Biological Science stream who are interested in pursuing careers in Food Science. The intake is limited to a maximum of 30 students per academic year.



### ***Career opportunities***

Food Science and Technology is a fast growing and diversifying industry. Graduates undertaking FSC as a subject have many opportunities to apply their knowledge to solve problems associated with food packaging, shelf-life, etc.

This course is aimed at equipping students with knowledge and skill in a range of key disciplines related to Food Science along with employability skills such as ICT, problem solving, team work, self-management and professional development.

### ***Course structure***

Food Science will constitute one third of the B.Sc. (General) degree programme. Students are required to take course units in FSC having a minimum cumulative credit value of 30. These include compulsory, core and optional course units.

### ***For further information, please contact;***

Dr. Piumi De A. Abeysundara  
Head/Department of Food Science and Technology  
E mail: [piumiabey@sjp.ac.lk](mailto:piumiabey@sjp.ac.lk)

# Food Science & Technology

## B.Sc. Honours Degree in Food Science and Technology

Each student should take course units having a minimum cumulative credit value of 120

### FIRST YEAR

#### Semester I

FST 155 1.0	Introduction to Computer Applications for Food Sciences (Based on FST 152 1.0, FST153 1.0)	c
FST 156 1.0	Principles of Management I	c
FST 160 1.0	Principles of Organic Chemistry I (As per CHE 108 1.0)	c
FST 161 1.0	Behavior of Transition Elements in Food (FST 162 1.0 Main Groups and Transition Elements)	c
FST 165 1.0	Chemical Thermodynamics (As per CHE 103 1.0)	c
FST 171 1.0	Concepts in Inorganic Chemistry I (As per CHE 110 1.0)	c
FST 174 1.0	Principles of Human Nutrition	c
FST 176 2.0	Mathematics for Food Sciences (Based on FST 151 1.0, FST 154 1.0)	c
FST 177 1.0	Principles of Physics I	c
FST 183 1.0	Fundamentals of Microbiology (Based on FST 268 1.0)	c
FST 186 0.0	Basic Practices in Food Industry (Based on FST 168 1.0)	a
FST 193 1.0	Food Science and Technology Practical I	a
FST 197 1.0	Chemistry Practical (As per CHE 107 2.0, Organic, Inorganic, Physical)	a
<b>Total</b>		<b>13</b>

### FIRST YEAR

#### Semester II

FST 158 1.0	Organizational Behavior (Based on FST 157 1.0, FST 256 1.0)	c
FST 159 1.0	Business Economics	c
FST 163 1.0	Chemistry of Living Systems	c
FST 164 2.0	Introduction to Analytical Chemistry (As per CHE 111 2.0)	c
FST 166 1.0	Structure and Properties of Matter (As per CHE 106 1.0)	c
FST 167 1.0	Principles of Organic Chemistry II (As per CHE 109 1.0)	c
FST 169 1.0	Applied Human Nutrition (Based on FST 270 1.0)	c
FST 188 2.0	Introduction to Animal and Plant-Based Food Products	c

## Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional



Course Type			
-a- Compulsory	FST 180 1.0	Principles of Physics II (Based on FST 179 1.0)	c
	FST 187 2.0	Food Microbiology (Based on FST 285 1.0)	c
	FST 196 1.0	Food Science and Technology Practical II	a
	FST 198 1.0	Chemistry Practical	a
	<b>Total</b>		<b>15</b>
<b>SECOND YEAR</b>			
-c- Core	<b>Semester I</b>		
	FST 253 1.0	Pest Management in Food Industry (Based on FST 289 1.0, FST 291 1.0)	c
	FST 255 1.0	Human Resources Management	c
	FST 258 2.0	Marketing Management (Based on FST 358 1.0, FST 473 1.0)	c
	FST 259 2.0	Entrepreneurship and Innovation (based on FST 489 2.0)	c
-o- Optional	FST 262 1.0	Electrochemistry (As per CHE 204 1.0)	c
	FST 273 1.0	Environment Management and Water Quality Assurance	c
	FST 278 1.0	Applied Food Physics	c
	FST 281 2.0	Food Preservation Technology	c
	FST 286 1.0	Analytical Microbiology (Based on FST 369 1.0)	c
	FST 293 1.0	Food Science and Technology Practical III	a
	FST 294 1.0	Chemistry Practical (Based on CHE 209 2.0)	a
	FST 297 2.0	Separation Techniques for Food Research	c
	<b>Total</b>		<b>16</b>
	<b>SECOND YEAR</b>		
	<b>Semester II</b>		
	FST 251 2.0	Statistics for Food Science I (Based on FST 252 1.0, FST 254 1.0, FST 284 1.0)	c
	FST 261 1.0	Organic Spectroscopy (As per CHE 203 1.0)	c
	FST 264 1.0	Chemical Kinetics (As per CHE 206 1.0)	c
	FST 269 2.0	Post Harvest Management of Plant and Animal Commodities	c
	FST 268 1.0	Dietetics	c
	FST 280 2.0	Unit Operations in Food Processing (Based on FST 279 1.0)	c
	FST 282 1.0	Food Packaging (Based on FST 397 1.0)	c
	FST 290 2.0	Food Chemistry	c
	FST 292 1.0	Bakery Science	c

FST 296 1.0	Food Science and Technology Practical IV	a
FST 298 1.0	Basic Management, Accounting and Finance	c
FST 299 1.0	Chemistry Practical	a
<b>Total</b>		<b>16</b>

### THIRD YEAR

#### Semester I

FST 351 2.0	Statistics for Food Science II (Based on FST 252 1.0, FST 254 1.0, FST 284 1.0, FST 294 1.0, FST 363 1.0)	c
FST 361 1.0	Food Analysis and Food Structures	c
FST 364 1.0	ICT for Food Science and Technology (Based on FST 352 1.0, FST 353 1.0)	c
FST 365 1.0	Operations Management (Based on FST 356 1.0)	c
FST 370 1.0	Food Safety and Regulations	c
FST 376 2.0	Food Quality Management	c
FST 378 2.0	Food Engineering	c
FST 379 1.0	Technology and Engineering for Food Industry	c
FST 388 1.0	Confectionery Technology	c
FST 392 1.0	Food Safety and Hygiene in Hospitality Management (Based on FST 377 1.0)	c
FST 395 2.0	Beverage Technology (Based on FST 389 1.0)	c
FST 396 2.0	Food Science and Technology Practical V (Based on FST 393 1.0)	a
<b>Total</b>		<b>17</b>

### THIRD YEAR

#### Semester II

FST 355 1.0/	Animal Feed Technology/	o
FST 359 1.0	Sustainability and Circular Economy	
FST 362 1.0	Sensory Analysis	c
FST 366 2.0	Regression Analysis (Based on FST 294 1.0+FST 363 1.0)	c
FST 367 1.0	Project Management (Based on FST 357 1.0)	c
FST 368 2.0	Emerging Food Technologies and Biotechnology	c
FST 374 1.0	Fish and Meat Processing Technology (Based on FST 382)	c
FST 380 2.0	Social Mobilization and Knowledge Transfer (Based on FST 360 2.0)	c
FST 383 1.0	Grain Technology	c
FST 384 1.0	Fruits and Vegetables Processing Technology	c

### Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional

Course Type			
-a- Compulsory	FST 386 1.0	Spices, Root and Tuber Crops Processing Technology (FST 385 1.0)	c
	FST 387 1.0	Fats and Oil Technology	c
	FST 391 1.0	Mechanical Aspects of Food Technology	c
	FST 394 2.0	Food Science and Technology Practical VI	a
	FST 399 1.0	Dairy Processing Technology	c
-c- Core	<b>Total</b>		<b>19</b>
	<b>FOURTH YEAR</b>		
-o- Optional	<b>Semester I</b>		
	FST 451 2.0	Design and Analysis of Experiments for Food Technology (Based on FST 294 1.0, FST 354 1.0)	c
	FST 456 1.0	Supply Chain Management	c
	FST 460 1.0/	Food Enzymology/	o
	FST 462 1.0	Phytochemical Compounds in Foods	
	FST 461 1.0	Food Toxicology and Allergens	c
	FST 493 0.0	Research and Communications	a
	FST 496 5.0	Industrial/ Research/ Field Placement	a
	FST 497 2.0	Feasibility Study and Business Planning (FST 491 2.0)	c
	<b>Total</b>		<b>12</b>
	<b>FOURTH YEAR</b>		
	<b>Semester II</b>		
	FST 452 1.0	Introduction to Multivariate Statistics and Data Mining Techniques in Food Industry (FST 363 1.0)	c
	FST 457 1.0	Career Skills Development	a
	FST 458 1.0	Strategic Management (Based on FST 257 1.0)	c
	FST 481 1.0	Industrial Microbiology	c
	FST 482 1.0	Nano Technology in Food Systems	c
	FST 498 8.0	Research Project	a
	<b>Total</b>		<b>13</b>
<b>Total number of credits — 120</b>			

# Food Science

## B.Sc. Degree Course Units

Each student should take course units having a minimum cumulative credit value of 30.0

### FIRST YEAR

#### Semester I

FSC 124 2.0	Food Commodities for Value Addition	c
FSC 111 1.0	Principles of Management	c
FSC 141 1.0	Fundamentals of Human Nutrition	c
FSC 191 1.0	Practicals- Characteristics of Major Food Constituents and Ingredients	a

### FIRST YEAR

#### Semester II

FSC 112 1.0	Food Business Management I	c
FSC 122 2.0	Introduction to Food Crop and Animal Technology	c
FSC 131 1.0	Basics of Biochemistry	c
FSC 192 1.0	Practicals- Functional Properties of Food Ingredients	a

### SECOND YEAR

#### Semester I

FSC 221 1.0	Science of Tea, Coffee and Cocoa Processing	c
FSC 203 1.0	Applied Food Physics	c
FSC 251 2.0	Food Preservation Technology	c
FSC 291 1.0	Practicals- Chemical Analysis of Foods	a

### SECOND YEAR

#### Semester II

FSC 231 2.0	Food Chemistry	c
FSC 211 1.0	Food Business Management II	c
FSC 252 1.0	Postharvest Management	c
FSC 292 1.0	Practicals - Postharvest Handling and Preservation of Foods	a

## Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional



# GMB

## Genetics & Molecular Biology

*Offered by the Genetics & Molecular Biology Unit*

*“Genetics is central to all biological sciences, which when combined with knowledge on Molecular Biology techniques has a variety of multidisciplinary applications”*

**B.Sc. Degree Program with Genetics & Molecular Biology**

**Course code: GMB**

**Duration: 3 years**

**Subject combination 1: Genetics & Molecular Biology, Chemistry, Biology (Please refer pages 156-161)**

**Subject Combination 2: Genetics and Molecular Biology, Chemistry, Environmental Management and Forestry**

***For whom?***

Biological Science stream students who are interested in pursuing research-based careers in academic, technological and industrial organizations. The intake is limited to a maximum of 35 students (30 students from Subject combination 1 and 5 students from Subject combination 2) in an academic year. The selection of students is based on the highest Z-scores from the GCE Advanced level examination from the students who apply.



### *Career opportunities*

This program is designed to provide basic and practical knowledge of Genetics and Molecular Biology which is a subject scarce in Sri Lanka, thereby producing capable professionals for employment in a spectrum of fields. The ideal graduate of the program will have a sound foundation in Genetics and be competent in Molecular Biology techniques, opening doors for them in many arenas. Genetics is pivotal to all biological sciences and is an evolving field, thus allowing graduates of this field to be employed as scientists in vast variety of areas such

as crop production, insecticide development, animal well-being and production, and identification of genetic disorders. As the necessity for introducing Genetics and Molecular Biology to schools and other institutions is being recognized, the need for qualified personnel to teach the curriculum will arise, and graduates of this program will be well suited for the role. The design of the program and the professional network of the academics of the program make those interested in pursuing higher studies in related fields well positioned to do so at renowned institutions



worldwide.

### *Course overview*

This program is introduced with the objective of creating well-rounded individuals, and the curriculum is designed to cater to this. Starting with basic courses such as Fundamentals of genetics, Molecular cell biology, and Molecular genetics, and gradually feeding into advanced courses such as Gene expression and regulation, Bioinformatics, Genomics and proteomics, the curriculum for the program is diverse and covers many areas of interest. The students will also have the opportunity to get industrial training in related areas giving them much-needed exposure to standing out in the competitive job market. The courses are designed not only to deliver knowledge but also to bring out hidden facets such as creativity and leadership. A key feature of the program is the opportunity for students to be inventors through a student-led project in the third year, where they will identify a need and develop a product or service to fulfill it. Not only will this allow students to put into practice what they have learned, but will also create individuals who are independent and can take initiative.

### *Course structure*

Students following the B.Sc. Degree will acquire 30 credits each from Chemistry, Biology / Environmental Management and Forestry and Genetics and Molecular Biology subject combinations during the

three years totaling 90 credits at graduation. Course units are classified as compulsory, core and optional and are designed to provide the students with basic and specialized knowledge and skills required in the field.

### **B.Sc. (Honours) Degree Program in Genetics & Molecular Biology**

**Duration: 4 years**

### *Career opportunities*

The main objective of the B.Sc. (Honours) Degree Program in Genetics & Molecular Biology is to produce a cohort of students who have in-depth knowledge and hands-on experience in advanced areas of Genetics and Molecular Biology. The honours curriculum is designed in a way in which students will acquire specific knowledge, practical experience, and soft skills that set them apart from other science graduates in Sri Lanka. Therefore, students will be able to confidently pursue higher studies in a related field. Students will have immense opportunities around the world as academics and researchers in a diverse range of fields.

### *Course overview*

Students following the B.Sc. (Honours) degree will acquire 20 credits each from Chemistry, Biology / Environmental Management and Forestry and Genetics and Molecular Biology subject combinations during the first two years totaling 60 credits. The

remaining 60 credits will be acquired from level 6 courses in Genetics and Molecular Biology during the third and fourth years totaling 120 credits by graduation.

### *Selection*

The ten students with the highest GPA at the end of the first two years will be selected to follow this program. The minimum GPA is 3.5.

### **B.Sc. (Honours) Degree Program in Applied Sciences (Genetics & Molecular Biology)**

**Duration: 4 years**

### *Career opportunities*

The main objective of the B.Sc. (Honours) Degree Program in Applied Sciences (Genetics & Molecular Biology) is to provide students who wish to pursue a career in the industry an opportunity to gain extensive industrial training. Moreover, since the duration of the degree is four years, these students are also well positioned to pursue in Sri Lanka or abroad if they wish to do so.

### *Course overview*

Students following the B.Sc. (Honours) degree in Applied Sciences (Genetics and Molecular Biology) will acquire 30 credits each from Chemistry, Biology/ Environmental Management and Forestry and Genetics and Molecular Biology subject combinations

during the first three years totaling 90 credits. The remaining 30 credits will be acquired from courses offered by the faculty (12 credits), the Genetics and Molecular Biology Unit (10 credits) and industrial training (8 credits) during the fourth-year totaling to 120 credits by graduation.

### *Selection*

The five students with the highest GPA at the end of the first five semesters will be selected to follow this program. The minimum GPA is 3.0.

**Please refer to page 146-147 for more details.**

### *Mode of instruction and assessment*

The academic staff of the unit is committed to providing a well-rounded learning experience. Lectures and practicals will be conducted in English and relevant course material will be uploaded on LMS, the online learning management system. Courses are designed such that students get a solid foundation, hands-on laboratory experience, and an opportunity to bring out their hidden talents. Learning is a multifaceted process and students will be continuously assessed via interactive classroom discussions, presentations, individual and group projects, and semester-end written and practical examinations.

### *For further information, please contact;*

Dr. Pamoda Jayatunga

Coordinator

Genetics & Molecular Biology Unit

Email: [coordinator\\_gmbu@sjp.ac.lk](mailto:coordinator_gmbu@sjp.ac.lk),

# Genetics & Molecular Biology

## B.Sc. Degree Course Units

Each student should take course units having a minimum cumulative credit value of 27.0

### FIRST YEAR Semester I

**Total Credits = 10**

		No: of Credits	
GMB 101 2.0	Molecular Cell Biology	2	c
GMB 102 2.0	Fundamentals of Genetics	2	c
GMB 131 1.0	Laboratory Work in Genetics and Molecular Cell Biology	1	a

### Semester II

GMB 103 2.0	Fundamentals of Molecular Genetics	2	c
GMB 105 2.0	Techniques in Molecular Biology and Genetic Engineering	2	c
GMB 132 1.0	Laboratory Work in Molecular Biology Techniques	1	a

### SECOND YEAR Semester I

**Total Credits = 10**

		No: of Credits	
GMB 207 1.0	Quantitative and Population Genetics	1	c
GMB 209.1.0	Introduction to Bioinformatics	1	c
GMB 210 2.0	Immunobiology	2	c
GMB 231 1.0	Laboratory Work in recombinant DNA Technology and Immunobiology	1	c

### Semester II

		No: of Credits	
GMB 203 1.0	Genomics and Proteomics	1	c
GMB 204 2.0	Microbes and Microbial Genetics	2	c
GMB 205 1.0	Gene Expression and Regulation	1	c
GMB 232 1.0	Laboratory Work in Microbial Genetics and Gene Expression	1	a

## Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional

## Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional

## THIRD YEAR

**Total number of credits to be completed from the Genetics and Molecular Biology Unit for each degree program are as follows:**

BSc Honours in Genetics and Molecular Biology – 30 credits  
BSc Honours in Applied Sciences (Genetics and Molecular Biology) – 10 Credits  
BSc degree program with Genetics and Molecular Biology as a subject – 10 credits

### Course Units offered only for the BSc in Applied Sciences (Genetics and Molecular Biology) Degree Programme

GMB 304 1.0	Developmental Genetics	1.0	o
GMB 305 1.0	Scientific Communication	1.0	c
GMB 333 2.0	Mini-Project	2.0	a
GMB 336 1.0	Laboratory Work in Biochemistry, RNA and Protein Techniques	1.0	a

### Course units offered for BSc and BSc Honours Genetics and Molecular Biology Degree Programmes

GMB 301 1.0	Advanced Population Genetics	1.0	o
GMB 311 2.0	Modern Biotechnology	2.0	c
GMB 314 1.0	Entrepreneurship	1.0	o
GMB 315 2.0	Introduction to Computer Programming and Web Designing	2.0	o
GMB 316 2.0	Bioelectronics	2.0	o
GMB 317 2.0	Biochemistry	2.0	c
GMB 318 1.0	Human Genetics and Counselling	1.0	o
GMB 319 1.0	Career Skills Development	1.0	o
GMB 321 1.0	Molecular Modelling and Computational Biochemistry	1.0	o
GMB 323 2.0	Protein Engineering	2.0	o
GMB 326 2.0	Molecular Entomology	2.0	o
GMB 327 1.0	Bioeconomics	1.0	o
GMB 329 1.0	Occupational Competence	1.0	o
GMB 336 1.0	Laboratory Work in Biochemistry, RNA and Protein Techniques	1.0	a

GMB 342 1.0	Epigenetics	1.0	c
GMB 343 2.0	Molecular Basis of Diseases	2.0	o
GMB 344 1.0	RNA Biology	1.0	c
GMB 345 1.0	Virology	1.0	o
GMB 346 1.0	Nanobiology	1.0	o

**Course Units offered solely for the BSc Honours in Genetics and Molecular Biology Degree Programme**

GMB 313 1.0	Cell Signalling and Signal Transduction	1.0	c
GMB 320 2.0	Research Methodology	2.0	c
GMB 337 1.0	Laboratory work in Nanobiology and Advanced Laboratory Techniques	1.0	a
GMB 340 2.0	Special Topics in Genetics and Molecular Biology	2.0	c
GMB 341 3.0	Current Topics in Genetics and Molecular Biology	3.0	c

#### FOURTH YEAR

**Total number of credits to be completed from the Genetics and Molecular Biology Unit for each degree program:**

**BSc Honors in Genetics and Molecular Biology – 30 credits**

**BSc Honors in Applied Sciences (Genetics and Molecular Biology) – 8 Credits**

**Course Units for the BSc Honours in Genetics and Molecular Biology Degree Programme open to students following the BSc Honours in Applied Sciences (Genetics and Molecular Biology) Degree programme as optional subjects under ASB course codes**

GMB 403 1.0/ ASB 464 1.0	Stem Cells and Regenerative Biology	1.0	o
GMB 406 2.0/ ASB 467 2.0	Molecular Microbial Ecology	2.0	o**

#### Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional

GMB 342 1.0	Epigenetics	1.0	c
GMB 343 2.0	Molecular Basis of Diseases	2.0	o
GMB 344 1.0	RNA Biology	1.0	c
GMB 345 1.0	Virology	1.0	o
GMB 346 1.0	Nanobiology	1.0	o

**Course Units offered solely for the BSc Honours in Genetics and Molecular Biology Degree Programme**

GMB 313 1.0	Cell Signalling and Signal Transduction	1.0	c
GMB 320 2.0	Research Methodology	2.0	c
GMB 337 1.0	Laboratory work in Nanobiology and Advanced Laboratory Techniques	1.0	a
GMB 340 2.0	Special Topics in Genetics and Molecular Biology	2.0	c
GMB 341 3.0	Current Topics in Genetics and Molecular Biology	3.0	c

#### FOURTH YEAR

**Total number of credits to be completed from the Genetics and Molecular Biology Unit for each degree program:**

**BSc Honors in Genetics and Molecular Biology – 30 credits**

**BSc Honors in Applied Sciences (Genetics and Molecular Biology) – 8 Credits**

**Course Units for the BSc Honours in Genetics and Molecular Biology Degree Programme open to students following the BSc Honours in Applied Sciences (Genetics and Molecular Biology) Degree programme as optional subjects under ASB course codes**

GMB 403 1.0/ ASB 464 1.0	Stem Cells and Regenerative Biology	1.0	o
GMB 406 2.0/ ASB 467 2.0	Molecular Microbial Ecology	2.0	o**

#### Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional



Course Type				
-a- Compulsory	GMB 409 2.0	Pharmaceutical Biotechnology	2.0	o
	GMB 411 2.0/ ASB 462 2.0	Molecular and Cellular Toxicology	2.0	c**
	GMB 412 2.0/ ASB 469 2.0	Molecular Diagnostics and Therapeutics	2.0	o**
	GMB 413 2.0/ ASB 463 2.0	Tissue and Cell culture	2.0	c**
-c- Core	GMB 415 1.0/ ASB 468 1.0	Journal Club	1.0	c**
	GMB 418 2.0/ ASB 466 2.0	Marine Biotechnology for Sustainable Development	2.0	o**
-o- Optional				

**Course Units offered solely for the BSc Honours in Genetics and Molecular Biology  
Degree Programme**

GMB 401 2.0	Case Studies in Genetics and Molecular Biology	2.0	c
GMB 402 1.0	Molecular Ecology	1.0	o
GMB 407 1.0	Scientific Writing	1.0	c
GMB 408 2.0	Neurobiology	2.0	o
GMB 410 8.0	Research Project	8.0	a
GMB 416 2.0	Molecular Evolution	2.0	o
GMB 419 1.0	Systems Biology	1.0	c
GMB 420 2.0	Molecular Immunology	2.0	c



# ICH

## Industrial Chemistry

### *Offered by the Department of Chemistry*

*“Industrial Chemistry is the link between academic research and industrial scale physical and chemical processes which transform raw materials into products that are beneficial to mankind”*

#### **B.Sc. Honours Degree in Industrial Chemistry**

**Course code: ICH**

**Duration: 4 years**

**Subject combinations : refer pages 156-161**

#### ***For whom?***

The main objective of the B.Sc. Honours degree in Industrial Chemistry program is to prepare the prospective students as industrial chemists and

introduce them to the basic attitudes and skills that would be required for their work in industry.

#### ***Career opportunities***

The B.Sc. Honours Degree in Industrial Chemistry, offered by the Department of Chemistry is aimed at training professionals in the field of chemistry to develop skills required of chemists who will be working in industry. The strong foundations laid by the program would enable the students to seek

employment at industries as R&D manager, bench scientist, technical support specialist, or in quality control/quality assurance work. In addition to that, students also can acquire postgraduate qualifications from recognized universities which would lead to a career path in academia in universities and other institutions.

### ***Course overview***

The courses offered in the industrial chemistry honors degree program play an important role in the development of skills required of chemists who intended to be working in industry. In this regard, all courses are designed to bridge the industry-academia skill gap and also introduce more applied chemistry into the degree program in addition to the courses that offer fundamentals of chemistry

### ***Course structure***

The industrial chemistry Honours degree students in their third year follow advanced theoretical courses in the core subject areas: organic, inorganic, physical and analytical chemistry, while fourth year students follow applied chemistry courses designed to address the needs of modern knowledge-based industries. Students in the fourth year are also required to carry out an industrial process oriented research project.

The research project helps the students to apply their chemistry knowledge to industrial processes. In addition, students enhance their scientific reasoning, research and analytical skills which prepare them to

become chemists who have a good understanding of both chemistry and chemical engineering concepts. At the end of the research project, a dissertation is submitted for assessment, which is evaluated after an oral presentation followed by a viva voce examination.

### ***Selection***

Selection of the students to follow the B.Sc. Honours degree in industrial chemistry is based on the student performance in the first two academic years. The intake is typically limited to a maximum of 10 students.

### ***Mode of instruction and assessment***

The modules include lectures, tutorials, laboratory practical, industrial visits and individual and group projects and assignments. They are assessed through end-of-semester written examinations, practical tests, presentations and reports. There is an emphasis of analysis of real industrial problems to reinforce learning. For the practical class, assessment will include attendance, record book and a practical exam. A minimum of 80% attendance will be an essential requirement for completing the practical component.

### ***For further information, please contact;***

Dr. Laksiri Weerasinghe

Course coordinator

Email: [laksiri@sjp.ac.lk](mailto:laksiri@sjp.ac.lk)

Course Type	B.Sc. Honours Degree course Units		
-a- Compulsory	<b>FIRST YEAR</b>		
	<b>Semester I</b>		
	CHE 110 1.0	Concepts in Inorganic Chemistry I	c
	CHE 108 1.0	Organic Chemistry I	c
	CHE 112 1.0	Main Group and Transition Elements	c
	CHE 106 1.0	Structure and Properties of Matter	c
	CHE 107 2.0	Chemistry Practical Module 1 (Semester I and II)	a
	<b>Semester II</b>		
	CHE 111 2.0	Introduction to Analytical Chemistry	c
	CHE 109 1.0	Organic Chemistry II	c
	CHE 103 1.0	Chemical Thermodynamics	c
	CHE 107 2.0	Chemistry Practical Module 1 (Semester I and II)	a
	<b>SECOND YEAR</b>		
	<b>Semester I</b>		
	CHE 205 1.0	Chemistry of Heterocyclic and Bioorganic Compounds	c
	CHE 207 1.0	Phase Equilibria and Surface Chemistry	c
	CHE 208 1.0	Quantum Chemistry	c
	CHE 211 1.0	Concepts in Inorganic Chemistry II	c
	CHE 209 2.0	Chemistry Practical Module 2 (Semester I and II)	a
	<b>Semester II</b>		
	CHE 202 1.0	Chemistry of Coordination Compounds	c
	CHE 203 1.0	Organic Spectroscopy	c
	CHE 204 1.0	Electrochemistry	c
	CHE 206 1.0	Chemical Kinetics	c
	CHE 209 2.0	Chemistry Practical Module 2 (Semester I and II)	a

### THIRD YEAR

#### Semester I

CHE 350 0.0	Mathematics for Chemistry	c
ICH 351 1.0	Introduction to Bioinformatics and Bio-modeling	c
ICH 355 1.0	Solid State Chemistry	c
ICH 357 1.0	Industrial Electrochemistry	c
ICH 362 1.0	Catalysts and catalyst design for industrial applications	c
ICH 366 2.0	Chromatography for industry	c
ICH 369 2.0	Food chemistry and Technology	c
ICH 372 2.0	Industrial Biochemistry and Biotechnology	c
ICH 374 2.0	Instrumental methods of analysis	c
ICH 376 2.0	Organic Chemistry Practical (Semester I and II)	a
ICH 377 2.0	Inorganic Chemistry Practical (Semester I and II)	a
ICH 378 2.0	Physical Chemistry Practical (Semester I and II)	a

#### Semester II

ICH 363 2.0	Organic Synthesis and Industrial Applications	c
ICH 364 1.0	Spectroscopic techniques for identification of inorganic compounds	c
ICH 365 1.0	Spectroscopic techniques for identification of organic compounds	c
ICH 367 2.0	Microscopic and Scattering Techniques	c
ICH 370 2.0	Molecular Modelling and computational Chemistry	c
ICH 373 2.0	Advance Chemical Kinetics and Thermodynamics	c
ICH 375 2.0	Industrial applications of green chemistry for sustainable development	c
ICH 376 2.0	Organic Chemistry Practical (Semester I and II)	a
ICH 377 2.0	Inorganic Chemistry Practical (Semester I and II)	a
ICH 378 2.0	Physical Chemistry Practical (Semester I and II)	a

#### Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional

## Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional

### FOURTH YEAR

#### Semester I

ICH 451 1.0	Extractive Metallurgy	c
ICH 453 1.0	Glass, ceramics and their composites	o
ICH 455 2.0	Industrial waste management	o
ICH 459 1.0	Nanotechnology and Applications in Industry	o
ICH 474 2.0	Chemistry of Woods and Wood Products	o
ICH 480 2.0	Industrial Organic Chemistry	o
ICH 481 2.0	Physical Organic Chemistry	c
ICH 483 2.0	Natural products in Industrial chemistry	o
ICH 485 2.0	Industrial Management and Marketing	o
ICH 473 8.0	Industrial training and Industry based research project (Semester I and II)a	

#### Semester II

ICH 457 1.0	Alternative Energy Sources and Energy Storage Devices	o
ICH 467 2.0	Fundamentals of process engineering	o
ICH 476 2.0	Petroleum Chemistry and Petrochemical Industry	o
ICH 478. 2.0	Pharmaceutical Chemistry	o
ICH 479 2.0	Novel developments in polymer, rubber and their composites	o
ICH 482. 3.0	Industrial minerals and their value-added products	o
ICH 484 2.0	Quality assurance, accreditation and Project Management	o
ICH 473 8.0	Industrial training and Industry-based research project (Semester I and II)a	





# ICT

## Information & Communication Technology

### *Offered by Department of Computer Science*

*“Information and Communication Technology stresses on unified communication and integrating telecommunication devices, computers and software, all of which allow users to access, store, transmit and manipulate information”*

#### **B.Sc. Degree Program with Information and Communication Technology**

**Course Code: ICT**

**Duration: 3 Years**

**Subject Combinations: Refer pages 156-161**

#### ***For whom?***

Physical Science Students who are selected by the University Grants Commission (UGC) through a

special window. The intake is limited to a maximum of 50 students per academic year.

#### ***Career opportunities***

TGraduates have a wide range of career opportunities, especially in industries that rely on technology. Sectors such as software companies, banking, insurance, electronics and government actively seek ICT graduates. These graduates are well-prepared for roles such as Computer Programmers, Web Designers, Database Analysts, Social Media Managers, Social Community



Managers and Technology Support specialists. Whether focusing on software development, systems support, or business management, ICT graduates are equipped to succeed in various professional settings.

#### ***Course overview***

Learning ICT is about understanding computer systems and applying them when seeking automated solutions. This includes both software and all its related hardware. This course concentrates on creating links between theory and practice. It covers a wide variety of software technologies and their application. Students are introduced to a range of programming paradigms, including procedural programming and object oriented programming. Other disciplines such as software engineering, net centric computing, visual computing and multimedia technologies are also covered. The syllabus offered by the department covers a vast area of the subject and is revised regularly to include the most recent developments.

#### ***Course structure***

ICT will constitute one third of the B.Sc. (General) degree program in allowed subject combinations.

Students are required to take core course units in ICT having a minimum cumulative credit value of 27.0.

These course units are designed to provide student with essential knowledge in theory, practice and skills that are required in ICT industry.

#### ***Mode of instruction and assessment***

Students will be taught by academic staff with good track records. The medium of instructions is English.

The course units include; lectures, assignments, individual/group projects and laboratory practical. They are assessed through continuous assessments, end of semester written examinations, practical examinations, presentations and reports.

#### ***For further information please contact:***

Dr. P. Ravindra De Silva

Head/ Department of Computer Science

Email: ravi@sjp.ac.lk

# Information & Communication Technology (ICT)

## B.Sc. Degree Course Units

Each student should take course units having a minimum cumulative credit value of 27.0

### FIRST YEAR

#### Semester I

ICT 105 1.5	Computer Architecture	c
ICT 106 1.5	Fundamentals of Computer Programming	c
ICT 107 1.0	Computer Programming - Laboratory I	c
ICT 108 1.0	Software Engineering I	c

#### Semester II

ICT 129 2.0	Object Oriented Programming	c
ICT 130 1.0	Computer Programming - Laboratory II	c
ICT 131 2.0	Software Engineering II	c

### SECOND YEAR

#### Semester I

ICT 204 2.0	Data Structures and Algorithms	c
ICT 205 1.5	Operating Systems	c
ICT 206 1.5	Database Systems and Administration	c

#### Semester II

ICT 229 2.0	User Interface Design and Implementation	c
ICT 230 1.5	Computer Networks and System Administration	c
ICT 231 1.5	Visual Computing	c

### THIRD YEAR

#### Semester I

ICT 304 1.5	Multimedia Technologies	c
ICT 305 2.0	Embedded Systems	c
ICT 306 1.5	Mobile Technologies and Application Development	o
ICT 307 2.0	Introduction to Artificial Intelligence	o

## Course Type

-c-  
Core

-o-  
Optional

Course Type		Semester II	
-c- Core	ICT 330 2.0	Software Architecture and Design	c
	ICT 331 1.5	Software Quality Assurance	c
	ICT 332 1.5	Human Computer Interaction	o
	ICT 333 1.5	Data Mining and Data Warehousing	o
-o- Optional	ICT 334 2.0	Project (Individual/Group)	o



## *Offered by the Department of Mathematics*

*“Management Science involves developing and applying models and concepts to understand and solve managerial problems”*

**B.Sc. Degree Programme with Management Science**

**Course Code : MAN**

**Duration : 3 Years**

**Subject combinations: Refer pages 156-161**

### ***For whom?***

Management science study stream can be selected by both physical science and bio-science stream students who are interested in enhancing their capabilities

in management and administration of business organizations.

### ***Career opportunities***

Individuals are taught how to work with a team in order to achieve some pre-defined goals and targets of the respective organizations utilizing human resources, financial resources, natural resources and technological resources. Following the course will offer graduates excellent career opportunities in different fields of management including accounting,

banking, finance, international business, human resources and marketing.

### ***Course overview***

Management science course units offered in our faculty may provide an applied approach to understanding business and management and the context in which they operate. This programme further offers students a wide range of management stream subject areas whilst requiring them to carryout researches relating to course areas to enhance their knowledge on business world. We believe that the flexibility and academic rigour of this degree will make it very attractive to students and employers which enable students to exploit most of their strengths and interests.

### ***Course structure***

The management science course units focus on the study of key disciplines, such as Management, Accounting Processes, Economics, Statistics, Operations Research, Forecasting, Marketing and Organizational Behaviour. Of the total of 31

credits, a cumulative credit value of 27 is required to be completed at the end of 3rd year. This include compulsory and optional course units.

### ***Mode of instruction and assessment***

The Faculty of Management Studies and Commerce render their expertise and support to conduct the lecture series. Management Science uses higher order assessment activities which include interactive learning sessions, tutorials, end semester examinations and individual and group assignments to better reflect what undergraduate students can really do to demonstrate their learning growth. These assessments may test cognitive processing skills of students with regard to task-based problem-solving and decision making skills.

### ***For further information please contact:***

Dr. K.A. Kamal Gnanaweera  
Coordinator, Management Science Unit  
**E-mail: [kamal@sjp.ac.lk](mailto:kamal@sjp.ac.lk)**



# Management Science

## B.Sc. Degree Course Units

Each student should take course units having a minimum cumulative credit value of 27.0

### FIRST YEAR

#### Semester I

MAN 102 2.0	Principles of Micro Economics	c
MAN 103 1.0	Methods of Operational Research I	c
MAN 104 2.0	Management Process	c

#### Semester II

MAN 126 2.0	Principles of Macro Economics	c
MAN 128 1.0	Introduction to Statistics	c
MAN 129 2.0	Introduction to Entrepreneurship	c

### SECOND YEAR

#### Semester I

MAN 201 2.0	Introduction to Human Resource Management	c
MAN 202 2.0	Methods of Operational Research II	c
MAN 203 1.0	Fundamentals of Accounting for Business	c

#### Semester II

MAN 226 2.0	Introduction to Organizational Behaviour	c
MAN 227 2.0	Statistical Quality Control & Industrial Statistics	c
MAN 228 1.0	Business Law	c

### THIRD YEAR

#### Semester I

MAN 301 2.0	Fundamentals of Marketing	o
MAN 302 2.0	Forecasting	o
MAN 303 1.0	MIS and Accounting Information Systems for Managers	o

#### Semester II

MAN 308 1.0	Intellectual Property (IP)	o
MAN 326 1.0	Production Control	o
MAN 327 2.0	Microcomputers and their Applications	o
MAN 328 2.0	Research Methodology	o

## Course Type

-c-  
Core

-o-  
Optional



# MAT

## Mathematics

### *Offered by the Department of Mathematics*

*“Mathematics is the Queen of modern science and is an efficient source of useful concepts and tools that are used to understand reality”*

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#### **B.Sc. Degree with Mathematics**

**Course Code: MAT**

**Duration : 3 Years**

**Subject combinations: Refer pages 156-161**

#### ***For whom?***

Students from physical science stream who are interested in science and technology-oriented careers with sharp logical thinking skills in Mathematics.

#### ***Career opportunities***

Mathematics has now found an increasingly significant influence in many diverse fields, from management to medicine. Mathematics related professionals are in high demand worldwide in various capacities in academic institutes, research institutes and engineering and technical sectors.

#### ***Course overview***

Scientific and industrial progress in recent years

has made Mathematics one of the most important subjects of our time. An undergraduate degree in Mathematics will open the way to a future filled with wide opportunities for jobs and professions. Furthermore, Mathematics alone will enable a person to make a positive contribution to the society. Mathematics is, in addition to being the language of science in its own right, a way of logical thinking rather than rules and regulations.

### *Course structure*

Mathematics offered as one of the three subjects for B.Sc. degree in a permitted subject combination for physical science students. This contains compulsory and optional course units which are designed to provide required knowledge of main areas of Mathematics such as Algebra, Analysis, Calculus and so on. Further, due to the high demand for computational mathematics, the department has introduced a practical component to most of the Mathematics course units in the department with the students having access to a well-equipped computer laboratory. Also the department offers a basic Mathematics course for the biological students.

## **B.Sc. Honours Degree in Mathematics**

**Duration: 4 years**

### *For whom?*

This degree is aimed at students who wish to grasp

the key aspects of Mathematics and who wish to study Mathematics in depth.

### *Career opportunities*

A special degree in Mathematics enables graduates to find employment as professionals in academic institutes, research personnel, experts in engineering and technical sector, actuarial scientists and statisticians.

### *Course overview*

The four year B.Sc. Honours degree in Mathematics is designed to provide a strong foundation on advanced topics in Mathematics emphasizing on the power and the beauty of abstract and rigorous reasoning that Mathematics promotes. On the one hand the Honours degree program focuses on developing student's appreciation for mathematics, and creating individuals who are self-motivated and are well prepared to pursue higher education in Mathematics. At the same time the program offers a range of practically applicable mathematics courses, ensuring that students who are interested in acquiring the mathematical expertise required to excel as professionals in industrial or financial sectors are equally well catered.

### *Course Structure:*

The core course units offered in the Mathematics Honours degree program provide the mathematical knowledge and skills that will be highly valuable for

has made Mathematics one of the most important subjects of our time. An undergraduate degree in Mathematics will open the way to a future filled with wide opportunities for jobs and professions. Furthermore, Mathematics alone will enable a person to make a positive contribution to the society. Mathematics is, in addition to being the language of science in its own right, a way of logical thinking rather than rules and regulations.

### *Course structure*

Mathematics offered as one of the three subjects for B.Sc. degree in a permitted subject combination for physical science students. This contains compulsory and optional course units which are designed to provide required knowledge of main areas of Mathematics such as Algebra, Analysis, Calculus and so on. Further, due to the high demand for computational mathematics, the department has introduced a practical component to most of the Mathematics course units in the department with the students having access to a well-equipped computer laboratory. Also the department offers a basic Mathematics course for the biological students.

## **B.Sc. Honours Degree in Mathematics**

**Duration: 4 years**

### *For whom?*

This degree is aimed at students who wish to grasp

the key aspects of Mathematics and who wish to study Mathematics in depth.

### *Career opportunities*

A special degree in Mathematics enables graduates to find employment as professionals in academic institutes, research personnel, experts in engineering and technical sector, actuarial scientists and statisticians.

### *Course overview*

The four year B.Sc. Honours degree in Mathematics is designed to provide a strong foundation on advanced topics in Mathematics emphasizing on the power and the beauty of abstract and rigorous reasoning that Mathematics promotes. On the one hand the Honours degree program focuses on developing student's appreciation for mathematics, and creating individuals who are self-motivated and are well prepared to pursue higher education in Mathematics. At the same time the program offers a range of practically applicable mathematics courses, ensuring that students who are interested in acquiring the mathematical expertise required to excel as professionals in industrial or financial sectors are equally well catered.

### *Course Structure:*

The core course units offered in the Mathematics Honours degree program provide the mathematical knowledge and skills that will be highly valuable for

# Mathematics

## B.Sc. Degree Course Units

Each student should take course units having a minimum cumulative credit value of 27.0

### FIRST YEAR

#### Semester I

MAT 111 2.0	Fundamentals of Logic and Set Theory	c
MAT 112 2.0	Differential Equations	c
MAT 113 1.0	Complex Numbers and Vectors	c
MAT 119 0.0	Mathematical Software I	c
MAT 114 1.0	Basic Mathematics	o <sup>#</sup>

#### Semester II

MAT 121 2.0	Linear Algebra I	c
MAT 122 2.0	Calculus	c
MAT 123 1.0	Vector Calculus	c
MAT 129 0.0	Mathematical Software II	c

### SECOND YEAR

#### Semester I

MAT 211 1.0	Linear Algebra II	c
MAT 212 2.0	Real Analysis I	c
MAT 213 2.0	Numerical Methods	c

#### Semester II

MAT 221 2.0	Functions of Several Variables	c
MAT 222 2.0	Partial Differential Equations	c
MAT 223 1.0	Basics of Number Theory	c

### THIRD YEAR

#### Semester I

MAT 311 2.0	Complex Analysis	c
MAT 312 2.0	Computer Programming	c*
MAT 313 1.0	Introduction to History of Mathematics	c
MAT 314 1.0	Teaching and Learning Methodologies in Mathematics	o
MAT 315 2.0	Boolean Algebra and Switching Circuits	o

## Course Type

-c-  
Core

-o-  
Optional

\_\*\_

Those who have done CSC, ICT or EES as a subject in the first or second year are not allowed to do this course

Course Type			
-c- Core	<b>Semester II</b>		
	MAT 321 2.0	Abstract Algebra	c
	MAT 322 2.0	Differential Geometry	c
	MAT 323 1.0	Optimization	o
	MAT 324 1.0	Mathematical Modeling I	o
-o- Optional	MAT 325 1.0	Internship Training	o
	MAT 326 2.0	Introduction to Dynamical Systems	o
_*_ Those who have done CSC, ICT or EES as a subject in the first or second year are not allowed to do this course	<b>Honours Degree Course Units</b>		
	<b>Part I</b>		
	<b>Semester I</b>		
	MAT 351 3.0	Group Theory	c
	MAT 352 2.0	Number Theory	c
	MAT 354 3.0	History of Mathematics	c
	MAT 315 2.0	Boolean Algebra and Switching Circuits	c
	MAT 356 2.0	Applicable Mathematics	o
	MAT 357 2.0	Operational Research	o#
	MAT 376 3.0	Real Analysis II	c
	MAT 359 2.0	Probability Theory I	o
	<b>Semester II</b>		
	MAT 353 3.0	Graph Theory	c
	MAT 375 3.0	Ring Theory	c
	MAT 377 3.0	Complex Variables	c
	MAT 378 2.0	Object Oriented Programming	o*
	MAT 379 2.0	Industrial Training	o
	MAT 380 2.0	Seminar and Report Writing	c
	MAT 381 2.0	Rotational Systems	o
	MAT 382 2.0	Topology	c
	MAT 383 2.0	Mathematical Modeling II	o
	MAT 384 2.0	Probability Theory II	o
	MAT 358 2.0	An Introduction to Answer Set Prolog	o



Course Type			
-c- Core	<b>Semester II</b>		
	MAT 321 2.0	Abstract Algebra	C
	MAT 322 2.0	Differential Geometry	C
	MAT 323 1.0	Optimization	O
	MAT 324 1.0	Mathematical Modeling I	O
-o- Optional	MAT 325 1.0	Internship Training	O
	MAT 326 2.0	Introduction to Dynamical Systems	O
-*_ Those who have done CSC, ICT or EES as a subject in the first or second year are not allowed to do this course	<b>Honours Degree Course Units</b>		
	<b>Part I</b>		
	<b>Semester I</b>		
	MAT 351 3.0	Group Theory	C
	MAT 352 2.0	Number Theory	C
	MAT 354 3.0	History of Mathematics	C
	MAT 315 2.0	Boolean Algebra and Switching Circuits	C
	MAT 356 2.0	Applicable Mathematics	O
	MAT 357 2.0	Operational Research	O#
	MAT 376 3.0	Real Analysis II	C
	MAT 359 2.0	Probability Theory I	O
	<b>Semester II</b>		
	MAT 353 3.0	Graph Theory	C
	MAT 375 3.0	Ring Theory	C
	MAT 377 3.0	Complex Variables	C
	MAT 378 2.0	Object Oriented Programming	O*
	MAT 379 2.0	Industrial Training	O
	MAT 380 2.0	Seminar and Report Writing	C
	MAT 381 2.0	Rotational Systems	O
	MAT 382 2.0	Topology	C
	MAT 383 2.0	Mathematical Modeling II	O
	MAT 384 2.0	Probability Theory II	O
	MAT 358 2.0	An Introduction to Answer Set Prolog	O

## Part II

### Semester I

MAT 455 2.0	Acturial Mathematics (based on AMT 312 2.0 Acturial Science)	o
MAT 452 3.0	Measure Theory	c
MAT 453 3.0	Optimization	c
MAT 454 2.0	Computational Mathematics	c
MAT 456 2.0	Cryptography (based on AMT 351 2.0 Cryptography)	o
MAT 457 2.0	Mathematics of Machine Learning	o
MAT 477 2.0	Module Theory	c
MAT 499 8.0	Project (Semester I and II)	c

### Semester II

MAT 451 3.0	Fields and Galois Theory	c
MAT 476 3.0	Functional Analysis	c
MAT 478 2.0	Categeory Theory	o
MAT 479 2.0	Geometric Transformations	o
MAT 480 2.0	Representation Theory	o
MAT 481 2.0	Data Analysis and Preparation of Reports	o
MAT 482 2.0	Statistical Modeling	o
MAT 483 2.0	Combinatorics	o
MAT 484 2.0	Differential Geometry and Manifolds	o
MAT 485 2.0	Univalent Functions and Conformal Mapping	o
MAT 499 8.0	Project (Semester I and II)	c

## Course Type

-c-  
Core

-o-  
Optional

\_\*\_  
Those who have done  
CSC, ICT or EES as a  
subject in the first or  
second year are not  
allowed to do this  
course



# MBL Microbiology

## *Offered by the Department of Botany*

*“Microbiology is an applied science that investigates and harnesses the industrial potential of microscopic organisms for a wide-spectrum of beneficial applications in agriculture, medicine and related fields such as the environment and food industry”*

### **B.Sc. Degree Programme with Microbiology]**

**Course code: MBL**

**Duration: 3 Years**

**Subject combinations: Refer pages 156-161**

#### ***For whom?***

Biological science stream students who are interested in pursuing careers in academic, technological, industrial or environmental organizations. The

intake is limited to a maximum of 60 students in an academic year. Minimum number for the course is 20 in an academic year.

#### ***Career opportunities***

The spectrum of jobs available for microbiology graduates include employment in fields such as, quality assurance, environmental surveillance and monitoring, food and beverage industries, research, secondary school teaching, veterinary sciences,

biofertilizer industry and agriculture, crop protection and medicine and the pharmaceutical industry.

### *Course overview*

Microbiology is a far more exciting area of science as it investigates the unseen world around us. Although it is a very broad subject, throughout much of its history microbiology focused on three areas, fermentation, food and medicine. Manipulation of genetic information of microbes for the large-scale production of beneficial products including antibiotics, beverages, biological catalysts and hormones, has unleashed the potential of microorganisms to transform basic substrates to invaluable yields of products, within the realms of medicine, agriculture and industrial applications.

The discipline microbiology, which was originally heavily dependent on the culture of microorganisms, has evolved with the advent of time, to incorporate molecular biology and genomics techniques for the identification and characterization of individual microorganisms from microbial assortments found within diverse ecological niches. In spite of the advances made in applied microbiology in the last two decades, the field of microbiology is largely an untapped discipline with virtually unlimited potential as many microbes are to be discovered and studied.

### *Course structure*

The subject Microbiology constitutes one third of the B.Sc. (General) degree program in an allowed

subject combination. All students who wish to offer microbiology will have to follow common compulsory and core course units during the first three semesters of the degree programme prior to the selection of microbiology as their chosen field of study. At the end of three years, total credit value gained by a student who has opted for general degree following a particular course should not be less than 27.0. A student can also opt for a special degree spending an additional year offering more advanced areas pertaining to respective subjects they have selected.

### **B.Sc. Honours Degree Programme in Microbiology** **Duration: 4 Years**

#### *Career opportunities*

The career opportunities available for graduates of the Honours Degree Program in Microbiology, will be centered on academia as well as practicing their trade as researchers in a diverse range of hierarchical positions undertaking in depth studies on contemporary research topics with the objectives of bridging gaps in knowledge and unraveling uninvestigated areas of Applied Microbiology.

#### *Course overview*

The department offers special degree programs in Microbiology for a few students with the intention of producing graduates having an in-depth knowledge, better skills and competent in handling various aspects of the subject selected. The core curriculum



of the special degree program is designed to provide advanced knowledge in the subject and simultaneously to impart hands-on experience in the world of work through an industrial training program in a government research institute or in a private sector organization for a short period of time. The final year research project assists students to improve problem solving ability, critical thinking, and time management, thereby preparing them to become professionals.

### **Selection**

Selection of students to follow a Honours degree in Microbiology is based on their performance during the first two academic years. The intake is limited to a maximum of 10 students per course.

### **Instruction and assessment**

Through the knowledge and experience of academic staff of the Department of Botany and of visiting staff, we endeavor to expose students to a range of teaching and learning activities, based on the course units identified under each of the subjects offered by the department. The modules conducted include lectures, laboratory practical classes, tutorials, field classes, individual and group assignments / projects. Majority of these modules are assessed through semester end theory examination, practical examination, presentations and reports/ theses, while a few are assessed continuously.

### **For further information please contact:**

Dr. M.L.A.M.S. Munasinghe  
Head/Department of Botany  
E mail: [mayuri@sci.sjp.ac.lk](mailto:mayuri@sci.sjp.ac.lk)

# Microbiology

## B.Sc. Degree Course Units

Each Student Should take course units having a minimum cumulative credit value of 27.0

### FIRST YEAR

#### Semester I

PLB/PBT/MBL 121 2.0	Cell Biology and Fundamentals of Plant Biochemistry	c
PBL/PBT/MBL 127 2.0	Plant Diversity	c
PBL/PBT/MBL 131 1.0	Practical Module I	a

#### Semester II

PBL/PBT/MBL 123 1.0	Principles of Ecology	c
PBL/PBT/MBL 129 2.0	Plant Form and Function	c
PBL/PBT/MBL 126 1.0	Classical Genetics	c
PBL/PBT/MBL	Practical Module II	a

### SECOND YEAR

#### Semester I

PBL/PBT/MBL 221 2.0	Bioenergetics and Plant Metabolism	c
PBL/PBT/MBL 233 2.0	Microbial Life	c
PBL/PBT/MBL	Practical Module I	a

#### Semester II

MBL 234 2.0	Phytopathogenic Microorganisms	c
MBL 235 2.0	Microbial Genetics	c
MBL 232 1.0	Practical Module I	a

### THIRD YEAR

#### Semester I

MBL 321 1.0	Soil and Agricultural Microbiology	c
MBL 328 1.0	Extremophiles	c
MBL 333 2.0	Industrial Microbiology	c

## Course Type

-a-

Compulsory

-c-

Core

-o-

Optional for all those doing Plant Biotechnology

-s-

Optional for all student in the faculty (Students should get the approval of the Head of the Department before commencement of lectures)

-†-

A student may register for only one Internship Training/ Industrial Training course unit offered by any one Department

Course Type			
-a- Compulsory	MBL 331 1.0	Practical Module I	a
-c- Core	<b>Semester II</b>		
	MBL 323 1.0	Food and Dairy Microbiology	c
	MBL 324 1.0	Medical Microbiology	o
	MBL 326 1.0	Industrial Management	c
	MBL 327 1.0	Bioinformatics and Molecular Modeling	c
-o- Optional for all those doing Plant Biotechnology	MBL 335 1.0	Mushroom Cultivation	c
	MBL 332 1.0	Practical Module II	a
	PBL/PBT/MBL 334 1.0	Internship Training	o <sup>†</sup>
-s- Optional for all student in the faculty (Students should get the approval of the Head of the Department before commencement of lectures)	<b>THIRD YEAR (Honours Part I)</b>		
	<b>Semester I</b>		
	MBL 380 2.0	Microbial Ecology	c
	MBL 381 2.0	Microbial Systematics	c
	MBL 385 4.0	Seminar	c
	MBL 388 1.0	Immunology	c
	MBL 389 2.0	Advanced Industrial Microbiology	c
	MBL 392 1.0	Genome Mapping	c
-‡- A student may register for only one Internship Training/ Industrial Training course unit offered by any one Department	<b>Semester II</b>		
	MBL 382 2.0	Microbes in Pest Management	c
	MBL 383 1.0	Microbial Biochemistry	c
	MBL 385 4.0	Seminar	c
	MBL 387 2.0	Biostatistics	c
	MBL 393 1.0	Advanced Mycology	c
	MBL 394 1.0	Nanobiology	c
	<b>FOURTH YEAR (Honours Part II)</b>		
	<b>Semester I</b>		
	MBL 480 1.0	Bioprospecting	c
	MBL 481 8.0	Research Project on Microbiology	c
	MBL 489 1.0	Bioethics & Biosafety	c
	MBL 490 2.0	Pharmaceutical Microbiology	c



MBL 491 2.0	Standardization & Quality Management	c
MBL 492 2.0	Organization and Dynamics of Genomes	c
MBL 494 1.0	Product Development and Marketing Management	c
MBL 498 2.0	Postharvest Management in Fruits and Vegetables	c

### Semester II

MBL 481 8.0	Research Project on Microbiology	c
MBL 483 2.0	Advanced Plant Pathology	c
MBL 484 2.0	Advanced Plant Virology	c
MBL 493 2.0	Environmental Microbiology	c
MBL 496 2.0	Plant Quarantine	c
MBL 497 1.0	Laboratory Management for Microbiologist	c
MBL 499 2.0	Molecular diagnosis of Plant Diseases	c

### Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional for all  
those doing Plant  
Biotechnology

-s-  
Optional for all  
student in the faculty  
(Students should  
get the approval  
of the Head of the  
Department before  
commencement of  
lectures)

-†-  
A student may  
register for only one  
Internship Training/  
Industrial Training  
course unit offered  
by any one  
Department



# PBT

## Plant Biotechnology

### *Offered by the Department of Botany*

*“Plant Biotechnology is an applied science that is centered on harnessing beneficial genes from plants to produce a host of helpful functions for human well-being”*

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#### **B.Sc. Degree Programme with Plant Biotechnology**

**Course code: PBT**

**Duration: 3 Years**

**Subject combinations: Refer pages 156-161**

#### ***For whom?***

Biological science stream students who are interested in pursuing careers in academic, technological,

industrial or environmental organizations. The intake is limited to a maximum of 60 students in an academic year. Minimum number for course is 20 in an academic year.

#### ***Career opportunities***

As the country is forging ahead to be the economic hub of Asia, graduates in Biotechnology will definitely have a variety of rewarding careers in both public and private sector establishments. Qualified

biotechnologists are needed across many sectors, including academic, technological, industrial and environmental organizations. In particular, the demand for biotechnology graduates is high within the fields, medicine and agriculture, where the tinkering of genes to maximize the beneficial traits of the gene products, takes precedence. In addition, with the strengthening of the 'transgenic' wave in agriculture, there will be even more opportunities for biotechnology graduates to embark on fruitful careers in the area of contemporary biotechnology.

### *Course overview*

The rapid growth of biological knowledge is placing its prominence among other sciences. Currently there are many real-world problems that entail plants: escalating pressure for food, the need for renewable energy resources, habitat preservation are being driven by the ever growing human population. In order to overcome these problems require detailed knowledge of life's component parts at every level from molecules to ecosystems.

Biotechnology is the practical application of biological science to improve the lives of humans and quality of the environment, by exploiting the potential of biological organisms as 'factories' or 'bio-industrial units' capable of manufacturing invaluable products, including food, pharmaceuticals, nutraceuticals, vaccinations, hormones, enzymes and miscellaneous biological agents. Many of these applications are not

new but through the understanding of the genetic code followed by genetic engineering, biotechnology has turned out to be an exciting and fascinating field of science. It is only through Biotechnology that it would be possible to overcome the twenty first century real-world problems.

### *Course structure*

The subject biotechnology constitutes one third of the B. Sc. (General) degree program in an allowed subject combination. All students who wish to offer plant biotechnology will have to follow common compulsory and core course units during the first three semesters of the degree programme prior to the selection of plant biotechnology as their chosen field of study. At the end of three years, total credit value gained by a student who has opted for general degree following a particular course should not be less than 27.0. A Student can also opt for a Honours degree spending an additional year offering more advanced areas pertaining to respective subject they have selected.

## **B.Sc. Honours Degree Programme in Plant Biotechnology**

**Duration: 4 Years**

### *Career opportunities*

The career opportunities available for graduates of

the Honours Degree Program in Plant Biotechnology, will be centered on academics as well as practicing their trade as researchers in a diverse range of hierarchical positions undertaking in depth studies on contemporary research topics with the objectives of bridging gaps in knowledge and unraveling complex areas of Applied Plant Biotechnology.

### *Course overview*

The department offers Honours degree programs in Plant Biotechnology for few students with the intention of producing graduates having an in-depth knowledge, better skills and competent in handling various aspects of the subject selected. The core curriculum of the special degree program is designed to provide advanced knowledge in the subject and simultaneously to impart hands-on experience in the world of work through an industrial training program in a government research institute or in a private sector organization for a short period of time. The final year research project assists students to improve on problem solving ability, critical thinking, and time management and there-by prepare them to become professionals.

### *Selection*

Selection of students to follow a Honours degree in Plant Biotechnology is based on their performance during the first two academic years. The intake is limited to a maximum of 10 students per course.

### *Instruction and assessment*

Through the knowledge and experience of the academic staff of the Department of Botany and of visiting staff, we endeavor to expose students to a range of teaching and learning activities, based on the course units identified under each of the subjects offered by the department. The modules conducted include lectures, laboratory practical classes, tutorials, field classes, individual and group assignments / projects. Majority of these modules are assessed through semester end theory examination, practical examination, presentations and reports/ theses, while a few are assessed continuously.

### *For further information please contact:*

Dr. M.L.A.M.S. Munasinghe  
Head/Department of Botany  
*E mail: [mayuri@sci.sjp.ac.lk](mailto:mayuri@sci.sjp.ac.lk)*

# Plant Biotechnology

## B.Sc. Degree Plant Biotechnology Course

### FIRST YEAR

#### Semester I

PBL/PBT/MBL 121 2.0	Cell Biology and Fundamentals of Plant Biochemistry	c
PBL/PBT/MBL 127 2.0	Plant Diversity	c
PBL/PBT/MBL 131 1.0	Practical Module I	a

#### Semester

PBL/PBT/MBL 123 1.0	Principles of Ecology	c
PBL/PBT/MBL 126 1.0	Classical Genetics	c
PBL/PBT/MBL 129 2.0	Plant Form and Function	c
PBL/PBT/MBL 132 1.0	Practical Module II	a

### SECOND YEAR

#### Semester I

PBL/PBT/MBL 221 2.0	Bioenergetics and Plant Metabolism	c
PBL/PBT/MBL 233 2.0	Microbial Life	c
PBL/PBT/MBL 231 1.0	Practical Module I	a

#### Semester II

PBT 224 2.0	Gene Technology	c
PBT 228 1.0	Genes and Gene Action	c
PBT 229 1.0	Systametics of Flowering Plants	c
PBT 232 1.0	Practical Module II (Including Angiosperm Taxonomy)	a

### THIRD YEAR

#### Semester I

PBT 321 1.0	Crop Biotechnology	c
PBT 322 1.0	Plant Tissue Culture	c
PBT 335 2.0	Plant Pathology	c
PBT 331 1.0	Practical Module I	a

#### Semester II

PBT 324 1.0	Medical Biotechnology	o
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## Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional for all  
those doing Plant  
Biotechnology

-s-  
Optional for all  
student in the faculty  
(Students should  
get the approval  
of the Head of the  
Department before  
commencement of  
lectures)

-†-  
A student may  
register for only one  
Internship Training/  
Industrial Training  
course unit offered by  
any one Department

Course Type			
-a- Compulsory	PBT 325 2.0	Industrial Biotechnology	o
	PBT 327 1.0	Bioinformatics and Molecular Modeling	c
	PBT 330 1.0	Horticulture and Landscaping	c
	PBT 332 1.0	Practical Module II	a
	PBL/PBT/MBL 334 1.0	Internship Training	o†
-c- Core	<b>THIRD YEAR ( Honours Part I)</b>		
-o- Optional for all those doing Plant Biotechnology	<b>Semester I</b>		
	PBT 380 1.0	Plant Genetic Resources Management	c
	PBT 383 2.0	Genome Mapping	c
	PBT 384 2.0	Plant Cell Culture	c
	PBT 385 4.0	Seminar	c
-s- Optional for all student in the faculty (Students should get the approval of the Head of the Department before commencement of lectures)	PBT 392 1.0	Biotechnology in Floriculture	c
	PBT 399 2.0	Plant Biochemistry	c
	<b>Semester II</b>		
	PBT 385 4.0	Seminar	c
	PBT 386 1.0	Advanced Microbial Genetics	c
	PBT 387 2.0	Biostatistics	c
	PBT 389 1.0	Marine Biotechnology	c
	PBT 390 2.0	Advanced Phytotaxonomy	c
	PBT 393 1.0	Plant Synthetic Biology	o
	PBT 394 1.0	Nanobiology	c
<b>FOURTH YEAR ( Honours Part II )</b>			
<b>Semester I</b>			
	PBT 481 8.0	Research Project on Plant Biotechnology	c
	PBT 483 2.0	Cellular Molecular Biology	c
	PBT 485 2.0	Advanced Plant Tissue Culture	c
	PBT 488 2.0	Plant Breeding	c
	PBT 489 1.0	Bioethics and Biosafety	c
	PBT 491 2.0	Standardization and Quality Management	c
	PBT 492 2.0	Organization and Dynamics of Genomes	c
	PBT 494 2.0	Product Development and Marketing Management	c

### Semester 11

PBT 481 8.0	Research Project on Plant Biotechnology	c
PBT 484 2.0	Palynology	c
PBT 486 1.0	Cell Signaling	c
PBT 490 1.0	Plant Developmental Genetics	c
PBT 493 2.0	Advanced Plant Virology	c
PBT 496 2.0	Plant Quarantine	c
PBT 499 2.0	Molecular Diagnosis of Plant diseases	c

### Course Type

-a-

Compulsory

-c-

Core

-o-

Optional for all  
those doing Plant  
Biotechnology

-s-

Optional for all  
student in the faculty  
(Students should  
get the approval  
of the Head of the  
Department before  
commencement of  
lectures)





# PBL

## Plant Biology

### *Offered by the Department of Botany*

*“Plant Biology is both a fundamental and applied science dealing with the structure, function, interactions, environment, evolution and taxonomy of plants”*

---

#### **B.Sc. Degree programme with Plant Biology**

**Course Code: PBL**

**Duration: 3 years**

**Subject combinations: Refer pages 156-161**

#### ***For whom?***

Biological science stream students who are interested in pursuing careers in academic, technological, industrial, or environmental organizations. The intake is limited to a maximum of 60 students in an

academic year. Minimum number for course is 20 in an academic year.

#### ***Career opportunities***

The range of employment opportunities available for plant biology graduates include, as plant biologists, taxonomists, researchers, secondary school teachers, agriculturists, quarantine and border control agents, roles in western and traditional medicine, park rangers and tour guides, and employment in conservation and biodiversity projects.

### *Course overview*

The study of plants is vital as they are critical for sustaining life on earth, through generation of oxygen and providing food and medicine for all life forms including man to exist. Plant Biology or Botany is the science of plant life including fungi, algae, and viruses. Plant biology began with early human efforts to identify edible, medicinal and poisonous plants, making it one of the oldest branches of science, which gets updated continuously. With high levels of malnutrition and deficiency diseases in diverse regions of the world including South Asia, there is a need to maximize the potential of food crops, to ensure that mouths are fed, and deficiency diseases are eradicated from the face of the earth. In order to harness the fullest potential of plants as manufacturing units of foods, biological processes that form the foundation of the vitality of plants, should be extensively studied and the labyrinths of interlocking biological pathways elucidated, which essentially requires the aptitude and dedication of a new breed of plant biologists.

Sri Lanka is a nation rich in endemic biodiversity and there is a vast amount of untapped resources to be harnessed from our unique assortment of flora found within our island shores. In order to reap the benefits of our endemic plant biodiversity, it is essential that a pool of graduates is developed with an in-depth knowledge in contemporary plant biology. Therefore, the discipline, plant biology, engineers a strong foundation for a student to impending pursue

a rewarding career while securing his/her interests in the appreciation of the diversity in plant life.

### *Course structure*

The subject plant biology constitutes one third of the B.Sc. (General) degree programme in an allowed subject combination. All students who wish to offer plant biology will have to follow common compulsory and core course units during the first three semesters of the degree programme prior to the selection of plant biology as their chosen field of study. At the end of three years, total credit value gained by a student who has opted for general degree following a particular course should not be less than 27.0. A student can also opt for a Special degree spending an additional year offering more advanced areas pertaining respective subject he/she has selected

### **B.Sc. Honours Degree Programme in Plant Biology**

**Duration: 4 years**

### *Career opportunities*

The career opportunities available for graduates of the Honours Degree Program in Plant Biology, will be centered on academia as well as practicing their trade as researchers in a diverse range of different positions undertaking in depth studies on contemporary research topics with the objectives of bridging gaps in knowledge and opening investigated areas of fundamental Plant Biology.



### ***Course overview***

The department offers Honours degree programs in Plant Biology for few students with the intention of producing graduates having an in- depth knowledge, better skills and competent in handling various aspects of the subject selected. The core curriculum of the Honours degree program is designed to provide advanced knowledge in the subject and simultaneously to impart hands-on experience in the world of work through an internship program in a government research institute or in a private sector organization for a short period. The final year research project assists students to improve on problem solving ability, critical thinking, and time management and there by preparing them to become professionals.

### ***Selection***

Selection of students to follow an Honours degree in Plant Biology is based on their performance during the first two academic years. The Plant Biology

Honours degree intake is limited to a maximum of 10 students and a minimum of 05 students per course.

### ***Instructions and assessment***

Through the knowledge and experience of academic staff of the Department of Botany and of visiting staff, we endeavor to expose students to a range of teaching and learning activities, based on the course units identified under each of the subjects offered by the department. The modules conducted include lectures, laboratory practical classes, tutorials, field classes, individual and group assignments/ projects. Majority of these modules are assessed through semester end theory examination, practical examination, presentations, and reports/theses, while a few are assessed continuously.

### ***For further information please contact:***

Dr. M.L.A.M.S. Munasinghe  
Head/Department of Botany  
E mail: [mayuri@sci.sjp.ac.lk](mailto:mayuri@sci.sjp.ac.lk)

Course Type				
-a- Compulsory	<b>Semester II</b>			
	PBL	326 1.0	Applied Microbiology	o
	PBL	332 1.0	Practical Module II	a
	PBL	333 2.0	Economic Botany	c
	PBL/PBT/MBL	334 1.0	Internship Training	o <sup>‡</sup>
-c- Core	<b>Plant Biology</b>			
	<b>THIRD YEAR (Honours Part I)</b>			
	<b>Semester I</b>			
	PBL	380 2.0	Plant Biochemistry	c
	PBL	381 2.0	Molecular Systematics	c
	PBL	382 1.0	Soil and Soil Fertility	c
	PBL	383 2.0	Genome Mapping	c
	PBL	385 4.0	Seminar	c
	PBL	392 1.0	Paleobotany and Plant Evolution	c
	<b>Semester II</b>			
	PBL	384 1.0	Fundamentals of GIS	c
	PBL	385 4.0	Seminar	c
	PBL	386 1.0	Advanced Genetics	c
	PBL	387 2.0	Biostatistics and Computer Applications	c
	PBL	388 1.0	Wood Science and Technology	o
	PBL	390 2.0	Advanced Phytotaxonomy	c
	PBL	391 1.0	Literature Survey and Assignment	c
	PBL	393 1.0	Environmental Toxicology	o
	<b>FOURTH YEAR (Honours Part II)</b>			
	<b>Semester I</b>			
	PBL	481 8.0	Research Project on Plant Biology	c
	PBL	483 1.0	Recent Trends in Ethnobotany	c
	PBL	484 2.0	Advanced Plant Virology	c
	PBL	485 2.0	Advanced Plant Tissue Culture	c
-o- Optional for all those doing Plant Biotechnology				
-s- Optional for all students in the faculty (Students should get the approval of the Head of the Department before commencement of lectures)				
-‡- A student may register for only one Internship Training/ Industrial Training course unit offered by any one Department				

PBL	486 1.0	Plant Genetic Resources Management	c
PBL	488 2.0	Plant Breeding	c
PBL	489 1.0	Bioethics and Biosafety	c
PBL	491 2.0	Standardization and Quality Management	c
PBL	498 2.0	Postharvest Management in Fruits and Vegetables	c

### Semester II

PBL	480 2.0	Crop Protection	c
PBL	481 8.0	Research Project on Plant Biology	c
PBL	482 2.0	Advanced Plant Pathology	c
PBL	484 2.0	Palynology	c
PBL	492 2.0	Advanced Applied Microbiology	c
PBL	496 2.0	Plant Quarantine	c

### Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional for all  
those doing Plant  
Biotechnology

-s-  
Optional for all  
students in the  
faculty (Students  
should get the  
approval of the  
Head of the  
Department before  
commencement of  
lectures)





# PHY Physics

## *Offered by the Department of Physics*

*Physics is a creative activity of human mind. Studying Physics provides you with a delightful and a rewarding experience that will make you suitable for any future career.*

**B.Sc. Degree programme with Physics as a subject**

**Course Code: PHY**

**Duration: 3 years**

**Subject combinations: Refer pages 156-161**

### *For whom?*

The course is primarily for the students of physical science stream who are interested in studying physics and are hoping to pursue knowledge and skills to

succeed in a career in science, education, industry and in management. The Department also welcomes students with a biological science background, who are seeking career opportunities where both physics and biology are involved, to read physics as a subject. They are even eligible to read for a Honours Degree in Physics provided they reach the required standard.

### *Career opportunities*

The Bachelor of Science General Degree is designed to provide you with the necessary knowledge and skills

to succeed in the career of your choice. Opportunities include positions in scientific and educational services, position in industry etc. The B.Sc. Degree could open doors to these possibilities and many more.

### **Course overview**

Physics is a natural science which encompasses a vast array of sub-fields ranging from the Solid state and sub-atomic regimes like Nuclear and Quantum physics to the study of the universe through Relativity and Astrophysics and the everyday applications such as Electronics and Optics.

A degree in physics offers you not only the subject knowledge but also the tools to be creative and think differently. It equips you with the analytical and personal skills that are essential for personal development, for any path you decide to take in the future.

### **Course structure**

The Bachelor of Science General Degree spans over three years. The students are required to take course units in Physics with a minimum cumulative credit value of 27.0 during the three years. The course units comprise of 'compulsory', 'core', 'non-core', 'optional', subjects so that the students are provided with the core knowledge of the physics stream while allowing some level of flexibility to pursue optional interest.

## **B.Sc. Honours Degree in Physics**

**Duration: 4 years**

### **For whom?**

The Honours Degree programme is aimed at the students who are interested in taking Physics as a career and would like to pursue an academic/research line in the future.

### **Course overview**

The B.Sc. Honours degree caters to those of you who are fascinated by the beauty of physics and hope to pursue an academic and research career. However, this is well-balanced by some practical courses including an industrial placement scheme which exposes the students to the industrial and scientific environment of the country.

### **Course structure**

The students are required to take course units in Physics with a minimum cumulative credit value of 30.0 each in the third and fourth years. The course units consist of 'compulsory', 'core' non- core, 'optional', subjects so that the students are provided with the core knowledge of the physics stream while allowing some level of flexibility to pursue optional interest.





### *Selection policy*

Selection of students to follow the B.Sc. Honours Degree in Physics is based on student's performance in the first two academic years. The intake is typically limited to a maximum of 20 students.

### *Mode of instruction and assessment*

Students enrolled in both General and Honours Degree programs will be guided by academic staff with established track record. The modules include lectures, tutorials, laboratory practicals, individual and group projects, seminars, internship, and assignments. These are assessed through end-of-semester written examinations, practical examinations, presentations, and reports.

### *For further information, please contact;*

Prof. N.G.S. Shantha Gamage  
Head/ Department of Physics  
*E-mail: [head.physics@sjp.ac.lk](mailto:head.physics@sjp.ac.lk)*

to succeed in the career of your choice. Opportunities include positions in scientific and educational services, position in industry etc. The B.Sc. Degree could open doors to these possibilities and many more.

### **Course overview**

Physics is a natural science which encompasses a vast array of sub-fields ranging from the Solid state and sub-atomic regimes like Nuclear and Quantum physics to the study of the universe through Relativity and Astrophysics and the everyday applications such as Electronics and Optics.

A degree in physics offers you not only the subject knowledge but also the tools to be creative and think differently. It equips you with the analytical and personal skills that are essential for personal development, for any path you decide to take in the future.

### **Course structure**

The Bachelor of Science General Degree spans over three years. The students are required to take course units in Physics with a minimum cumulative credit value of 27.0 during the three years. The course units comprise of 'compulsory', 'core', 'non-core', 'optional', subjects so that the students are provided with the core knowledge of the physics stream while allowing some level of flexibility to pursue optional interest.

## **B.Sc. Honours Degree in Physics**

**Duration: 4 years**

### **For whom?**

The Honours Degree programme is aimed at the students who are interested in taking Physics as a career and would like to pursue an academic/research line in the future.

### **Course overview**

The B.Sc. Honours degree caters to those of you who are fascinated by the beauty of physics and hope to pursue an academic and research career. However, this is well-balanced by some practical courses including an industrial placement scheme which exposes the students to the industrial and scientific environment of the country.

### **Course structure**

The students are required to take course units in Physics with a minimum cumulative credit value of 30.0 each in the third and fourth years. The course units consist of 'compulsory', 'core' non-core, 'optional', subjects so that the students are provided with the core knowledge of the physics stream while allowing some level of flexibility to pursue optional interest.

# Physics

## B.Sc. Degree Course Units

Each student should take course units having minimum cumulative credit value of 27.0

### FIRST YEAR

#### Semester I

PHY 101 1.0	Fundamentals of Electronics (Unaudited Unit)	o
PHY 102 2.0	Mathematics for Bio Science Students-Semester I&II (Unaudited Unit)	o
PHY 103 2.0	Mechanics and Properties of Matter	c
PHY 104 1.0	Electricity and Magnetism	c
PHY 105 1.0	Waves and Vibrations	c
PHY 106 2.0	Practical (Elementary)- Semester I&II	a

#### Semester II

PHY 102 2.0	Mathematics for Bio Science Students-Semester I&II (Unaudited Unit)	o
PHY 107 2.0	Applied Electricity and Basic Electronics	c
PHY 108 2.0	Thermodynamics	c
PHY 106 2.0	Practical(Elementary)-Semester I&II	a

### SECOND YEAR

#### Semester I

PHY 201 2.0	Optics I	c
PHY 202 2.0	Analog and Digital Electronics	c,n
PHY 203 1.0	Practical (Optics)-Semester I&II	a
PHY 204 1.0	Practical (Electronics)-Semester I&II	a

#### Semester II

PHY 205 1.0	Statistical Physics I	c
PHY 206 1.0	Mathematical Physics I	c
PHY 207 1.0	Special Theory of Relativity	c,n
PHY 208 1.0	Atomic and Nuclear Physics	c
PHY 203 1.0	Practical (Optics)-Semester I&II	a
PHY 204 1.0	Practical (Electronics)-Semester I&II	a

## Course Type

-a-  
Compulsory

-c-  
Core

-n-  
Optional for those  
not doing Physics

-o-  
Optional for those  
doing Physics

-s-  
Optional for all  
students in the  
faculty

Course Type	THIRD YEAR		
	<b>Semester I</b>		
-a- Compulsory	PHY 301 1.0	Electromagnetic Theory I	c
	PHY 302 1.0	Quantum Mechanics I	c
	PHY 303 1.0	Computational tools of Physics	o
-c- Core	PHY 304 2.0	Group Project- Semester I&II	o
	PHY 305 1.0	Geophysics I	s
	PHY 306 1.0	Solid State Physics I	o
-o- Optional for those doing Physics	PHY 307 1.0	Practical (Applied) -Semester I&II	a
	PHY 308 1.0	Practical (Computational)-Semester I&II	a
	<b>Semester II</b>		
-s- Optional for all students in the faculty	PHY 309 1.0	Introduction to Microprocessors	c <sup>#</sup>
	PHY 310 1.0	Space Physics	s
	PHY 311 1.0	Computer Hardware & Networking	o*
	PHY 312 1.0	Industrial Physics	s
	PHY 313 1.0	Physics and Environment	s
	PHY 314 1.0	Astronomy	o
-#- Those who are doing Electronics & Embedded Systems as a subject must take PHY 311 1.0 Computer Hardware and Networking instead of PHY 309 1.0 Intro to Microprocessors	PHY 315 1.0	Metrology	o
	PHY 316 1.0	Paradigms of Physics and Sustainability	s
	PHY 317 1.0	Reflection Seismology	o
	PHY 318 1.0	Nanophysics I	o
	PHY 319 1.0	Physics Education	o
	PHY 320 1.0	Applied Optics	o
	PHY 321 1.0	Medical Physics	o
	PHY 322 1.0	Biophysics	o
	PHY 307 1.0	Practical (Applied) -Semester I&II	a
	PHY 308 1.0	Practical (Computational)-Semester I&II	a
	<b>Comments :</b>		
	PHY 313 1.0: Some familiarity with Advanced Level mathematics will be essential for this course.		
	PHY 207 1.0: Knowledge in algebra is a prerequisite for this course.		
-‡- A student may register for only one Internship Training / Industrial Training course unit offered by any one Department.	In addition to the above optional units, the students may offer any one of the B.Sc. (Special) Degree units if they have necessary prerequisite knowledge and if the time table permits. Decision with regard to the suitability of a student to follow such a unit shall be made by the lecturer in charge of that unit.		

## B.Sc. (Honors) Degree Course Units

### PART I

#### Semester I

PHY 301 1.0	Electromagnetic Theory I	c
PHY 302 1.0	Quantum Mechanics I	c
PHY 303 1.0	Computational tools of Physics	o
PHY 305 1.0	Geophysics I	c
PHY 306 1.0	Solid State Physics I	c
PHY 351 2.0	Mathematical Physics II	c
PHY 353 2.0	Optics II	o
PHY 358 2.0	Nuclear Physics II	c
PHY 359 2.0	Telecommunication	c
PHY 361 2.0	Seminar	c
PHY 307 1.0	Practical (Applied) -Semester I&II	a
PHY 308 1.0	Practical (Computational)-Semester I&II	a
PHY 355 4.0	Practical (Advanced)-Semester I&II	a

#### Semester II

PHY 309 1.0	Introduction to Microprocessors	c
PHY 310 1.0	Space Physics	s
PHY 311 1.0	Computer Hardware & Networking	c
PHY 312 1.0	Industrial Physics	s
PHY 313 1.0	Physics and Environment	s
PHY 314 1.0	Astronomy	o
PHY 315 1.0	Metrology	o
PHY 316 1.0	Paradigms of Physics and Sustainability	s
PHY 317 1.0	Reflection Seismology	o
PHY 318 1.0	Nanophysics I	o
PHY 319 1.0	Physics Education	o
PHY 320 1.0	Applied Optics	o
PHY 321 1.0	Medical Physics	o
PHY 322 1.0	Biophysics	o

## Course Type

-a-  
Compulsory

-c-  
Core

-n-  
Optional for those  
not doing Physics

-o-  
Optional for those  
doing Physics

-s-  
Optional for all  
students in the  
faculty

Course Type			
-a- Compulsory	PHY 323 1.0	Cosmology	o
	PHY 356 2.0	Solid State Physics II	c
	PHY 357 2.0	Geophysics II	c
	PHY 360 2.0	Workshop Technology	c
	PHY 307 1.0	Practical (Applied) -Semester I&II	a
-c- Core	PHY 308 1.0	Practical (Computational)-Semester I&II	a
	PHY 355 4.0	Practical (Advanced)-Semester I&II	a
-n- Optional for those not doing Physics	<b>PART II</b>		
	<b>Semester I</b>		
	PHY 452 2.0	Statistical Physics II	c
	PHY 453 2.0	Microprocessor and Computer Interfacing	c
	PHY 454 8.0	Project – Semester I&II	c
-o- Optional for those doing Physics	PHY 455 3.0	Internship	c
	PHY 457 2.0	Particle Physics and Instrumentation	c
	PHY 462 3.0	Classical Mechanics	c
-s- Optional for all students in the faculty	PHY 463 1.0	Nanophysics II	o
	<b>Semester II</b>		
	PHY 451 3.0	Electromagnetic Theory II	c
	PHY 456 3.0	Quantum Mechanics II	c
	PHY 458 2.0	Space and Atmospheric Physics	c
	PHY 459 2.0	Computational Physics	c
	PHY 460 1.0	Mathematical Physics III	o
	PHY 454 8.0	Project – Semester I&II	c

### Comments:

PHY 313 1.0: Some familiarity with Advanced Level mathematics will be essential for this course.

PHY 207 1.0: Knowledge in algebra is prerequisite for this course.

PHY 357 2.0: PHY 305 1.0 Geophysics I is prerequisite for this course.



# PSC

## Polymer Science

### *Offered by the Department of Polymer Science*

*“Polymer Science holds a unique place within material science as it creates useful materials by changing molecular scale properties of monomers and by applying different chemical and processing techniques, catering for a wide range of applications.”*

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#### **B. Sc. Honours Degree Program in Polymer Science**

**Course code: PSC**

**Duration: 4 years**

#### ***Career opportunities***

This degree is designed for students to obtain an in-depth knowledge in polymer science and to thereby produce professionals for the polymer industry and

academia. As there are over five thousand polymer related industries including plastics, rubber, textile, etc. in Sri Lanka, the students who graduate with a degree in polymer science have a high opportunity to enter into the employment market and to contribute to the country's economy through research and development in the field of polymer science and by sharing their knowledge with the industries and helping these industries to prosper. Also, the program would open up great opportunities for student to





follow postgraduate degrees through research in recognized universities and research institutes in the world.

#### ***Course overview***

B.Sc. Honours Degree Program in Polymer Science is designed to create competent graduates to meet

the demands of polymer related industries, research institutes and postgraduate institutes. The syllabus includes fundamentals of polymer science, more specialized and most recent advanced courses in the discipline, along with a large number of optional courses in terms of polymer engineering and technology and other fields to meet the current

demand in the country. The program is also designed for students to develop a variety of different soft skills essential for their career success and to excel in a very competitive job market.

### ***Course structure***

First two years comprises of compulsory and core course units which would lay a foundation for them to specialize in polymer science and technology. Based on students' performance in the first two years, limited number of students will be selected to follow B.Sc. Honours Degree program in polymer science depending on the available resources. Courses in third and fourth years comprise of a large number of specialized core and optional courses for students to be an experts in the field of polymer science. The practical course units are specially designed to cover almost all the applications in the polymer industry with hands on experience to apply theoretical concepts that they learnt along with a number of industrial/field visits for students to experience how things related to polymer science are utilized in the world. Students are requires to carry out a research project which would enable students to gather hands on experience on scientific research and to obtain a variety of soft skills such as analytical thinking and reasoning, problem solving, etc. through research in the fourth year. A dissertation will be evaluated through an oral presentation and viva voce examination.

### ***Mode of instruction and assessment***

The courses in the syllabus are delivered as lectures, tutorials, practicals, assessments, reports, projects, etc. The medium of instruction is English. The students are assessed through end semester examinations, practical tests, reports and presentation

### ***For further information please contact:***

Dr. Madhubhashini Maddumaarachchi  
Head/Department of Polymer Science  
*E-mail: madhubh@sjp.ac.lk, head.polymer@sjp.ac.lk*

# Polymer Science

Course Type	B.Sc. Honours Degree Course Units			
-a- Compulsory	<b>FIRST YEAR</b>			
	<b>Semester I</b>			
	PSC 101 3.0	Fundamentals of Polymer		c
-c- Core	PSC 102 2.0	Fundamentals of Polymer Physics		c
	<b>Semester II</b>			
-o- Optional	PSC 103 2.0	Polymer Degradation		c
	PSC 104 3.0	Polymeric Materials		c
	<b>SECOND YEAR</b>			
	<b>Semester I</b>			
	PSC 201 1.0	Polymer Thermodynamics		c
	PSC 202 2.0	Polymer Characterization		c
	PSC 203 2.0	Polymer Technology		c
	<b>Semester II</b>			
	PSC 204 2.0	Polymer Viscoelasticity and Rheology		c
	PSC 205 1.0	Polymer Kinetics		c
	PSC 206 2.0	Polymer Processing and Products Testing		c
	<b>THIRD YEAR</b>			
	<b>Part I</b>			
	<b>Semester I</b>			
	PSC 301 2.0	Basic Chemical Engineering and Unit Operations in Polymer Industry		o
	PSC 302 2.0	Applied Polymer Science I		o
	PSC 303 2.0	Polymers for Textile Industry		o
	PSC 304 2.0	Statistics		o
	PSC 305 1.0	Occupational Health and Safety		o
	PSC 306 3.0	Management for Business Insight		o
	PSC 307 1.0	Polymer Practical Level 1A		a
	PSC 315 2.0	Organic Synthesis		c

PSC 316 2.0	Advanced Concepts in Thermodynamics and Statistical Thermodynamics	c
PSC 317 4.0	Polymer practical Level 2	a

### Semester II

PSC 308 2.0	Polymer Blends and Composites	o
PSC 309 2.0	Polymer Waste: The Environment and Sustainable Development	o
PSC 310 2.0	Fundamentals of Accounting and Finance	o
PSC 311 1.0	Mould and Tool Designing	o
PSC 312 3.0	Testing of Polymers	o
PSC 313 1.0	Polymer Practical Level 1B	a
PSC 318 1.0	Molecular Modelling and Computational Chemistry	o
PSC 319 2.0	Scattering and Microscopic Techniques for Polymer Characterization	c
PSC 320 2.0	Thermal Analysis Techniques for Polymer Characterization	c
PSC 321 2.0	Research Methodology & Scientific Writing	o

## FOURTH YEAR

### Part II

#### Semester I

PSC 401 2.0	Computational Tools for Polymer Industry and Finite Element Analysis	o
PSC 402 3.0	Modelling 2D and 3D drawings in Polymer Industry	o
PSC 403 1.0	Applications of Engineering Concepts in Polymer Industry	o
PSC 404 2.0	Advanced Polymeric Materials	c
PSC 405 1.0	Polymer Synthesis	c
PSC 406 8.0	Research Project	a

#### Semester II

PSC 407 3.0	Applied Polymer Sciences 11	c
PSC 408 2.0	Chemistry and Physics of Polymer Surfaces	c
PSC 409 2.0	Current Trends in Polymer Science	c
PSC 410 2.0	Polymer Dynamics	c
PSC 411 2.0	Hydrogels	o
PSC 412 1.0	Quality Control and Assurance	o
PSC 413 1.0	Upcycling	o
PSC 414 2.0	Life Cycle Analysis for Polymer Products and Processes	o

### Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional



# PSC

## Polymer Science and Technology

### *Offered by the Department of Polymer Science*

*“Polymer Science is a blend of organic chemistry, physical chemistry, material physics, statistical mathematics, and inorganic chemistry. Polymer Technology is a combination of polymer science, some aspects of chemical engineering, rheology, and reactor designing for polymerization, mechanical aspects and mould designing. Its interdisciplinary nature makes it a fascinating and challengeable subject”*

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#### **B. Sc. Degree Program with Polymer Science & Technology**

**Course code: PSC**

**Duration: 3 years**

#### ***For whom?***

Polymer Science and Technology is globally

established with a wide scope in cost effective and energy saving benefits for the sustainability of the modern era. Students from physical and bio science streams who have an interest in the field of polymer science and technology are eligible. The current intake is limited to maximum of 90 students per academic year.





### *Opportunities*

Polymer industry has become a major contributor towards national economy since the early 1930's. The function of the University of Sri Jayewardenepura in workforce development in the Polymer industry is quite dominant. With the winning combination of a strong foundation of theoretical knowledge gained through three years of course units and practical hands-on experience, students find it easy to get established in the Sri Lankan polymer-based industries

as polymer chemists, technologists, technicians, and management personnel.

### *Course overview*

The Department of Polymer Science University of Sri Jayewardenepura has developed into an active center of providing well educated and responsible young scientists in the field of Polymer Science and Technology. The subject is offered in such a way to provide mastery in scientific theory, technology,

initiative, and creativity in the field of Polymer Science and Technology. We are constantly striving to improve our policies and develop our curriculum, in such a way to awaken creativity while nourishing their minds with knowledge. Thus, many strategic activities such as frequent industrial seminars, industrial visits, curriculum developments, workshops, conferences and since of late, organizing an annual symposiums are all part of the program.

### ***Course structure***

Chemistry, Physics and Polymer Science and Technology (PSC) are the three compulsory subjects for students who seek to join in the PSC program. Course units in chemistry, physics, and PSC in the first two years are compulsory and cover the core area of the subjects. Students in the PSC stream are eligible for a special degree program in chemistry, physics, or Polymer Science if they can meet the criterion at the end of the second year. A range of optional course units are offered with industrial training in polymer-based industry for the students in the third year.

### **For further information please contact:**

Dr. Madhubhashini Maddumaarachchi  
Head/Department of Polymer Science  
*E-mail: madhubh@sjp.ac.lk, head.polymer@sjp.ac.lk*



# Polymer Science & Technology

## B.Sc. Degree Program with Polymer Science & Technology

### FIRST YEAR

#### Semester I

PSC 101 3.0	Fundamentals of Polymer Chemistry	c
PSC 102 2.0	Fundamentals of Polymer Physics	c

#### Semester II

PSC 103 2.0	Polymer Degradation	c
PSC 104 3.0	Polymeric Materials	c

### SECOND YEAR

#### Semester I

PSC 201 1.0	Polymer Thermodynamics	c
PSC 202 2.0	Polymer Characterization	c
PSC 203 2.0	Polymer Technology	c

#### Semester II

PSC 204 2.0	Polymer Viscoelasticity and Rheology	c
PSC 205 1.0	Polymer Kinetics	c
PSC 206 2.0	Polymer Processing and Products Testing	c

### THIRD YEAR

#### Semester I

PSC 301 2.0	Basic Chemical Engineering and Unit Operations in Polymer Industry	o
PSC 302 2.0	Applied Polymer Science I	o
PSC 303 2.0	Polymers for Textile Industry	o
PSC 304 2.0	Statistics	o
PSC 305 1.0	Occupational Health and Safety	o
PSC 306 3.0	Management for Business Insight	o
PSC 307 1.0	Polymer Practical Level 1A	a

## Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Optional

## Course Type

-a-

Compulsory

-c-

Core

-o-

Optional

## Semester II

PSC 308 2.0	Polymer Blends and Composites	o
PSC 309 2.0	Polymer Waste: The Environment and Sustainable Development	o
PSC 310 2.0	Fundamentals of Accounting and Finance	o
PSC 311 1.0	Mould and Tool Designing	o
PSC 312 3.0	Testing of Polymers	o
PSC 313 1.0	Polymer Practical Level 1B	a
PSC 314 0.0	Industrial Training	o



# SSM

## Sports Science & Management

### *Offered by the Department of Sports Science*

*Sports Science and Management is a discipline that studies the application of scientific principles, techniques, and management practices with the aim of improving sporting performance.*

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#### **B.Sc. Honours Degree in Sports Science and Management**

**Course Code: SSM**

**Duration: 4 years**

#### ***For whom?***

Advanced level students in the stream of Arts/ Biological Science / Physical Science / Commerce/ Technology or any other combination (any three subjects) who have obtained the stipulated Z score

set for the Sports Science and Management Degree programme by the University Grant Commission. The maximum number of students admitted to this course will be limited to 90.

#### ***Course overview***

The study of Sport Science and Management incorporates areas of sports physiology, training principles, strength and conditioning, sports medicine, applied sports physiology, sports nutrition, sports biomechanics, sports psychology, sports



management, practical knowledge of selected sports teaching and coaching practicals, etc.

### *Course structure*

The Sports Science and Management degree is an Honours degree with full-time coursework consisting of four academic years (eight semesters). Students need to complete 120 credits of coursework/research to qualify for the award of the Bachelor of Science Honours in Sports Science and Management.

### *Modes of instruction and assessment*

Assessment of course units are varied and comprised into a combination of coursework, continuous assessments, research reports and internship placements. Students are given the opportunity to give oral presentations as a part of formative assessment

tasks and are encouraged to develop practitioner skills alongside academic skills through the use of different assessment methods.

### **For further information please contact:**

Dr. H. P. N. Perera

Head/Department of Sports Science

E-mail: [piumiri@sjp.ac.lk](mailto:piumiri@sjp.ac.lk)

# Sports Science and Management

## B.Sc. Honours Degree in Sports Science and Management

Each student should take course units having a minimum cumulative credit value of 120.

### FIRST YEAR

#### Semester I

SSM 101 2.0	Introductory Biology	c
SSM 102 2.0	Introduction to Physics	c
SSM 103 1.0	Principles of Mathematics	c
SSM 109 1.0	Introduction to Information Technology I	c
SSM 153 2.0	Introduction to Sports Psychology	c
SSM 162 2.0	Sport Management	c
SSM 186 1.0	Fundamental Skills of Swimming	c
SSM 187 2.0	Fundamental Movements and Skills Analysis of Athletics I	c
SSM 188 1.0	Rhythmic Movements in Aerobics	c

#### Semester II

SSM 106 2.0	Basic Biochemistry	c
SSM 108 2.0	Sports Biomechanics	c
SSM 110 1.0	Introduction to Information Technology II	c
SSM 111 1.0	Introduction to Mathematical Software	c
SSM 124 1.0	Physiology I	c
SSM 125 1.0	General Anatomy I	c
SSM 155 1.0	Sports Sociology	c
SSM 189 1.0	Fundamental Movements and Skills Analysis of Athletics II	c
SSM 190 3.0	Fundamental Movements and Skills Analysis of Ball Games	c
SSM 191 1.0	Fundamental Movements and Skills Analysis of Gymnastics	c
SSM 192 2.0	Aerobics for Fitness and Health Promotion	c

### Course Type

-c-

Core

-o-

Optional

-e-

Elected

Course Type	SECOND YEAR		
	<b>Semester I</b>		
-c- Core	SSM 201 2.0	Human Nutrition	c
	SSM 223 2.0	Physiology II	c
	SSM 224 2.0	General Anatomy II	c
-o- Optional	SSM 241 1.0	Healthy Living Styles	c
	SSM 262 3.0	Leadership and Human Resource Management in Sports Industry	c
	SSM 270 2.0	General Theory of Sports Training	c
	SSM 291 2.0	Fundamental Movements and Skills Analysis of Racket Sports	c
-e- Elected	SSM 292 1.0	Weightlifting and Strength Applications	c
	SSM 215 0.0	Professional Skills Development I	a
-a- Compulsory	<b>Semester II</b>		
	SSM 203 2.0	Analytic Methods in Sports	c
	SSM 225 2.0	Exercise and Sports Physiology	c
	SSM 254 2.0	Applied Sports and Exercise Psychology	c
	SSM 260 2.0	Financial Accounting	c
	SSM 271 2.0	Strength and Conditioning I	c
	SSM 272 1.0	Long Term Athlete Development	c
	SSM 293 2.0	Fundamental Movements and Skills Analysis of Coordination Sports	c
	SSM 294 2.0	Mixed Martial Arts	c
	SSM 216 0.0	Professional Skills Development II	a
	<b>THIRD YEAR</b>		
	<b>Semester I</b>		
	SSM 362 2.0	Sport Marketing	c
	SSM 363 2.0	Management Accounting in Sport	c
	SSM 371 2.0	Strength and Conditioning II	c
	SSM 372 2.0	Introduction to Sports Physiotherapy	c
	SSM 373 2.0	Sports Medicine	c
	SSM 374 2.0	Advanced Analytic Methods in Sports	c
	SSM 376 1.0	Principles of Ayurveda for Sports Practices	c
	SSM 387 2.0	Physical Education Pedagogy	c
	SSM 315 0.0	Professional Skills Development III	a



### Semester II

SSM 352 2.0	Practicum in Sports and Physical Education	c
SSM 364 2.0	Financial Management	c
SSM 365 2.0	Sport Entrepreneurship and Business Development	c
SSM 366 2.0	Sport Organizational Behavior #	o
SSM 367 2.0	Operations Research in Sports #	o
SSM 370 2.0	Research Methodology	c
SSM 375 2.0	Dietetics	c
SSM 388 2.0	Sports for Special Populations	c
SSM 390 1.0	Advanced Training in Selected Sport	c

### FOURTH YEAR

#### Semester I

SSM 453 1.0	Yoga and Relaxation Techniques	c
SSM 460 2.0	Facilities Design and Management	c
SSM 462 2.0	Sports Budgeting and Finance	c
SSM 464 2.0	Sport Tourism and Outdoor Recreation	c
SSM 465 2.0	Advanced Sport Marketing	c
SSM 467 1.0	Sport Policy and Development##	o
SSM 470 8.0	Research Project in Sport Science and Management	a
SSM 472 3.0	Sports Nutrition and Health Promotion	c
SSM 473 1.0	Forensic Science in Sports ##	o
SSM 474 1.0	Olympism and Olympic Movement ##	o
SSM 482 2.0	Sports Law	c

#### Semester II

SSM 463 2.0	Sports Event Management	c
SSM 466 2.0	Sport Strategic Management	c
SSM 470 8.0	Research Project in Sport Science and Management	a
SSM 471 3.0	Internship in Sports Science and Management###	o
SSM 475 3.0	Entrepreneurial Venture Development in Sport Science & Management###	o

### Course Type

-c-Core

-o-Optional

-e-Elected

##- A student must choose at least one of the two optional course units SSM 366 2.0 and SSM 367 2.0 in order to complete the SSM degree programme.

###-A student must choose at least one of the three optional course units SSM 467 1.0, SSM 473 1.0 and SSM 474 1.0 in order to complete the SSM degree programme

###-A Student must choose at least one of the two optional course units of SSM 471 3.0 and SSM 475 3.0 in order to complete the SSM degree programme

-a-Compulsory





# STA Statistics

## *Offered by the Department of Statistics*

*Statistics is the study of collecting, analysing, interpreting and presenting data.*

*“Statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write”  
- H.G. Wells (1866 - 1946) in his book ‘Mankind in the Making (1903)’-*

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### **B.Sc. Degree Programme with Statistics**

**Course code: STA**

**Duration: 3 Years**

**Subject combinations: Refer pages 156-161**

#### ***For whom?***

Students from physical science stream who are interested in pursuing careers in Statistics or related disciplines. The intake at present is limited to a

maximum of 160 students in an academic year.

#### ***Career opportunities***

Graduates who follow Statistics as a subject are employed as statisticians, teachers, business analysts, quality assurance managers, banking officers, planning executives, etc.

#### ***Course overview***

Statistics plays a vital role in all aspects of databased

investigations using well designed experiments and surveys to discover the patterns in data, and to determine the principal causes of important effects. It is the science of drawing reliable conclusions through data collection, analysis, interpretation and presentation under uncertainty. The theory and methods of statistics are essential in a wide variety of fields such as biology, economics, engineering, medicine, public health, psychology, marketing, education, and insurance. Our degree program provides a solid training in theory, methods, and applications of statistics which are necessary for both academia and industry where advanced knowledge is required. It is developed with a strong emphasis on industry-based skills, underpinned by sound scientific knowledge and understanding.

### *Course structure*

A three-year program is offered to students who choose the above subject combinations. All first and second year courses are core units. These courses provide a solid foundation in Statistics and computational skills with an introduction to different fields of applications. Third year general degree students have a range of optional courses in applied areas. In addition to the essential theoretical knowledge, Statistics undergraduates are given an ample opportunity to collect and analyze data and prepare statistical reports related to real world problems. They also gain vital experience in solving real world problems through

the Statistical Consultancy Unit of the Department of Statistics which offers its services to both on campus and off campus researchers. Further, students are given plenty of opportunities for practical work using industry standard computer packages such as MINITAB, SPSS, R, Eviews, etc.

## **B.Sc. Honours Degree in Statistics**

**Duration: 4 years**

### *For whom?*

The honours degree program is designed for students who aspire to be leaders in various functional areas in statistics such as academia, research, government and industry.

### *Career opportunities*

Statisticians are consistently rated among the top jobs when factors such as salary, working conditions, and interest are combined. In general, statisticians can easily fit into careers in any field. The public and private sector rely on statistical information for decision making, regulation, controlling and planning. Some major areas of applications of Statistics are the production of government statistics, pharmaceutical research, industrial quality management, risk assessment in insurance (actuarial statistics), environmental monitoring and assessment, medical research, etc.



Some of our past graduates holding honours degrees in Statistics are now employed as lecturers at various state universities and private educational institutes affiliated to foreign universities, while many others are employed as directors, managers, executive officers of state and private banks, group compliance and systems managers, project officers, logistic analysts, management trainees, research assistants, financial analysts, program assistants, etc. Some are pursuing higher studies abroad.

#### *Course overview*

The B.Sc. honours degree in Statistics is aimed at preparing experts in the field of Statistics. Our degree provides a firm foundation in Statistics, together with relevant mathematical and computing knowledge

required to pursue higher studies in Statistics related disciplines. The degree is recognized by many universities in Canada, Europe, USA, and Australia. Doctoral degree or similar postgraduate qualifications from a recognized university would lead the career path in academia in the widely expanding university system in Sri Lanka.

#### *Course structure*

The core curriculum offered under the honours degree is an excellent preparation for careers where statistical, mathematical and computing skills are highly valued. The courses in the third year of the Statistics honours degree are all core units while in the fourth year a wider choice of specialized optional

courses is offered. Throughout the curriculum, special emphasis is placed on the up-to-date applications of Statistics in industry.

Statistics honours degree students are required to complete a comprehensive guided project which is evaluated by an oral presentation followed by a viva voce examination. In addition, students undergo a four-month, full - time, industrial training. Further, they are provided with the opportunity to solve real world problems through the Statistical Consultancy Unit enabling them to gain experience as a statistical consultant.

### ***Selection Policy***

Selection of students for the B.Sc. honours degree in Statistics is based on student performance in the first two academic years. The number of students typically depends on availability of human and other resources in the department.

### ***Mode of instruction and assessment***

Students enrolled in both B.Sc. and B.Sc.(Honours) Degree programs are taught by highly skilled, knowledgeable academic staff who are up to date with current applications of statistical methods. Most of the basic core teachings are provided through lectures while seminars and group tutorials offer the opportunity to discuss subject matter in greater detail and raise questions in a more informal setting.

Course units are assessed through mid and end of-semester written examinations, practical tests, quizzes, presentations, viva voce examinations, and reports. Diversified learning activities and assessment methods such as seminar presentations, individual and group assignments, case studies, individual and group projects are used to encourage active and participatory learning. This diversification helps to improve soft skills such as oral and written communication, teamwork and time-management skills demanded by the employers.

### **For further information please contact:**

Dr. C. L. Jayasinghe

Head/Department of Statistics

*E mail: chathuri@sjp.ac.lk*

# Statistics

## Course Type

-c-  
Core

-o-  
Optional for those  
following statistics

## B.Sc. Degree Course Units

Each student should take course units having a minimum cumulative credit value of 27.0

### SECOND YEAR

#### Semester I

STA 113 2.0	Descriptive Statistics	c
STA 114 2.0	Probability and Distribution Theory I	c
STA 115 1.0	Elements of Sampling	c

#### Semester II

STA 123 2.0	Probability and Distribution Theory II	c
STA 124 2.0	Data Analysis I	c
STA 125 1.0	Statistical Communication	c

### SECOND YEAR

#### Semester I

STA 213 2.0	Inferential Statistics	c
STA 214 1.0	Nonparametric Statistics	c
STA 215 2.0	Sampling Techniques	c

#### Semester II

STA 224 2.0	Regression Analysis	c
STA 225 2.0	Design and Analysis of Experiments	c
STA 226 1.0	Data Analysis II	c

### THIRD YEAR

#### Semester I

STA 312 2.0	Time Series Analysis	c
STA 313 1.0	Statistical Decision Theory	o
STA 314 2.0	Multivariate Statistical Methods	o
STA 316 2.0	Discrete and Categorical Data Analysis	c

STA 319 2.0	Advanced Regression Analysis	o
STA 326 2.0	Programming and Data Analysis with R	o
STA 351 2.0	Research Methodology	o

### Semester II

STA 315 2.0	Essential Skills in Statistics	c
STA 321 2.0	Statistical Quality Assurance	o
STA 322 2.0	Medical Statistics	o
STA 324 2.0	Operations Research	o
STA 325 2.0	Independent Study	o <sup>#</sup>
STA 330 2.0	Data Analysis and Preparation of Reports	c
STA 332 2.0	Compilation of Official Statistics	o*
STA 333 2.0	Econometric Models	o
STA 348 1.0	Internship Training	o <sup>‡</sup>

## B. Sc. Honours Degree Course Units

### Part I

#### Semester I

STA 312 2.0	Time Series Analysis	c
STA 313 1.0	Statistical Decision Theory	o
STA 314 2.0	Multivariate Statistical Methods	c
STA 316 2.0	Discrete and Categorical Data Analysis	c
STA 318 2.0	Advanced Distribution Theory	c
STA 319 2.0	Advanced Regression Analysis	c
STA 326 2.0	Programming and Data Analysis with R	c
STA 334 2.0	Advanced Sampling Theory	o
STA 351 2.0	Research Methodology	c
STA 354 2.0	Machine Learning 1 (based on CSC 369 2.0)	o

#### Semester II

STA 315 2.0	Essential Skills in Statistics	c
STA 317 2.0	Advanced Designs of Experiments	c
STA 321 2.0	Statistical Quality Assurance	o

### Course Type

-c-  
Core

-o-  
Optional for those  
following Statistics

-o<sup>#</sup>-  
B.Sc. (General)  
degree students who  
have followed STA  
351 2.0 Research  
Methodology can  
do this course as an  
optional course

-o\*-  
Those who are  
doing Economics  
as a subject are not  
allowed to do this  
course

-‡-  
A student may  
register for only one  
Internship Training/  
Industrial Training  
course unit offered by  
any one Department

Course Type			
-c- Core	STA 322 2.0	Medical Statistics	O
	STA 323 2.0	Introduction to Actuarial Statistics	O
-o- Optional for those following Statistics	STA 324 2.0	Operations Research	O
	STA 327 2.0	Theory of Multivariate Statistics	C
	STA 329 2.0	Advanced Statistical Inference	C
	STA 330 2.0	Data Analysis and Preparation of Reports	C
	STA 331 2.0	Stochastic Processes	C
	STA 332 2.0	Compilation of Official Statistics	O
	STA 335 2.0	Generalized Linear and Non-linear Models	C
	STA 336 2.0	Statistical Data Mining	C
	STA 355 3.0	Optimization (based on MAT 453 3.0)	O
	<b>Part II</b>		
	STA 472 2.0	Bayesian Inference	C
	STA 474 2.0	Statistical Consultancy	C
	STA 475 2.0	Econometric Models	O
	STA 477 2.0	Spatial Statistics	O
	STA 478 2.0	Advanced Time Series Analysis	C
	STA 480 2.0	Current Topics in Statistics	O
	STA 481 2.0	Seminar	C
	STA 483 8.0	Research Project	C
	STA 484 4.0	Industrial Training in Statistics	C
	STA 485 2.0	Measure Theory (based on MAT 452 3.0)	O
	STA 486 2.0	Survival Analysis	O
	STA 487 2.0	Computational Inference	O
	STA 490 2.0	Linear Mixed Models and Generalized Linear Mixed Models	O
	STA 491 2.0	Special Topics in Statistics	O
	STA 492 2.0	Data Visualisation (based on ASP 460 2.0)	O





# ZOO

## Zoology

### *Offered by the Department of Zoology*

*Zoology is a branch of biology that is centered on the study of the structure, function, evolution, interactions, nutrition, environment, and taxonomy of the fauna of earth-the animal kingdom*

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#### **B.Sc. Degree Programme with Zoology**

**Course code: ZOO**

**Duration: 3 Years**

**Subject combinations: Refer pages 156-161**

#### ***For whom?***

Students from biological sciences streams who are interested in pursuing careers in Zoology!

#### ***Career opportunities***

Sri Lanka is at heart a nation with a rich endemic biodiversity. In order to harness the potential of our island nation in biodiversity, it is important that a pool of talent is developed who are equipped with specialist and applied knowledge in Zoology. Simultaneously, Sri Lanka is a nation harboring a host of tropical communicable and deficiency diseases, which mandatorily necessitates a workforce equipped with applied scientific knowledge to undertake surveillance, research and extension activities

associated with the distribution of such debilitation conditions. Therefore, by the provision of skilled graduates in contemporary Zoology, the department contributes towards national development and the upliftment of communities through its alumni. The scope in Zoology is reasonably broad in its spectrum of employment opportunities with prospects of joining government ministries, private organizations, universities and education providers, hospitals, museums, secondary schools, consultancy firms as well as providing opportunity for entrepreneurship.

#### *Course overview*

The subject Zoology aims to provide a holistic learning environment in contemporary Zoology as a blend of specialist knowledge and applied laboratory and field studies, to ensure the all- round development of a student to suit the 21st century aspirations of our island nation. As a result, course units which are part of the modern learning environments, imparted by the Department of Zoology include Limnology, Molecular Biology, Genetics, Nutrition, Wildlife and Conservation of Biodiversity, Microbial Ecology, Insect Pest Management, Fisheries and Aquaculture and Environmental Toxicology.

Outside of the key subject areas, students are equipped with communication and problem-solving skills, team work , perseverance and leadership qualities to ensure their career readiness to secure a future within the 21st century workforce.

#### *Course structure*

The subject Zoology will contribute one third of the B.Sc. degree program within the framework of a permitted subject combination. Students are required to take course units equaling or exceeding a cumulative credit value of 27.0 points. Course units are classified as compulsory, core and optional course units and the course units are designed to provide the student with specialist knowledge and skills required in contemporary Zoology.

#### **B.Sc. Honours Degree Programme in Zoology**

**Duration: 4 Years**

#### *Career opportunities*

The career opportunities available for graduates of the Honours Degree Program in Zoology, will be centered on academia, government ministries, consultancy firms and as well as practicing their trade as researchers at a diverse range of hierarchical positions undertaking in depth studies on contemporary research topics with the objectives of bridging gaps in knowledge and deciphering cryptic areas of fundamental Zoology.

#### *Course overview*

The B.Sc. Honours Degree in Zoology aims to prepare a new breed of experts with marketable and transferable skills in contemporary applied Zoology.

As the degree programme imparts a higher level of specialist knowledge and practical training, the Honours Degree program is ideally suited for students with aspirations for graduate studies and further research training.

The core strengths of the Honours Degree Programme are the coverage of specialist knowledge, both in-depth and with a wide spectrum of horizontal topics, the provision of a higher degree of practical skills which are transferable beyond the learning environment, higher levels of analytical and communication skills and in whole, a well-rounded education program suited for research endeavors or higher studies under specialist topics. The final year research project is of core significance to the Honours Degree Programme which advances a student's capacity to undertake research endeavors, develops core analytical skills, expand communication, networking and language skills and to pursue careers in academia.

### **Selection**

Selection of students to pursue an Honours Degree Programme in Zoology, is based on the student's performance in the first two years of the academic programme and a limited number of students are selected based on the staff availability.

### **Instruction and assessment**

The impartation of education to students enrolled in B.Sc. Programme and Honours Degree programme, will be conducted by an eminent group of lecturers, with proven track records in academia and research. The teaching environment within the Department of Zoology consists of lectures, laboratory practicals, field studies and project assignments which ensures the all-round development of students in specialist knowledge and practical training. The modes of assessment include end-of-semester examinations, practical tests, presentations and reports.

### **For further information please contact:**

Prof. R. R. M. K. P. Ranatunga  
Head/Department of Zoology  
E-mail: [ranatunga@sci.sjp.ac.lk](mailto:ranatunga@sci.sjp.ac.lk)  
Tel: +94 112804515

# Zoology

## Course Type

-a-

Compulsory

-c-

Core

-o-

Optional for all those  
doing Zoology

-\*\_

Compulsory with a  
pass (D+) Grade will  
not be considered for  
the GPA

## B.Sc. Degree Course Units

Each student should take course units having minimum cumulative credit value of 27.0

### FIRST YEAR

#### Semester I

ZOO 117 1.0	Histology	c
ZOO 118 1.0	Animal Diversity	c
ZOO 120 1.0	Laboratory and Field Work	a
ZOO 126 1.0	Evolution	c
ZOO 128 1.0	Cell Biology	c

**Total Credits - 10**

#### Semester II

ZOO 121 1.0	Ecology	c
ZOO 124 1.0	Comparative Functional Anatomy	c
ZOO 125 1.0	Laboratory and Field Work	a
ZOO 129 1.0	Fundamentals of Environmental Science	c
ZOO 130 1.0	Insect Biology	c

### SECOND YEAR

#### Semester I

ZOO 219 1.0	Parasitology	c
ZOO 220 1.0	Laboratory and Field Work	a
ZOO 224 1.0	Biodiversity and Conservation	c
ZOO 230 2.0	Animal Physiology	c

**Total Credits - 10**

#### Semester II

ZOO 218 1.0	Animal Behaviour	c
ZOO 226 1.0	Laboratory and Field Work	a
ZOO 228 1.0	Developmental Zoology	c
ZOO 231 2.0	Genetics and Molecular Biology	c

### THIRD YEAR

*Total Credit = 20*

### Course Type

#### Semester I

ZOO 322 2.0	Aquaculture and Ornamental Fish Breeding	o
ZOO 324 2.0	Surface and Ground Water Ecology (Based on ARM 301 2.0)	o
ZOO 325 1.0	Research Project	o
ZOO 326 1.0	Laboratory and field Work	a
ZOO 328 2.0	Marine Fisheries Management (Based on ARM 202 2.0)	o
ZOO 330 1.0	Environmental Toxicology	o
ZOO 340 1.0	Wildlife Ecology	o
ZOO 342 2.0	Recombinant DNA Technology	o
STA 349 2.0	Introductory Statistics	c

-a-

Compulsory

-c-

Core

-o-

Optional for all those  
doing Zoology

-‡-

A student may  
register for only one  
Internship Training/  
Industrial Training  
course unit offered by  
any one Department

#### Semester II

ZOO 327 2.0	Nutrition	o
ZOO 332 1.0	Environmental Physiology (Based on ARM 310 1.0)	o
ZOO 333 1.0	Laboratory and Field Work	a
ZOO 343 1.0	Fundamentals of Immunology	o
ZOO 344 1.0	Fundamentals of Microbial Ecology	o
ZOO 345 1.0	Wildlife Management	o
ZOO 347 1.0	Integrated Watershed Management (Based on ARM 311 1.0)	o
ZOO 365 2.0	Industrial Training	o‡
ZOO 366 2.0	Insect Pest Management	o

### B. Sc. Honours Degree Course Units

#### Part I

*Total Credit = 30*

#### Semester I

ZOO 322 2.0	Aquaculture and Ornamental Fish Breeding	o
ZOO 324 2.0	Surface and Ground Water Ecology (Based on ARM 301 2.0)	o
ZOO 326 2.0	Laboratory and Field Work	a
ZOO 328 2.0	Marine Fisheries Management (Based on ARM 202 2.0)	o
ZOO 330 1.0	Environmental Toxicology	o
ZOO 335 2.0	Fundamentals of GIS	o

Course Type			
-a- Compulsory	ZOO 336 1.0	Coastal Zone Management (Based on ARM 315 1.0)	o
	ZOO 337 1.0	EIA Methodologies	o
	ZOO 340 1.0	Wildlife Ecology	o
	ZOO 342 2.0	Recombinant DNA Technology	o
	STA 349 2.0	Introductory Statistics	c
-c- Core	ZOO 361 1.0	Medical Entomology	o
-o- Optional for all those doing Zoology	<b>Semester II</b>		
	ZOO 327 2.0	Nutrition	o
	ZOO 332 1.0	Environmental Physiology	o
	ZOO 333 2.0	Laboratory, Field and Museum work	a
	ZOO 343 1.0	Fundamentals of Immunology	o
-#- These optional units have to be selected by students based on their research project	ZOO 344 1.0	Fundamentals of Microbial Ecology	o
	ZOO 345 1.0	Wildlife Management	o
	ZOO 347 1.0	Integrated Watershed Management (Based on ARM 311 1.0)	o
	ZOO 349 2.0	Marine and Coastal Ecology (Based on ARM 309 2.0)	o
	ZOO 362 2.0	Research Methodology	o
	ZOO 363 2.0	Current Topics in Zoology	a
	ZOO 365 2.0	Industrial Training	c
	ZOO 366 2.0	Insect Pest Management	o
	<b>Part II</b>		<b>Total Credit = 20</b>
	<b>Semester I</b>		
	ZOO 400 2.0	Advanced Immunology	o <sup>#</sup>
	ZOO 401 2.0	Fisheries Management	o <sup>#</sup>
	ZOO 402 2.0	Food chemistry	o <sup>#</sup>
	ZOO 404 2.0	Advanced Ichthyology	o <sup>#</sup>
	ZOO 405 2.0	Fundamental Concepts in Agricultural Entomology	o <sup>#</sup>
	ZOO 406 2.0	Molecular Genetics	o <sup>#</sup>
	ZOO 407 2.0	Advanced Microbial Ecology	o <sup>#</sup>
	ZOO 408 2.0	Wildlife Conservation and Management	o <sup>#</sup>
	ZOO 409 2.0	Arthropod Vectors of Human Diseases	o <sup>#</sup>

ZOO 412 1.0	Literature Review	a
ZOO 413 2.0	Biochemical Signalling	o <sup>#</sup>
ZOO 430 2.0	Freshwater Pollution and Management	o <sup>#</sup>
ZOO 431 3.0	Special Topics in Zoology	a
ZOO 432 1.0	Hematology	c
ZOO 433 1.0	Radiation Biology	c
STA 399 2.0	Statistical Methods	c

## Semester II

ZOO 414 2.0	Molecular Principles of Human Diseases	o
ZOO 421 2.0	Fish Population Dynamics	o <sup>#</sup>
ZOO 422 2.0	Food Management	o <sup>#</sup>
ZOO 423 2.0	Limnology Management	o <sup>#</sup>
ZOO 424 2.0	Aquaculture Engineering Principles	o <sup>#</sup>
ZOO 425 2.0	Bio-intensive Intergrated Pest Management	o <sup>#</sup>
ZOO 426 2.0	Molecular Systematics	o <sup>#</sup>
ZOO 427 2.0	Applications of Microbial Ecology	o <sup>#</sup>
ZOO 428 2.0	Tetrapod Biology	o <sup>#</sup>
ZOO 429 2.0	Mosquito Biology	o <sup>#</sup>
ZOO 491 8.0	Research Project (Semester I & II)	a

## Course Type

-a-

Compulsory

-c-

Core

-o-

Optional for all those  
doing Zoology

-#-

These optional units  
have to be selected  
by students based on  
their research project





## ASP/ ASB/ ASC B.Sc. (Honours) Degree in Applied Science (Four-year Extended Degree Programme)

### *Offered by the Faculty of Applied Sciences*

*The B.Sc. (Honours) Degree in Applied Sciences prepares students to be performance oriented to meet current global standards as well as to contribute to the socio-economic development of the country by combining academic excellence with practical experience*

#### **B.Sc. Honours Degree in Applied Sciences**

**Course Code: ASC/ASP/ASB**

**Duration: Additional 1 year**

#### ***For whom?***

This program is for students who have entered the faculty of Applied Sciences of University of Sri Jayawardenepura through either Physical, Biological or Polymer Science stream and completed their

general degree with a minimum GPA of 2.5 at the end of their third year B.Sc programme. It is a professional degree program, which is multidisciplinary in nature and offered by eight departments (Mathematics, Chemistry, Physics, Zoology, Botany, Forestry & Environmental Science, Statistics and Polymer Science) and the units (Resource Economics, Management science, Genetics & Molecular Biology) attached to those respective departments of the faculty. The extended year consists of course work

and industrial based project performed as an inplant training. The program is conducted as a cumulative effort of the Faculty and it is mainly catering to the industrial sector in Sri Lanka. The focus of this program is to produce highly competent, quality, employable graduates who will meet the demands of the industrial sector in the relevant fields with suitable practical knowledge. These individuals could provide immense contribution to the development of the national economy. The intake is limited to maximum number of 120 as specified by the FAS, considering the available resources at the faculty.

### *Career opportunities*

There is growing demand for graduates with professional qualifications to meet the current and future needs of the industrial sector in Sri Lanka. As such, Establishing this degree as a four year program with an industrial project component not only uncovers the vast amounts of job opportunities available but also allows our students to pursue higher studies in international universities by fulfilling the requirements of a four year degree. As science graduates are not restricted to a single field, this will open up a multitude of job opportunities. Therefore this degree program will definitely be highly recognized worldwide.

### *Course overview*

B.Sc. (Honours) Degree in Applied Sciences is a

full time four year degree programme conducted in English medium which extends through the general degree program from either Physical, Biological or Polymer Science stream. The programme is assessed at SLQF 6/ NVQL 6 level in the Sri Lankan Qualification Framework (SLQF) of the Ministry of Higher Education.

Each student should take course units having a minimum cumulative credit value of 30 in the fourth year having registered for 90 credits from their B.Sc General Degree Programme. There will be two semesters of fifteen weeks and students should register for 17 credits in the first semester including 09 core credits (c) relevant to industrial applications offered by the Faculty of Applied Sciences and must register for 8 optional credits (o) offered by each department based on their discipline or field of study. In the second semester, students should register for a total of 13 credits (a and c), where students will engage in industrial training and do an industrial based project (10 compulsory credits) from the selected discipline or subject area and 2 core credits as assigned by the FAS. During the second semester a student should do the inplant training for 4 days of the core lectures week and last day of the week, Friday he/she must attend to the core lectures at the university. A student must maintain satisfactory attendance for the core courses offered by FAS and must register for minimum of 46 credits from her/his discipline/focus subject area

for the entire four years. Additionally students must perform minimum of five months in-plant training to graduate from this degree program.

The disciplines of B.Sc. Hons Degree in Applied Sciences and respective departments offering the course

1. Mathematics: Department of Mathematics
2. Applied Mathematics: Department of Mathematics
3. Chemistry: Department of Chemistry
4. Polymer Science and Technology: Department of Polymer Science
5. Zoology: Department of Zoology
6. Aquatic Resource Management: Department of Zoology
7. Forestry and Environmental Science: Department of Forestry and Environmental Science
8. Genetics and Molecular Biology: Genetics & Molecular Biology unit
9. Economics: Resource Economics Unit
10. Management Science: Management Science Unit
11. Physics: Department of Physics
12. Electronics and Embedded Systems: Department of Physics
13. Microbiology Department of Botany
14. Plant Biotechnology: Department of Botany
15. Plant Biology: Department of Botany
16. Biology: Department of Botany and Department of Zoology

#### 17. Statistics: Department of Statistics

A student should complete the Industrial training and the assigned industrial based project with relevance to the focus subject area under the external supervisor (industrial) and the internal supervisor (university) from the respective department. A thesis written based on the project, needs to be submitted to the respective department to complete the degree program and for the graduation.

#### *Selection criteria*

At the end of the third year, students who are interested in the degree program are required to state their preferences with respect to the field of study /discipline in the application form. Additionally, applicants should have passed the compulsory English course unit examinations conducted by the Faculty during the first three semesters and earned a 'passing' at for compulsory English. The students will be selected for the relevant field of study / discipline solely by their GPA calculated with course units offered in the five semesters of the general degree (until third year first semester) and the availability of resources in the respective field as decided by the FAS. Students who wish to be selected for the programme are required to maintain satisfactory attendance for courses offered by certain Departments.

### ***Instruction and assessment***

Students' performance at each course unit is assessed and graded by one or more theory based examinations, continuous assessments, assignments, reports, case studies, oral examinations, etc. as specified by the lecturer-in-charge of the respective course unit. Students will be informed on the method of assessment at the beginning of the semester by the course lecturer. When there are multiple examinations for a course unit, marks obtained by the student for each examination is combined in order to obtain a final grade.

### ***For further information, please contact;***

Prof. Pahan Godakumbura  
Program Coordinator  
*Email - pahanig@sjp.ac.lk*

## **FOURTH YEAR**

The relevant course units are listed below.

### **Course Type**

**a:** Candidates should register and follow these compulsory course units and should obtain a minimum specified grade at the examination to qualify for the degree and/or Class.

**c:** Candidates should register and follow these core course units to qualify for the degree or class.

**n:** These course units are chosen by candidates according to their preference but based on the selection criteria set by the FAS. To register for this course, candidates should not have been registered for this field of the study at USJ previously.

(eg: Those who have not taken Management in B.Sc general degree program can register for ASP 434 2.0 Industrial Management)

**o:** These course units are chosen by candidates according to their preference in the relevant fields, but based on the selection criteria set by the FAS. This course unit may or may not have a pre-requisite in the relevant

# B.Sc. Hons Degree in Applied Sciences

## Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Chosen by  
candidates according  
to their preference  
in the relevant fields,  
but based on the  
selection criteria set  
by the PMC

\_\*\_  
Candidates who  
have done Applied  
Mathematics as  
a subject are not  
eligible to take this  
course unit

-#-  
Candidates who have  
done Management  
Science as a subject  
are not eligible to  
take this course unit

## (Four-year Extended Degree Programme)

### Semester I

ASC 401 2.0	Quality Assurance and Standards	c
ASC 402 2.0	Waste Management and Cleaner Production	c
ASC 403 2.0	Entrepreneurship and Small Business Management	c
ASC 404 1.0	Industrial Law and Intellectual Property	c
ASC 407 2.0	Scientific Education and Teaching Methodology	c

### Optional Course Units Offered from Departments

Students must take 8 credits from the following courses offered by each department according to their interest. Students may follow some of the following course units in the fourth year if they have not followed them before. Some of the courses have prerequisites included therein.

ASB 403 2.0	Plant Breeding	o
ASB 406 2.0	Postharvest Technology	o
ASB 421 2.0	Advanced plant tissue culture	o
ASB 422 2.0	Plant Tissue Culture	o
ASB 423 1.0	Bioethics and Biosafety	o
ASB 424 2.0	Advanced Plant Pathology	o
ASB 425 2.0	Organization and Dynamics of Genome	o
ASB 426 2.0	Herbal Technology	o
ASB 427 2.0	Plant Cell Culture	o
ASB 429 2.0	Advanced molecular Genetics	o
ASB 430 2.0	Wildlife conservation and management	o
ASB 431 2.0	Freshwater Pollution and Management	o
ASB 432 2.0	Fundamentals of GIS	o
ASB 433 2.0	Marine Biotechnology	o
ASB 434 2.0	Microbial Ecology	o
ASB 435 2.0	Marine Resources Management	o
ASB 436 2.0	Pond and hatchery Management practices in Aquaculture	o
ASB 437 2.0	EIA methodologies	o
ASB 438 2.0	Fisheries Economics & marketing	o

ASB 439 2.0	Postharvest Pathology	o
ASB 441 2.0	Advanced Microbial Ecology	o
ASB 443 2.0	Advanced Plant Virology	o
ASB 444 2.0	Biochemical Cell Signaling	o
ASB 447 2.0	Advanced Microbial Genetics	o
ASB 448 1.0	Immunology	o
ASB 450 2.0	Molecular Genetics	
ASB 460 2.0	Standardization and Quality Management	o
ASB 461 1.0	Linkage Mapping	o
ASB 462.2.0	Molecular and Cellular Toxicology	o
ASB 463 2.0	Tissue and Cell culture	o
ASB 464 1.0	Stem cells and regenerative biology	o
ASB 465 2.0	Pharmaceutical Biotechnology	o
ASB 466 2.0	Marine biotechnology for sustainable development	o
ASB 467.2.0	Molecular microbial ecology	o
ASB 468 1.0	Journal Club	o
ASB 469 2.0	Molecular Diagnostics and Therapeutics	o
ASB 470 2.0	Pharmaceutical Biotechnology	o
ASB 490 2.0	Advanced Limnology	o
ASB 491 2.0	Arthropod Vectors of Human Diseases	o
ASP 401 2.0	Environmental and Green Chemistry	o
ASP 402 2.0	Modelling and Computational Chemistry	o
ASP 403 2.0	Soil Science and Mineral Based Industries	o
ASP 404 2.0	Biological Sensors and Imaging	o
ASP 411 2.0	Polymer Blends and Nano Composites	o
ASP 412 3.0	Modelling 2D and 3D Drawings in Polymer Industry	
ASP 413 3.0	Applied Polymer Sciences - II	o
ASP 414 3.0	Application of CAD Drawing in Polymer Industry Introduction to	o
ASP 415 2.0	Computational Tool for Polymer Technology	o
ASP 416 1.0	Polymers in Packaging Industry	o
ASP 417 2.0	Advanced Polymeric Materials	o
ASP 423 2.0	Graph Theory with Applications (Based onAMT 454 2.0	
	Graph Theory with Applications)	o

## Course Type

-a-  
Compulsory

-c-  
Core

-o-  
Chosen by  
candidates according  
to their preference  
in the relevant fields,  
but based on the  
selection criteria set  
by the PMC

-\*-  
Candidates who  
have done Applied  
Mathematics as  
a subject are not  
eligible to take this  
course unit

-#-  
Candidates who have  
done Management  
Science as a subject  
are not eligible to  
take this course unit

# B.Sc. Hons Degree in Applied Sciences

Course Type			
-a- Compulsory	ASP 426 2.0	Operational Research (Based on AMT 455 2.0 Operational Research II)	o <sup>#</sup>
	ASP 427 2.0	Actuarial Science (Based on AMT 312 2.0 Actuarial Science)	o <sup>*</sup>
	ASP 428 2.0	Applicable Mathematics (Based on MAT 356 2.0 Applicable Mathematics)	o <sup>*</sup>
	ASP 429 2.0	Non-linear Differential Equations and Dynamical Systems (Based on AMT 352 2.0 Non-linear Differential Equations and Dynamical Systems)	o
-c- Core	ASP 430 2.0	Applied mathematical Techniques (New 2020)	o
	ASP 431 2.0	Operations Management	o
	ASP 432 2.0	Supply Chain Management	o
	ASP 433 2.0	Project Appraisal Techniques	o
-o- Chosen by candidates according to their preference in the relevant fields, but based on the selection criteria set by the PMC	ASP 434 2.0	Industrial Management	o
	ASP 435 2.0	Accounting and Finance	o
	ASP 438 2.0	An Introduction to Answer Set Prolog(Based on AMT 457 2.0 An Introduction to Answer Set Prolog) (New 2021)	o
	ASP 441 2.0	Physics of Ceramics and Glass	o
	ASP 442 2.0	Applied Geophysics	o
	ASP 443 1.0	Computational Physics in Advanced Programming	o
	ASP 444 1.0	Physics of Agricultural materials	o
	ASP 445 1.0	Philosophy of Science	o
	ASP 446 1.0	Fundamentals of Digital Signal Processing	o
	ASP 447 1.0	Advanced Nano physics	o
-*_ Candidates who have done Applied Mathematics as a subject are not eligible to take this course unit	ASP 448 1.0	Nuclear Physics II	o
	ASP 449 1.0	Digital Image Processing	o
	ASP 451 2.0	Multivariate Statistical Methods	o
	ASP 452 2.0	Advanced Designs of Experiments	o
	ASP 453 2.0	Special Topics in Statistics	o
	ASP 454 2.0	Programming and Data Analysis with R	o
	ASP 457 2.0	Advanced Distribution Theory	o
	ASP 458 2.0	Programming and Data Analysis with R	o
	ASP 459 2.0	Advanced Regression Analysis	o
	ASP 460 2.0	Data Visualization	o
-#- Candidates who have done Management Science as a subject are not eligible to take this course unit	ASP 467 2.0	Advanced Sampling Theory (based on STA 334 2.0)	o



# B. Sc. Degree Courses



## B. Sc. Degree Courses

In the first year, all students except those following B.Sc. Honours Degree in Food Science and Technology and B.Sc. Honours Degree in Sports Science and Management should register for the B.Sc. Degree programme selecting a combination of three subjects as given below.

Students who wish to select one of the following subjects offered by the Department of Botany (PBT, PBL or MBL) have to follow the course as a common course until the first semester of the second year. However, a student who wishes to change a course subject offered by the Department of Botany (PBT, PBL or MBL) can do so at the beginning of the second semester of the second year.

Students who have entered through the Biological Science stream of G.C.E. Advanced Level can select one of the combinations given below

<b>Combination No:</b>	<b>Combinations available for Biological Science Students</b>
B01	Chemistry, Zoology, Physics
B02	Chemistry, Zoology, PBT
B04	Chemistry, PBT, EMF
B05	Chemistry, Zoology, ARM
B08	Chemistry, Management Science, Zoology,
B09	Chemistry, Food Science, Biology
B12	Chemistry, Management Science, ARM
B14	Chemistry, Biology, GMB
B15	Chemistry, ARM, EMF
B16	Zoology, ARM, Management Science
B17	Chemistry, GMB, EMF

PBT - Plant Biotechnology; EMF- Environmental Management and Forestry; ARM- Aquatic Resource Management; GMB- Genetics and Molecular Biology

Students who have entered through the Physical Science stream of G.C.E. Advanced Level Examination can select one of the following combinations.

## B. Sc. Degree Courses

<b>Combination No:</b>	<b>Combinations available for Physical Science Students</b>
P01	Mathematics, Chemistry, Physics
P02	Mathematics, Chemistry, Statistics
P03	Mathematics, Physics, Statistics
P04	Mathematics, Chemistry, Management Science
P05	Mathematics, Physics, Management Science
P06	Mathematics, Computer Science, Statistics
P07	Mathematics, Computer Science, Physics
P08	Mathematics, Statistics, Economics
P12	Mathematics, Applied Mathematics, Computer Science
P13	Mathematics, Physics, EES
P14	Mathematics, Management Science, Applied Mathematics

EES - Electronics and Embedded Systems

The following subject combinations are available for students entering from either Biological Science stream or Physical Science stream.

<b>Combination No.</b>	<b>Combinations available for Biological Science/Physical Science Students</b>
C01	Chemistry, EMF, Management Science
C02	Chemistry, Physics, PSC

EMF- Environmental Management and Forestry: PSC - Polymer Science and Technology

Students who have entered through the Physical Science stream following Combined Mathematics, Physics and ICT at the G.C.E. Advanced Level Examination must select one of the following combinations.

<b>Combination No.</b>	<b>Combinations available for students who have sat for Combined Mathematics, Physics and ICT</b>
101	Mathematics, Physics, ICT
102	Mathematics, Physics, EES

ICT - Information and Communication Technology; EES- Electronics and Embedded Systems

In addition to the course units offered under the above-mentioned subject combinations, it is mandatory that optional course units for 2 credit value are selected from the course units offered for the development of technical and/or entrepreneurial skills of undergraduates.

# Course Units offered for the Development of Technical and Entrepreneurial Skills

These course units are offered with two objectives:

1. to inculcate diverse technical skills other than those associated with their chosen study streams
2. to develop entrepreneurial skills

The course units offered to developing diverse skills in undergraduates are specifically designed with a view of developing diverse skills that will not be acquired through the course units offered by their respective study streams. Students are expected to gain insightful knowledge and hands-on experience as well as socioemotional stability through the outcome-based teaching- learning experience.

The contents of some of the selected course units will enable students to start their businesses through the skills developed through the course units and related activities that will train them to become successful entrepreneurs. The Internship Training course unit will enable students to gain an understanding of the workplace environment thus giving them the experience and the competence to integrate into the world of work successfully and confidently.

It is mandatory for all students to fulfil 02 credits of their credit requirement with these course units.

## Courses offered:

Year and Semester	Course code	Title	Department/ Unit/ Programme	Course Type	Remarks
3rd Year Semester I	CSC 341 1.0	Scientific Computing for Life Science	Computer Science	Optional	Only for students who entered through the Biological Sciences stream in G.C.E. A/L, who are not following FST, MAN or PHY as a subject

	EMF 333 1.0	Applications of GIS in Resource Management	Forestry and Env. Science	Optional	Students who are following EMF as a subject cannot take this course.
	MAT 316 2.0	Computer Aided Mathematics	Mathematics	Optional	Only for students who did not take Combined Mathematics as a subject in G.C.E. A/L
	EES 398 1.0	Introduction to Electronics and Embedded systems	Physics	Optional	Only for students who entered through the Biological Sciences stream in G.C.E. A/L, who are not following PHY and/or CSC as a subject
	PHY 398 1.0	Workshop Training	Physics	Optional	Only for students who entered through the Biological Sciences stream in G.C.E. A/L, who are not following Honora in Physics
	SSM 374 2.0	Advanced Analytic Methods in Sports	Sports Science	Core	
	ECN 306 1.0	Applications of Environmental Economics and Policy	Economics	Optional	Students who are following ECN or EMF as a subject cannot take this course.
	MAN 329 1.0	Strategic Management	Management Science	Optional	Students who are following MAN as a subject cannot take this course.

	COP 303 1.0	Basic Analytical Instrumentation	Instrument Centre	Optional	Students who are not taking Chemistry as a subject can take this course.
3rd Year Semester II	SSM 365 2.0	Sport Entrepreneurship and Business Development	Sports Science	Core	
	STA 349 2.0	Introductory Statistics	Statistics	Optional	Students who are following AMT/FST/STA/MAN/SSM as a subject cannot take this course.
4th Year Semester I	STA 499 2.0	Statistical Methods	Statistics	Optional	Students who are following AMT/FST/STA/MAN/SSM as a subject cannot take this course. STA 349 2.0 is a prerequisite for this course
4th Year Semester II	SSM 475 3.0	Entrepreneurial Venture Development in Sport Science and Management	Sports Science	Optional	A student must follow at least one of the optional course units SSM 471 3.0 Internship in Sports Science and Management and SSM 475 3.0 Entrepreneurial Venture Development in Sports Science and Management to complete the Bachelor of Science Honours in Sports Science and Management degree programme.



A photograph showing students in a computer lab. In the foreground, a student with dark hair tied in a ponytail with a red scrunchie is looking at a laptop. To her right, another student is partially visible. In the background, other students are working at their desks with laptops. The image is partially covered by a purple graphic element on the right side.

# DELT

## Department of English Language Teaching

### *Department of English Language Teaching*

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#### *About English Language Proficiency Courses*

##### ***Rationale***

The English proficiency courses offered by the Department of English Language Teaching to the students of the Faculty of Applied Sciences are geared to assist students to deal with the English language skills they need when they follow their academic courses in English medium. The two courses in the first year first and second semesters will cover the four major skills of English language; listening, speaking, reading and writing. It is a mandatory requirement to complete the two English courses in order to obtain the degree in the university.

##### ***Course content***

ENG 101 2.0 Compulsory English (Scientific Communication) is offered in the first year first semester. ENG 102 2.0 English for Scientific Discourse is offered in the first year second semester. ENG 301 2.0 Professional English (Optional) is offered in the third year first semester. All these three course units consist of the lessons focused on the general use of the language, the use of English in scientific contexts and in professional environments. The module-based teaching materials, interactive language learning methods supported by audio-visual teaching aids will be utilized in the language learning process of the above-mentioned courses.



# Department of English Language Teaching

## Examination and Evaluation

The final examination consists of both a written paper and continuous assessments. Continuous assessments will carry 40 marks and written paper is scaled for 60 marks.

### Semester I

ENG 101 2.0      Compulsory English (Scientific Communication)\*      a

### Semester II

ENG 102 2.0      English for Scientific Discourse      c

### Semester I

ENG 301 2.0      Professional English      o

## Course Type

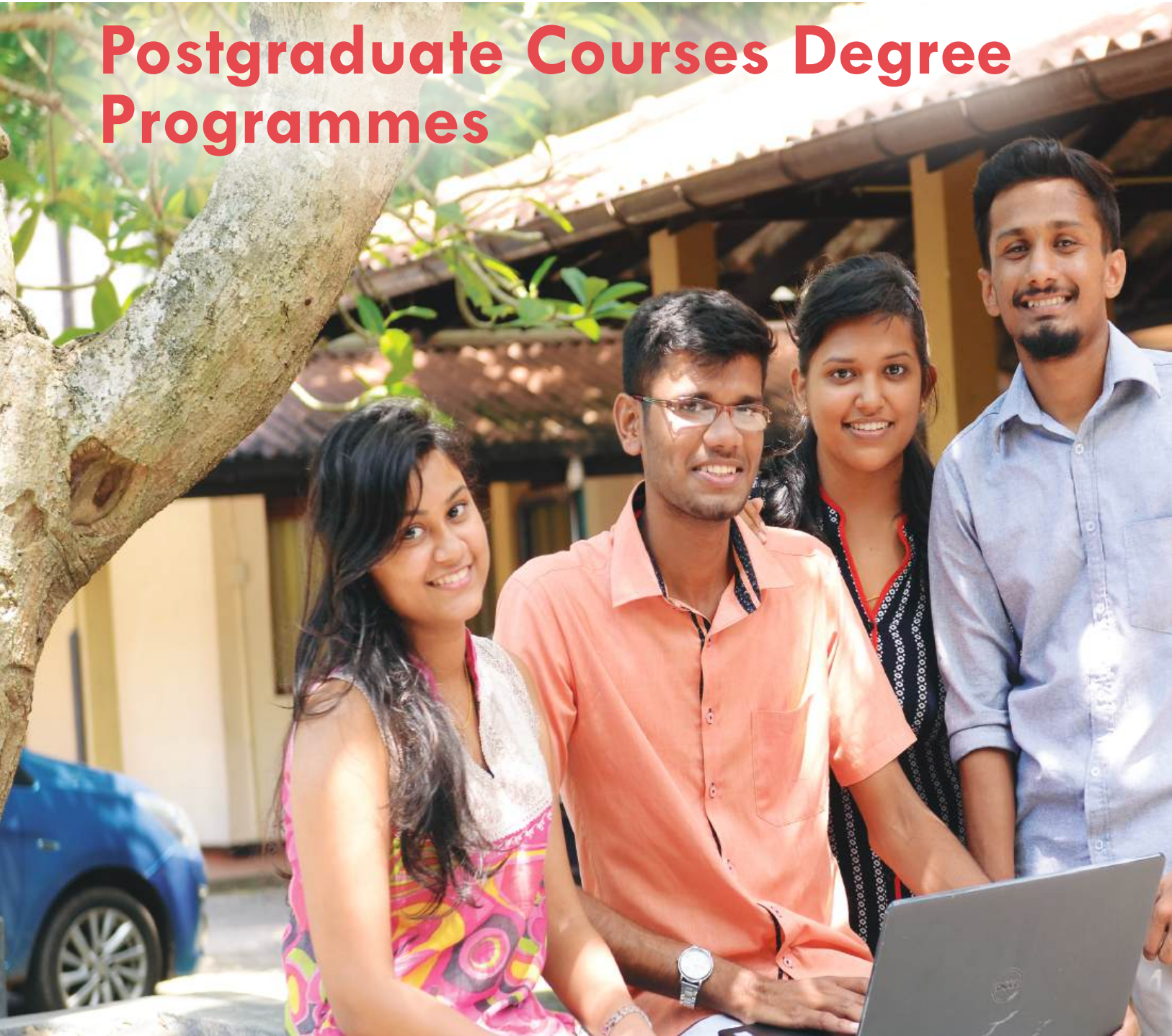
-a-  
Compulsory

-o-  
Optional

-c-  
Core

\* To obtain the degree, a minimum grade of 'C' should be obtained.

# Postgraduate Courses Degree Programmes



# **M.Sc. Degree/Postgraduate diploma in Polymer Science and Technology**

**Offered by the Department  
of Polymer Science**





## **M.Sc. Degree Programme in Polymer Science and Technology**

**Offered by the Department of Polymer Science**

### **Why Study Polymer Science?**

Today polymers have become indispensable to mankind. Rubber and plastic have become integral parts of our daily lives. There applications are everywhere, from a simple bouncing ball to rocket science, beautiful jewelries to artificial hearts. We use polymers from morning till night, e.g.: bed, slippers, toothbrush, cups, plates, mobile phones, cloths, car, tyres, computer to television. In general, 80% materials used daily by a regular human being is made out of polymers. Simply we are living in a world of polymers, so why not study them!

### **History of the M.Sc. program in Polymer Science and Technology at USJ**

Polymer industry has become a major contributor towards our national economy since the early 1930's. By recognizing the national need of quality education in this field of science, a master's degree program in Polymer Science and Technology (PST) was introduced in 1974 by the Department of Chemistry with the aid of University of Aston, United Kingdom.

### **Course description**

Our endeavor is to develop enlightened members of the polymer society. We pursue excellence in graduate education. Therefore, the program is designed to embrace topics from introductory level to high end applications of polymer science and technology. This 24-month M.Sc. program has been aimed for training much needed polymer

scientists, polymer technologists, quality control officers, and plant managers for booming Sri Lankan rubber and plastics industry. Hence, the course is suitable for the professional community who are engaged in PST and for graduates seeking entry to such organizations.

### **Careers**

The program encompasses a broad spectrum of both theoretical and practical aspects in PST. By gaining good theoretical and practical insight students find it easy to establish themselves in the Sri Lankan polymer-based industries and academia. In addition, the course curriculum contains sufficient academic depth such that it will create a golden platform for students to proceed for higher degrees at national as well as international level.

### **For more information contact**

Dr. Dhammika Weeratunga

Coordinator

M.Sc. Degree/ Postgraduate Diploma in Polymer Science and Technology

Phone: +94 702025694

Email: dhammikaweerathunga@sjp.ac.lk

# M.Sc. Degree/Postgraduate Diploma in Industrial Analytical Chemistry

**Offered by the Department  
of Chemistry**



## **M.Sc. Degree/Postgraduate Diploma in Industrial Analytical Chemistry**

**Offered by the Department of Chemistry**

### **Introduction**

Chemical analysis plays a vital role in all aspects of life. There is an increasing demand for qualified analytical chemists throughout the world. By recognizing the need of qualified personnel in this field of science, a Master's Degree program as well as a Post Graduate Diploma in Industrial Analytical Chemistry has been initiated by the Department of Chemistry in 2013.

### **Course description**

The Department of Chemistry at University of Sri Jayewardenepura is equipped with high-end analytical tools where students will get hands on experience in achieving the correct level of accuracy in each measurement, which is the key for developing a qualified analytical chemist. The second-year research component and the case studies are specifically designed to solve analytical chemistry problems in the industrial setup. The duration for the M.Sc. Degree is two years whereas the duration for the Post Graduate Diploma is one year.

### **Entry Requirements**

Applicants should possess any of the following:

A B.Sc. degree from any recognized university having a minimum 30 credit units in Chemistry. Any other special qualification equivalent to a degree recognized by the UGC or considered appropriate by the University Senate. Students who are awaiting results are also eligible to apply.

### **Careers**

This course is designed to improve the analytical chemistry skills of government and industrial employees who are engaged in chemical, pharmaceutical, bio-analytical, forensic, food and environmental fields. This also gives an opportunity for university graduates to improve their entrance potential for industrial positions as well as for further higher studies.

### ***For more information, please contact;***

Dr. Asitha Cooray

Coordinator

M.Sc. Degree/P.G Diploma in Industrial Analytical Chemistry

Phone: +94 112 758471

Email: [atcooray@sjp.ac.lk](mailto:atcooray@sjp.ac.lk)

Website: [www.sjp.ac.lk/che/analytical](http://www.sjp.ac.lk/che/analytical)

# M.Sc. Degree/Master/Postgraduate Diploma in Industrial Organic Chemistry

**Offered by the Department  
of Chemistry**





## M.Sc. Degree/Master/Postgraduate Diploma in Industrial Organic Chemistry

Offered by the Department of Chemistry

### Introduction

Organic chemistry is a dynamic and creative discipline of science involving the synthesis of carbon-based molecules and exploring the properties of exciting molecules. It forms the foundation of various disciplines such as medicine, biotechnology, and biochemistry. Moreover, organic chemistry plays a vital role in the chemical industries contributing significantly to the economy and the overall development of the country. It serves as the central science behind key industries including pharmaceuticals, agrochemicals, food production and processing, rubber manufacturing, plastics, fuel production, cosmetics, detergent production, coatings, textile chemicals, and high technology materials. These industries heavily rely on organic chemistry to manufacture a wide array of consumer goods and thousands of products inputs used in agriculture, manufacturing, construction, and the service sector.

There is a growing demand for trained organic chemists in sectors as pharmaceuticals, biotechnology, chemicals, consumer goods, and petroleum. However, undergraduate research in state academic institutes primarily focuses on the fundamental aspects of organic chemistry, leaving a gap in applied organic chemistry skills that are required by the industrial sector. To bridge this gap effectively, it is crucial to design postgraduate programs that are oriented towards industrial applications and address the practical needs of the field.

### Course description

The postgraduate programs in industrial organic chemistry have been designed to provide the students with the necessary fundamental knowledge and the essentials of novel trends in industrial organic chemistry. These programs aim to provide students with the necessary expertise to solve industrial problems in organic chemistry and use critical thinking towards industrially applied organic chemistry. Moreover, these programs will provide stronger connections with local industries through industrial visits, guest lectures by industrial experts, and industrially oriented research projects. By incorporating these industry-focused elements, the programs ensure that students gain firsthand exposure to the real-world applications of applied organic chemistry. Furthermore, the postgraduate programs offer opportunities for individuals with diverse academic and professional backgrounds to pursue postgraduate studies in organic chemistry.

### Postgraduate Diploma in Industrial Organic Chemistry

The program is designed to provide both theoretical and practical knowledge in organic chemistry for prospective students who wish to enhance their skills in organic chemistry. The program consists of theory coursework (25 credits), practical classes (4 credits), seminars and industrial visits including guest lectures by industrial experts. This is a direct entry program. In addition, this program is offered as an exit option to the Master of Science in Industrial Organic Chemistry and Master of Industrial Organic Chemistry Degree programs.

### Master of Industrial Organic Chemistry

The one-year Master of Industrial Organic Chemistry program is designed to provide both theoretical and practical knowledge in organic chemistry to prospective

# M.Sc. Degree/ Postgraduate Diploma in Industrial Mathematics

Offered by the Department  
of Mathematics



## **M.Sc. Degree/Postgraduate Diploma in Industrial Mathematics**

**Offered by the Department of Mathematics**

### **Introduction**

Being the first Faculty of Applied Sciences of the country and realizing the potential of graduates with a strong mathematical background, we launched the first Postgraduate Diploma/M. Sc. Program in Industrial Mathematics in Sri Lanka, in 1996. By this program it is hoped to bring together the mathematically oriented personnel employed in various industries and the application orientated researchers within the university community, to provide means of further improving their effectiveness. It is a well- accepted fact that science and technology play a vital role in the process of development. We will concentrate on utilization of the resources of this country for the benefit of its own people.

### **The Growing Importance of Industrial Mathematics**

Success in Industrial Mathematics is based on applying existing tools and computational techniques in addition to discovering new tools and techniques. The mathematical scientist in industry must have a broad background to be able to recognize when the model or solution procedure has already been investigated. Skills in formulation, modeling and implementation are critical in industry. Teamwork, communication skills and breadth of knowledge are also valued in industry.

### **Course Description**

Total number of contact hours (lectures and practicals)

of the M.Sc. program exceeds 400 hours. Therefore, the M.Sc. program is categorized as a full-time program. Naturally, Industrial Mathematics may borrow from a variety of mathematical disciplines, such as Numerical Analysis, Computational Mathematics, Partial Differential Equations, Dynamical Systems, Control and Optimization theory, Probability and Statistics and Discrete Mathematics. The common feature running through this program is the goal of getting better understanding of industrial models and processes through mathematical ideas and computations.

### **Programme Eligibility**

Candidates applying for the PG Diploma/ M.Sc. program in Industrial Mathematics should have a bachelor's degree with Mathematics as a component preferably B.Sc. (Special) Mathematics, Statistics, Computer Science, B.Sc. (Physical Science) or B.Sc. (Engineering) graduates.

### **For more information contact**

Dr. M. T. M. Perera

Coordinator

PG Diploma/M.Sc. in Industrial Mathematics

Department of Mathematics

*Phone: +94 11 2758389*

*Fax: +94 11 2803470*



# **M.Sc. Degree/ Postgraduate Diploma in Fisheries and Aquatic Resource Management**

**Offered by the Department  
of Zoology**



## **M.Sc. Degree/ Postgraduate Diploma in Fisheries and Aquatic Resource Management**

**Offered by the Department of Zoology**

### **Introduction**

The postgraduate degree program is designed to meet the increasing need for highly skilled multidisciplinary decision makers, entrepreneurs, biologists or biologically literate mathematicians and statisticians in order to address the management challenges of the present day aquatic resources facing. It is of equal interest to recent graduates seeking employment prospects in aquatic resources management. This is the pioneer M.Sc. degree in the discipline in Sri Lanka which has produced hundreds of qualified resource managers working in key local and foreign institutes.

### **Course description**

The duration for the M.Sc. Degree is two years whereas the duration for the Post Graduate Diploma is one year.

### **Entry qualifications**

First degree in Biology, Veterinary Science, Chemistry, Physical Sciences, Geology, Oceanography, Environment Science, Natural Resources, Agriculture Any other degree with 3 years of experience in fisheries or aquatic resources sector. Any other qualifications equivalent to a degree recognized by the University Grants Commission with at least 5 years of experience in the field of fisheries and aquatic resources.

### **For more information Contact:**

Dr. Indunil Senanayake

Coordinator

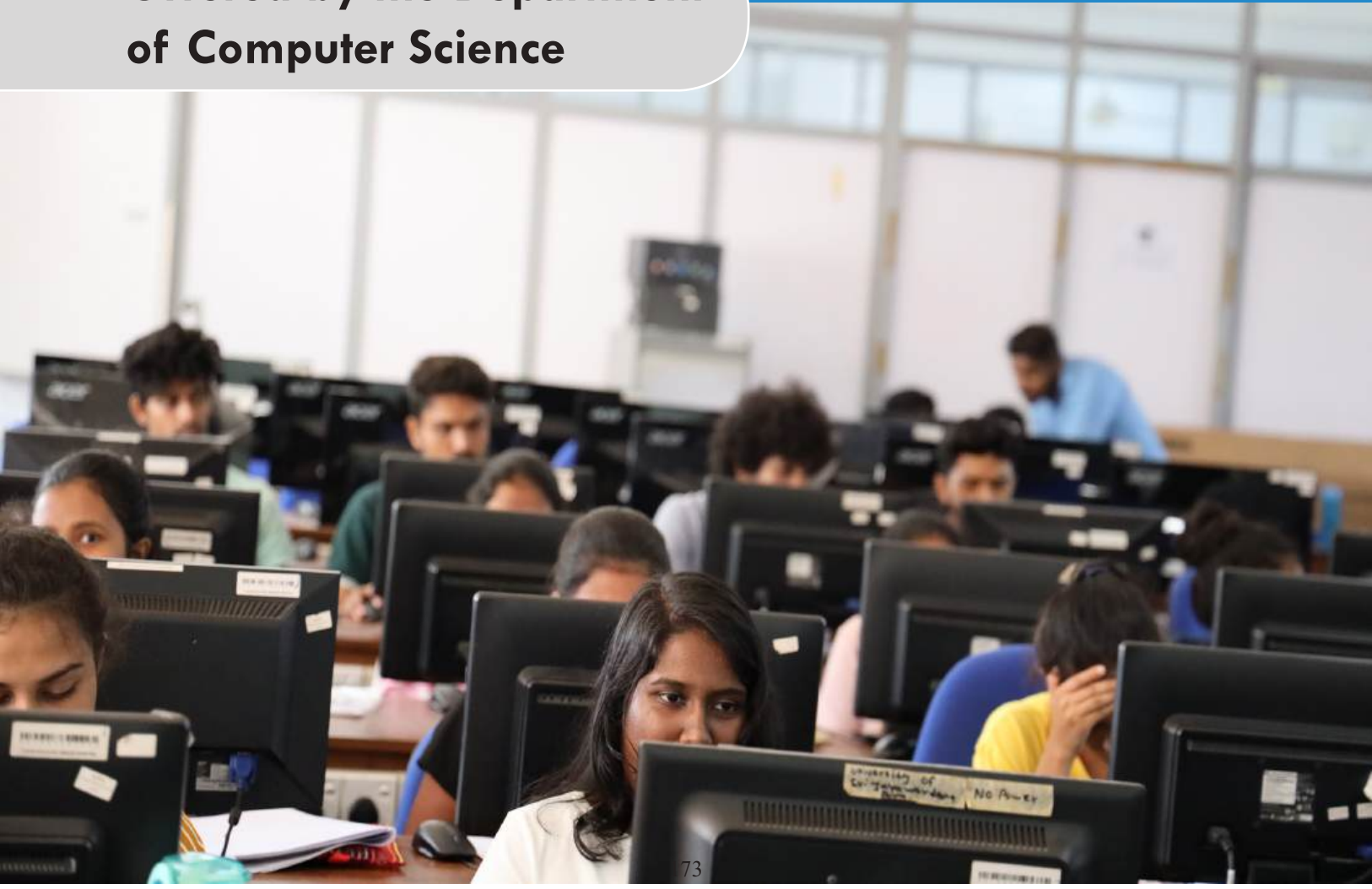
*M.Sc. Degree/ P.G. Diploma in Fisheries and Aquatic Resources Management*

*Phone: +94 112 804515, +94 112 758439*

*E-mail: indunil@sci.sjp.ac.lk*

# M. Sc. Degree/ Postgraduate Diploma in Computer Science

**Offered by the Department  
of Computer Science**





## M.Sc. Degree / Postgraduate Diploma in Computer Science

Offered by the Department of Computer Science

### Introduction

This program has been designed for those who are interested in pursuing higher studies in the field of Computer Science. This is offered with four exit points, including the option to leave with a Postgraduate Diploma for those who choose to exit early. The curriculum of this program is designed to provide students with a good grasp of core contents of Computer Science which any professional in the subject is expected to know, to foster logical and analytical thought, independent study, self-motivation and communication skills, to make aware of research results and latest trends in the key areas of the subject, to provide opportunities to gain practical experience of computing, using modern hardware and software, in order to provide motivation for and deeper understanding of material taught in formal lectures, to produce graduates with sound knowledge in both theory and practice in Computer Science, including current emerging technologies and experimental learning, to prepare students to contribute to the computing profession upon graduation and to provide the necessary background required to read for a Ph.D. in Computer Science.

### Eligibility

1. Bachelor's degree from a recognized university or any other equivalent qualification in the field of Computer Science or ICT that would be acceptable to the Faculty of Applied Sciences and the senate of the university.
2. All lectures, practical classes and examinations are conducted in English. Therefore, the candidates must be fluent in English.

### Target group

- Individuals seeking academic qualifications in Computer Science.
- Those planning to start a career in computing or already employed in the field.
- Educators teaching Computer Science or ICT in universities, schools or other educational institutions.
- Individuals aiming to migrate for job opportunities in the computing field.
- Those intending to pursue higher education abroad in Computer Science or related disciplines.

### For more information Contact

Dr. Kasun Kosala Jinasena

Coordinator

M.Sc. Programme in Computer Science

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Email: kasun@sjp.ac.lk

# **M. Sc. Degree/ Postgraduate Diploma in Forestry and Environmental Science**

**Offered by the Department of  
Forestry and Environmental Science**



## **M. Sc. Degree/ Postgraduate Diploma in Forestry and Environmental Science**

**Offered by the Department of Forestry and Environmental Science**

### **Introduction**

With the concept of “sustainability” percolating into virtually all key sectors of the economy, applied knowledge in environment, natural resources and their management has become a skill of demanded in the modern competitive career market. The MSc./Post Graduate Diploma in Forestry and Environmental Management offered through the Department of Forestry and Environmental Science is designed to equip you with the necessary knowledge and skills to take up diverse challenges in natural resource management.

### **Be a part of the tradition...**

Postgraduate education in Forestry and Environmental Sciences at the Department of Forestry and Environmental Science University of Sri Jayewardenepura has a history of more than 30 years. Since 1983, we have produced over 500 professionals with master’s qualifications, who are currently holding top managerial and executive positions in various forestry and environment related institutions, and ably contributing to the management of country’s natural resources.

### **Course description**

M.Sc. in Forestry and Environmental Management is a full-time two-year course whereas the Post Graduate Diploma is a one-year course. The course consists of core courses, assignments, and a research project. The coursework component of both M.Sc. and Post Graduate Diploma programs consists of an integrated series of lectures selected from 4 taught modules.

During the first year, both M.Sc. and Post Graduate Diploma students follow a common program that provides a comprehensive background. During the second year, M.Sc. candidates concentrate more on applied aspects as well as on the research project.

### **Entry requirements**

B.Sc. Degree in Biological or Physical Science, Forestry and Environmental Science, Geography, Geology, Agriculture, Civil or Chemical Engineering or a Four year Degree in Management, Social Science, Economics, with at least 5 years of experience in a relevant field or Any other special qualification equivalent to a degree recognized by the University Grants Commission and considered appropriate by the University Senate, with at least 7 years of experience in the field.

### **Careers**

The course is designed to train professionals to undertake tasks in forest and wildlife management, water and other natural resource management, environmental pollution control and use of special tools such as environmental impact assessment, cost benefit analysis, GIS and remote sensing applications in environmental management. As such, this program will open up the pathway to diverse and rewarding careers in government ministries, non-governmental organizations, environmental and business consultancies, public sector organizations, and manufacturing and service industries in the private sector.

### **For more information contact:**

Prof. Daham Jayawardana

M.Sc./Postgraduate Diploma in Forestry and Environmental Management

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# Postgraduate Programmes in Applied Statistics

**Offered by the Department  
of Statistics**



## **Postgraduate certificate/M.Sc. Degree in Applied Statistics**

**Offered by the Department of Statistics**

### **Why Study Statistics?**

Statistical thinking and methods are becoming more and more prevalent in an exceptionally wide range of areas. With this postgraduate qualification in Applied Statistics, students can advance their career in almost any field including education, science, technology, health care, government, or business. In Sri Lanka, qualified statisticians are employed by Central Bank of Sri Lanka, Department of Census and Statistics and Coconut/ Tea/Rubber institutes. The demand for trained statisticians continues to increase in the industry as well as it is becoming more dependent on predictive data and numerical reasoning.

### **History of the postgraduate programmes in Applied Statistics at USJ**

The first ever self-financed postgraduate programme in Sri Lanka, namely the postgraduate Diploma in Statistics, was started in 1968 by the Department of Mathematics of the University of Sri Jayewardenepura. The Department of Statistics and Computer Science restructured and renamed that programme as the M.Sc. Degree/Postgraduate Diploma programme in Applied Statistics in 1997. In year 2016, the department restructured the postgraduate programme in Applied Statistics to cater for those who wish to obtain one of the following qualifications: Postgraduate Certificate (SLQF 7), Postgraduate Diploma (SLQF 8), Masters Degree (SLQF 9), M.Sc. Degree (SLQF 10).

### **Course Description**

Postgraduate Certificate programme in Applied Statistics has been specially designed to provide professionals from various fields with a basic knowledge in Applied Statistics. The duration of the Postgraduate Certificate programme is one year.

The M.Sc. Degree programme in Applied Statistics has been designed to provide graduates from a related field with an opportunity to further develop their knowledge in Applied Statistics. The duration of the M.Sc. Degree Programme is two years.

The M.Sc. programme also consists of two exit points at Postgraduate Diploma and master's degree levels.

### **Entry qualifications**

The Postgraduate Certificate programme in Applied Statistics requires a bachelor's degree from any field of study from a university or an equivalent institution which is recognized by university Grants Commission/University of Sri Jayewardenepura. An adequate mathematical knowledge is recommended. The M.Sc. programme in Applied Statistics requires a bachelor's degree with 30 credits in statistics and/ or a related discipline from a university or an equivalent institution which is recognized by University Grants Commission/University of Sri Jayewardenepura.

### **For more information contact:**

Dr. H. A. Pathberiya

Coordinator

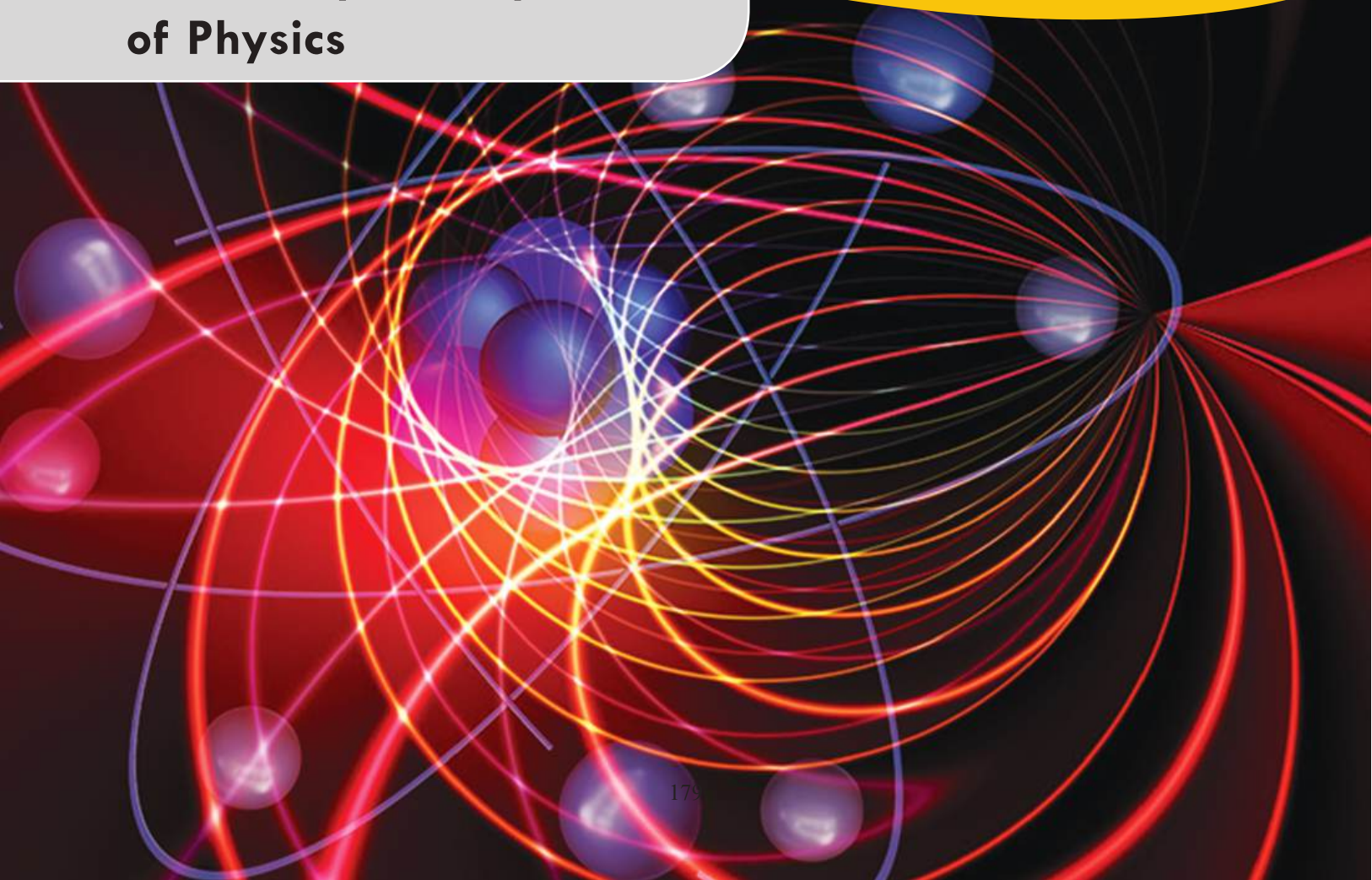
Postgraduate Programmes in Applied Statistics

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Email: msc.appstat@sjp.ac.lk, pgcerti.appstat@sjp.ac.lk

# M.Sc. Degree in Physics Education

**Offered by the Department  
of Physics**





## M.Sc. Degree in Physics Education

Offered by the Department of Physics

### Introduction

Physics plays an important role in all aspects of life and is undoubtedly the route to intellectual enlightenment in relation to the physical world. In addition to its well-known applications in numerous fields, physics provides a logical and conceptual framework useful in understanding natural phenomena and processes. Exposing students to physics at early stages therefore will help them to have a proper insight into the physical world. This however cannot be achieved without the active involvement of properly trained teachers who are well versed in principles of Physics as well as those of Education. Academic discipline that covers both these aspects is referred to as Physics education. The Department of Physics wishes to address this problem and proposes to commence a Postgraduate Diploma / M.Sc. programme in Physics Education under the Board of Study of Physical Science of the Faculty of Graduate Studies to fill this lacuna.

### Objectives

Objectives of the proposed postgraduate programme are to produce secondary school Physics teachers and other educators in Physics who will be

1. Having a sound knowledge of physics based on concept as well relevant aspects of Education.
2. Competent enough to upgrade their knowledge in new areas that will be added to the Physics curriculum from time to time.
3. Having general idea of philosophical aspects of Physics and recent developments and trends in Physics.

4. Competent in using mathematics, computers and microprocessors etc. as tools of teaching of Physics.
5. Sufficiently motivated to use the knowledge of Physics in design low-cost equipment for Physics laboratory studies.
6. Sufficiently matured to identify and design projects that would develop skills and competencies in the student and supervise them.
7. Knowledgeable in modern evolution methods.
8. Capable of recognizing the usefulness and limitations of Physics and appreciate applicability in other disciplines and everyday life.
9. Capable of developing skills and attitudes in students that will be of long term value in an increasingly technological world rather than focusing on large quantities of factual material which will have only short-term relevance.
10. Capable of motivating students to use the logical thinking process acquired by studying Physics in addressing other issues.

### Entry Qualification

Graduates of recognized universities who have offered Physics as a subject are eligible to apply. Preference will be given to those who are in the teaching profession or allied professions.

### For more information Contact:

Prof. P.K.D.D.P.Pitigala

Coordinator

M.Sc.in Physics Education,

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# M. Sc. Degree in Food Science and Technology

**Offered by the Department of  
Food Science and Technology**



## **M. Sc. Degree in Food Science and Technology**

**Offered by the Department of Food Science and Technology**

### **Why Study Food Science?**

Food Science and Technology drawn on the spectrum of biological and physical sciences, applies them to one of the essentials of life which is none other than food. Food science, not only in the academic, but in the real-world sense, relies on mathematics, physics, biology, chemistry, biochemistry, microbiology, engineering, processing, nutrition, biotechnology, marketing and management. The purpose of the M.Sc. degree in Food Science and Technology is to provide the student with an advanced training in a specialization, with a particular emphasis on the acquisition of experience in the strategies and experimental methods of modern, original scientific research.

### **History of the M.Sc. program in Food Science and Technology at USJP**

The national need for human resource development in the field of Food Science and Technology was recognized by USJP as far back as 1969. Based on this realization the first ever Post Graduate Diploma in Food Science and Technology in the country was introduced through the Department of Biological Sciences in 1968 due to the efforts of late professor A.C.J. Weerakoon, then professor of Biological Sciences. Subsequently in 1979 this programme was transferred to be managed by the Department of Chemistry. Later in the year 1992, the Postgraduate Diploma was upgraded to a Masters Degree in Food Science and Technology to be executed through the Department of Chemistry. On establishing the Department of Food

Science and Technology in the year 2005 this masters degree programme became to be managed by the Department of Food Science and Technology under the responsibility of the Faculty of Graduate Studies.

### **Course description**

The course consists of course work, practical classes and a research component geared towards those already employed in the food sector as food technologists, research scientists, academics, trainers, food analysts, QC personnel, factory managers, medical/scientific persons in Nutrition, Food Policy and Food Security or for those wishing to enter a career in the food related sectors as above or enhance knowledge on scientific aspects of food resources and their management for better utilization in business opportunities. Hence the curriculum has been designed to cater to the needs of different personnel involved in the food industry.

### **Entry qualification**

Applicants should possess one of the following degrees from any recognized university:

B.Sc. degree with Chemistry as a subject

Degree in Agriculture, Medicine, B.V.Sc., B.A.M.S., M.B.B.S., Chem..Eng.,

An equivalent qualification from a recognized higher education institution

### **Recruitment procedure**

Applicants are invited from the candidates who have satisfied the entry requirements. Due to large numbers of candidates applying for this course, suitable candidates are selected by an aptitude test and subsequently with an

interview where mostly the authenticity of certificates is examined. However, applications sponsored by state and private sector other organizations working in the target food-related areas would be given preference.

### **Careers**

The program prepares those already employed in the food sector as food technologists, research scientists, academics, trainers, food analysts, QC personnel, factory managers, medical/scientific persons in nutrition, food policy and food security or for those wishing to enter a career in the food related sectors. The programme incorporates many different disciplines and through those, it prepares you for a career not only in the food industry, but in many areas that you probably wouldn't even think of.

### **For more information, please contact;**

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Coordinator

M.Sc. in Food Science and Technology

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*+94 11 2758468*

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## Department of Botany

The mission of the department is to foster, promote and excel in teaching, learning and research in Plant Biology, Microbiology and Plant Biotechnology. Apart from imparting knowledge and developing skills of students on the fundamentals of these areas, enhancement of the quality of graduates, quality of teaching and research, and expansion of services offered to industry and society at large are other objectives of the department.



### Introduction:

Plants are the life-givers on earth. As primary producers, they are the first link of all food chains; produce oxygen that we breathe in; they give mankind everything from food, timber, medicine, spices, perfumes and oils to flowers. Can we ever think of an ecosystem without plants?

These are just some reasons why Botany holds a unique position among all sciences. The knowledge of a man will not be complete without the knowledge about trees. Botany enables one to learn about phenomena like the greenhouse effect, environmental pollution, and how to create an entire plant from a cell that is not even visible to the human eye.

Apart from all these, we, Sri Lankans are lucky enough not only to possess a rich biodiversity, but also to inherit an enchanting virgin rain Forest; the Sinharaja, which makes Botany a truly special field.

### Degree programmes offered by the department:

The Department of Botany offers three different courses (Plant Biology, Plant Biotechnology and Microbiology), which are designed to provide students with solid preparation to develop a range of skills in above areas of plant sciences together with employability skills such as communication, critical and creative thinking, teamwork and decision making. The Department offers two postgraduate research degrees: M.Phil. and Ph.D. in a range of disciplines

including Biotechnology, Tissue culture, Microbiology, Molecular Biology, Genetics and Plant Anatomy. It has built up an excellent research culture by having many staff members who have received awards for their innovations.

### Facilities in the Department

- **Molecular Biology Laboratory:**

A well-equipped Biotechnology Laboratory is available for teaching several course units in Plant Biotechnology and also for the use of research students.

- **Computer Laboratory:**

A computer laboratory with networking is available for teaching Biometrics, Bioinformatics, Molecular Modelling and Numerical Taxonomy.

- **Plant House:**

Three plant houses are available for maintaining live specimens needed for teaching Plant Diversity, Plant Taxonomy, Plant Virology, Plant Tissue Culture etc.

- **Tissue Culture Laboratory:**

A fully equipped Tissue Culture laboratory is available for teaching and research purposes.

- **Botanical Garden:**

In addition to Greenhouses a botanical garden is available (with a pond) for teaching and research (field experiments/field trials) purposes.



- **Herbarium:**

An herbarium comprising wet and dry specimens gives you an opportunity to study the plant diversity of the country.

- **Research Laboratories:**

Research laboratories for Plant Tissue Culture, Molecular and Microbiology, Virology and Pathology are available with 24-hour access to research students under the supervision of senior academic member of the department.

### **Botany and Plant Biotechnology Society**

Botany and Plant Biotechnology Society, which was formed in 2006, conducts various activities such as workshops, seminars, public lectures related to current topics in popular science.



### **For further advice and information please contact;**

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Nugegoda.

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*E-mail: mayuri@sci.sjp.ac.lk*



**Dr. M. L. A. M. S. Munasingha**

B.Sc. (Colombo), M.Phil. (Kelaniya), Ph.D. (Aberdeen, UK)

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Senior Lecturer and Head of the Department

*Research interests: Pollen analysis of cereals, Morphology, Distribution and drought resistant characteristics of Sri Lankan rice landraces.*

*Email - mayuri@sci.sjp.ac.lk*



**Prof. W. T. P. S. K. Senarath**

B.Sc. (Peradeniya), Ph.D. (Bangor, UK)

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Senior Professor

*Research interests: Plant cell and tissue culture, Secondary metabolites, Synthetic seed technology and Cryopreservation*

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**Prof. P. N. Dasanayaka**

B.Sc. (USJ), Ph.D. (USJ)

---

Professor

*Research interests: Molecular Biology, Conservation and utilization of Plant genetic resources, Genome Mapping*

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**Dr. D. H. H. Munasinghe**

B.Sc. (Colombo), M.Sc. (Cheju National University),

Ph.D. (Birmingham, UK)

---

Professor

*Research interests: Effects of plant metabolites on Caenorhabditis elegans with special emphasis on life span*

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**Dr. (Mrs.) P.K. C. Buddhinie**

B.Sc. (Colombo), M.Phil. (USJ), Ph.D. (USQ, Australia)

---

Senior Lecturer

*Research interests: post-harvest pathology with special interest on fungal and viral infections in fruits*

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**Dr. I.U. Kariyawasam**

B.Sc. (Hons,Botany,USJ), M.Sc.(Edinburgh,UK), Ph.D. (Edinburgh,UK)

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Senior Lecturer

*Research interests: Plant phylogenomics, next generation sequencing with special emphasis on target enrichment methods, taxonomy & systematics of cryptogamoc plants, historical Botany*

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**Dr. (Mrs.) Rinukshi Wimalasekara**

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*Research interests: Molecular plant physiology, Signal transduction*

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**Dr. (Mrs.) Dimuthu S. Manamgoda**

B.Sc. (Peradeniya), Ph.D. (Thailand)

---

Senior Lecturer

*Research interests: Molecular physiology and systematics, fungal diversity, cereal pathogens*

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**Dr. (Mrs.) G.D. Sinniah**  
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**Dr. N. Hewavitharana**  
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**Ms. H. Tharaka Mandakini**  
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## Supporting Staff

Mr. W.A.T.S. Weerasiri	Mr. S.H.C.K Premasiri	Mr. M.W.C. Maduwantha
Mrs. S.U. Herath	Mrs. H.S.M. Soysa	Mr. K.D.C. Lalitha
Mrs. R.A.D.C. Priyadarshani	Mr. D.S. Sahabandu	Mr. K.P.C. Methpriya
Miss S.H.S. Dilrukshi	Mr. D.M. Abeyrathna	Mr. D.N.W. Ranasinghe



## Department of Chemistry

Chemistry, which is the study of atoms and molecules from nano to macro levels, is often referred to as the central science, and is critical to a fundamental understanding of the world around us. Chemical concepts have traditionally been central to the canonical sciences such as biology, physics, and geology and continues its role in newer disciplines (i.e: materials science, forensics, astrobiology, biotechnology, bioinformatics, pharmacology, and atmospheric science).



## Introduction

Chemistry is a rapidly growing discipline bringing new discoveries theories, and scientific applications that ultimately benefit society. It is necessary for practicing chemists to be proficient in a wide range of chemical disciplines in order to address the important problems that lie at the interface of chemistry and closely related disciplines.

The Department of Chemistry at the University of Sri Jayewardenepura offers courses that incorporate the most recent advances in the discipline and provide our students with a strong foundation in the fundamentals of Chemistry and a choice of more specialized optional courses that cover a wide range of topics to suit their future goals. Academic programs in Chemistry are designed to meet the needs of the country and prepare students to seek employment with confidence. The B.Sc. Honours in Chemistry degree program offered by the Department of Chemistry provides students an in-depth knowledge in the sub-disciplines of Chemistry with a strong emphasis on fundamentals of Chemistry. The high level of standards in the Honours degree programme has resulted in postgraduate opportunities for the graduates to study in leading universities around the world.

The Honours degree in Industrial Chemistry is another program offered by the Department of Chemistry. This program aims to strengthen the knowledge and skills of students who wish to become industrial

chemists by offering the fundamentals of Chemistry required for industrial research and development. Industrial Chemistry is the branch of Chemistry that deals with the development, optimization and monitoring of various chemical processes towards the transformation of raw materials into useful commercial products that are of beneficial to society.

The department of Chemistry has a highly skilled academic staff, 20 PhDs and offers an excellent research environment that includes research laboratories and a fully staffed instrumentation facility with state-of-the-art equipment including Atomic Absorption Spectrophotometer, Fluorescence Spectrophotometer, Gas Chromatography Mass Spectrometry, Luminescence Spectrometer, Near IR Analysis.

The vision of the department is to contribute to national development, scientific advancement and professional development by providing up to date training and opportunities to students to become efficient and successful professionals.

## Degree programmes offered by the department

B.Sc. Honors degree with chemistry as a subject  
B.Sc. Honors degree in chemistry  
B.Sc. Honors degree in Industrial Chemistry

## Postgraduate Courses

The department has built a long tradition of excellence in research and postgraduate training. It offers

research degrees (Ph.D., M.Phil.) and the following MSc. Programmes by coursework.

M.Sc. Degree/Postgraduate Diploma in Industrial Analytical Chemistry.

M.Sc. Degree/Master/Postgraduate Diploma in Industrial Organic Chemistry.

### **The Chemical Society**

The Chemical society of University of Sri Jayewardenepura is one of the most active student societies in the university. Some of the activities are publication of a magazine (CRUCIBLE), organizing guest lectures, Annual Award of the GCN Jayasuriya Gold Medal at the convocation, Annual Chemistry staff vs students cricket match, annual outing, raising money for book/scholarship funds.



**For further advice and information, please contact;**

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**Prof. Champa D. Jayaweera**

B.Sc. (USJ), Ph.D. (Belfast), M.I.Chem.C.

Professor and Head of the Department

*Research interests: Trace metal analysis, Applications of chemical kinetics in Analytical Chemistry, Removal of hazardous dyes and metals in wastewater from low-cost materials, Analysis, value addition to naturally available plants and seeds, Safe aqua food.*

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**Prof. P. M. Jayaweera**

B.Sc. (USJ), Ph.D. (Belfast), M.I.Chem.C.

Senior Professor

*Research interests: Photochemistry and photophysics of labile metal complexes, Excited State studies of complexes and Spectroscopic studies of metal colloids, Sols and MELLFS, Reaction Kinetics, Surface Science of Nano Materials. Dye sensitized Nano-porous photovoltaic devices.*

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**Prof. S. S. L. W. Liyanage**

B.Sc. (USJ), Ph.D. (Cardiff Wales), M.I.Chem.C., MRSC, FPRISL.

Senior Professor

*Research interests: Synthesis of triphosphamacrocycles, Improvement of quality of natural rubber latex, Study on degradation patterns of polymer-based products, effects on nano-scale additives in Rubber compounding.*

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**Prof. B. A. Perera**

B.Sc. (Colombo), M.Sc., Ph.D. (Wichita State University, USA)

Professor

*Research interests: Comparison of migration behaviour of contaminants from plastic bottles to food. Cleavage of Bisnitrophenylphosphate using peptides*

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**Prof. S. D. M. Chinthaka**

B.Sc. (USJ), Ph.D. (Wayne State University, USA)

Professor

*Research interests: identification and quantification of trace level environmental contaminant using AAS, GCMS, and HPLC, use of hydrogels for environmental applications, utilization of micro extraction techniques coupled with chromatographic techniques in environmental analytical chemistry.*

*Email-sdmchin@sjp.ac.lk*



**Prof. C. Padumadasa**

B.Sc. (Colombo), Ph.D. (University of Oxford, UK)

Professor

*Research interests: Chemistry and biological activity studies of phytochemicals, characterization of heterocyclic compounds with pharmaceutical potential.*

*Email - chayanikapadumadasa@yahoo.com*



**Prof. N. T. Perera**

B.Sc. (Colombo), Ph.D. (Louisiana State University, USA)

Professor

*Research interests: Synthesis and spectroscopic characterization of inorganic complexes of biomedical relevance; biological cell imaging of rhenium complexes.*

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**Prof. M. A. B. Prashantha**

B.Sc. (USJ), Ph.D. (University of Moratuwa)

Professor

*Research interests: Synthesis of alkyd resins using locally available fatty oil and pyrolysis of locally available fatty oil, modeling the degradation of plastics.*

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**Prof. Pahan Godakumbura**

B.Sc. (USJ), Ph.D. (Wayne State University, USA)

---

Professor

*Research interest: Sensor development to detect small molecules/heavy metals biological systems by coupling with protein conformational change and nanoparticles. Identification of heavy metal and other toxic chemical contamination and accumulation in water, sediments of food and their analysis.*

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**Dr. P. K. D. M. C. Karunaratne**

B.Sc. (USJ), Ph.D. (Wayne State University, USA)

---

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Research interests: Material Science & Nano Chemistry.

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**Dr. Ranga S. Jayakody**

B.Sc. (Hon. Carlton University, Canada), M.Sc. (UCT), Ph.D. (UCT)

---

Senior Lecturer

*Research interest: Computer Aided Drug Design (CADD) In silico investigation of potential biological targets for small drug molecules isolated from therapeutic herbal preparations. Computational studies of their mode of binding, binding affinities, dynamics and enhancement of their drug potency by using CADD tools.*

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**Dr. Asitha T. Cooray**

B.Sc. (USJ). Ph.D. (NMT, USA)

---

Senior Lecturer

*Research interests: Analytical Chemistry, Aquatic Chemistry, Environmental Chemistry and impact of climate change on water resources.*

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**Dr. Isurika Fernando**

B.Sc. (USJ), Ph.D. (Western Michigan University, USA)

Senior Lecturer

*Research interest: Synthesis of mechanically interlocked molecules chemistry, and their applications towards miniature electronic devices and controlled drug delivery Systems*

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**Dr. N. P. L. N. Palliyaguru**

B.Sc. (USJ), Ph.D. (Temple University, USA)

Senior Lecturer

*Research interests: Investigating the photochemistry of industrially and environmentally relevant molecules.*

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**Dr. Chandima Narangoda**

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Senior Lecturer

*Research interest: Designing new synthetic strategies to access biologically relevant molecular motifs and 4-, 5-, 6-membered N-heterocycles, methodology development in organic synthesis, green chemistry in organic synthesis, synthesis of natural products-based hybrid-drug molecules, synthesis of bio-degradable nanomaterials in the use of environmental remediation, development of surface modified fillers for rubber and plastic based products*

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**Dr. A. D. K. I. Weerarathne**

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Senior Lecturer

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Senior Lecturer

*Research interest: Fabrication, characterization, and optimization of catalyst layers for hydrogen fuel cell applications. Investigation of bio-derived polymer coatings for enhancing the surface properties of carbon supports in hydrogen fuel cell catalyst layers.*

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## Supporting Staff

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Miss. L.M.G. Liyanage	Mr. S.P.P.L. Perera	Miss. B.K.A.H. Abeywickrama
Miss. D.P.S. Tharuka	Mr. J.A.R. Rukshan	Mr. D.P.A.S. Dharmasena
Mr. E.A. Nilaj	Mr. H.N.P. Fernando	Mr. J.M.U.P. Kumara
Mr. H.S.S. Fernando	Mr. D.M.S. Rupasinghe	Mr. H.M.D.P. Kumara
Mr. G.G.R. Rajapaksha	Mrs. N.T.M. De Silva	Miss. N.A.H. Silva



# Department of Computer Science

The mission of the Department of Computer Science (DCS) is to produce high quality graduates and postgraduates in Computer Science and ICT who can contribute to the national development and to the development of the two disciplines.

## Introduction

Computing is an essential part of 21st-century life and is an exceptionally fast-moving subject that gives rise to a range of interesting and challenging problems. To solve these problems, skillful, knowledgeable and versatile scientists who have a firm grasp of the fundamental concepts as well as in-depth knowledge of specific areas such as software engineering, visual computing, intelligent computing, distributed computing, mobile computing, networks, web services and the Internet are needed.

## Computer Science and ICT at the University of Sri Jayewardenepura

The Department of Computer Science at the University of Sri Jayewardenepura is a large and growing department with exciting undergraduate teaching programs. A degree from us can prepare you for some of the newest, most dynamic and exciting careers around today and the careers of tomorrow. The department offers Computer Science and ICT as a subject for physical science undergraduates. By choosing to study Computer Science/ ICT with us, you will be well on your way to becoming a leader in the field of computing.

Currently there are about 520 undergraduates in four batches following a general degree with Computer Science, general degree with ICT and a special degree in Computer Science. During the first two years, students are given a strong foundation in core Computer Science concepts. In the third year,

the focus shifts to hands-on learning and industry-aligned experiences, while the fourth year delves into advanced concepts in Computer Science.

Teaching methods involve a combination of lectures, tutorials, group work and practical work. The tutorials are provided in all years of the study programs. At the first year, most of the practical work is carried out in supervised laboratories with academic staff on hand to offer assistance. In the more senior years, most of the practical work is carried out independently with consulting assistance available at specified times. At the University of Sri Jayewardenepura, we are dedicated to uplift the education and development of leaders in the computing industry.

## Degree programs offered by the department

- B.Sc. Honours Degree in Computer Science
- B.Sc. General Degree with Computer Science as a subject
- B.Sc. General Degree with ICT as a subject

Goals and learning outcomes of course units, course contents, methods of assessments, handouts, past question papers, details on recent research activities, postgraduate programs etc. are available at our website [www.cs.sjp.ac.lk](http://www.cs.sjp.ac.lk).

## Postgraduate Studies

Computer Science is a dynamic and continually expanding subject, and DCS at SJP is committed to excellence in its teaching and research. Our

postgraduate studies will enable you to explore the full breadth and depth of this dynamic discipline.

The Department of Computer Science offers postgraduate programs to study in Computer Science leading to the:

- Postgraduate Certificate Computer Science (SLQAF 7)
- Postgraduate Diploma in Computer Science (SLQAF 8)
- Master in Computer Science (M.CS.) (SLQAF 9) (1 year)
- Master of Science in Computer Science (M.Sc. in CS) (SLQAF 10) (2 years)
- Master of Philosophy (M.Phil.) (SLQAF 11)
- Doctor of Philosophy (Ph.D.) (SLQAF 12)

### **Post graduate diploma / Certificate**

The Postgraduate Diploma/Certificate in Computer Science is a professional qualification for graduates with a background in computing. It is particularly suitable if you are working in areas related to computing and wish to bring your expertise up to date with developments in this fast-changing field. As a research project is not compulsory, the postgraduate program will appeal to students wanting for postgraduate course-work qualifications.

### **Master of Science (M.Sc.)**

The Master of Science in Computer Science is a master's degree centered on course work completed over two years with or without research work. This is designed to broaden understanding and knowledge of computer science and enhance the ability to apply this within industry or commerce. Also, in addition to gaining an

in-depth knowledge of state-of-the-art technologies, it also further develops the competence and ability to apply them in your own working environment.

### **Master of Philosophy (M.Phil.)**

The Master of Philosophy in Computer Science is a research-based degree, in which students develop research skills that will be invaluable for further work in a research environments, and it aims to provide preparation appropriate for undertaking a Ph.D. program in computer science. Students are expected to make a significant contribution to knowledge in the field of study.

The program offers four exit points, allowing students to obtain a Postgraduate Certificate, a Postgraduate Diploma, a Master's Degree in Computer Science, or an M.Phil., depending on the level of study and research work completed. This flexible structure ensures that students can align their educational achievements with their personal and professional goals.

### **Doctor of Philosophy (Ph.D.)**

The Ph.D. program in Computer Science is a research degree granted primarily on the presentation of a substantial research achievement which involves three to four years of original research work. A Ph.D. is generally required by those people seeking careers in a university or research laboratory.



## Computer Science Association



The Computer Science Association of the University of Sri Jayewardenepura (CSA of USJ) is the official governing body of all student-related activities of the Department of Computer Science, University of Sri Jayewardenepura, which is a prominent and growing department with exciting undergraduate and postgraduate programs.

In 2024, the CSA organized a range of impactful activities, including Aurora, the Annual Conference on Computer Science for undergraduates and school students, and “Back to School” sessions to enhance students’ knowledge in computer science and ICT. The association also hosted guest lectures and workshops on trending topics, organized the Annual Inter-faculty Gaming Competition, and launched Odyssey 2024, an industry visit series providing undergraduates with insights into industry expectations.

Additionally, they conducted a webinar titled “Soar Higher: Excelling as an Undergraduate and Pursuing Higher Studies Abroad,” featuring distinguished alumni to guide students in their academic and professional pursuits.

### Our achievements are remarkable:

Innoventures, a team of second-year undergraduates, secured the 1st runner-up position at IdeaForge, a

prestigious competition organized by the University of Kelaniya in 2024. The Department proudly celebrated the outstanding achievements of its students at the 47th Colors Awarding Ceremony. Additionally, the department won the Gold medal at Asia Pacific ICT Awards (APICTA) 2019 and 2018, Silver and Bronze Medals at NBQSA 2019 and 2018, First Place Global Award at Robotic Design Competitions, Spain, 2019.

### For more information

<http://www.cs.sjp.ac.lk/>

### For further advice and information, please contact:

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Ph.D. (USJ, SL)



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**Ms. F. S. Sourjah**

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## Academic Supporting Staff



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### Temporary Instructors

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Ms. S. A,M P Udeshika  
Ms.Tharundi Dunuwila  
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Mr. R.V.P.S. Akesh  
Mr. Naveen Avishka Livera

## Supporting Staff

Ms. Charuni Liyanage	Mr. M. V. S. Perera	Mr. N. A. Ferdinands
Mr. Dinidu Rukmal	Mr. Chamath Wijesekara	



## Department of Food Science and Technology

The Department of Food Science and Technology offers B.Sc Honours degree programme in Food Science and Technology. The B.Sc. (FST) degree programme has a strong origin and background as the university started Food Science and Technology teaching through a Postgraduate Diploma programme in Food Science and Technology as early as 1969.



## Strategic Intent of the Department of Food Science and Technology

To become a centre of excellence in higher learning in the arena of Food Science and Technology and Nutrition which disseminates knowledge in keeping with the developmental needs of the country and requirements of the region for related professionals.

Being closer to Colombo, the department has comfortably established collaborative links with major and small scale institutions of the food sector. Therefore, undergraduates have great opportunities to get themselves exposed to many food related industries for field trips, Industrial/Research/Field placements etc. In addition, the department is in position to invite experts working for the relevant private sector institutions in conducting lectures, seminars, workshops and practicals.

### Program outcomes; B.Sc. Honours in Food Science and Technology:

1. Demonstrate competency in appropriate knowledge in the field of food<sup>#</sup>.
2. Communicate efficiently and effectively in respective field of specialization using written, oral, visual and electronic forms.
3. Demonstrate as an empathetic and emotionally intelligent team player with leadership qualities.

4. Apply the skill-set\* related to food<sup>#</sup> creatively to solve real-world problems by making context specific operational decisions while adapting to changing environments.
5. Create value through integration of innovation, and entrepreneurial & managerial proficiencies.
6. Implement subject-based solutions in keeping with ethical, societal, and environmental norms and need for sustainable development in the sphere of food<sup>#</sup>.
7. Depict lifelong learning through scholarly advancement and/or strengthening professional skills and ensuring the betterment of the community.

\* The term food means basic, advanced and applied subjects related to Food Science, Food Technology and Nutrition.

\* A skill set is the combination of knowledge, experience, and abilities that the student develops through his studies and beyond

The B.Sc. degree in Food Science and Technology has been designed to enable the prospective FST graduates to be able to demonstrate excellence in all subject related practical skills and apply both theoretical knowledge and related practical skills acquired appropriately in different situations. It is

also expected that they will develop their technical competencies in order to be fitting to any challenging situation in the Food Industry. The abilities and skills expected to transfer to the prospective FST graduates through the degree programme include Generic Skills, Numeracy skills, Communication skills (with special emphasis on scientific communication), Information and communication technology (ICT) skills, Interpersonal/teamwork skills, Self management and professional development skills.

**The FST degree programme offered by the Department of Food Science and Technology has been designed to help the student in achieving the following,**

1. Develop the knowledge, skills and attitudes based on a broad and multi-disciplinary approaches in order to fulfill the current and emerging needs in local, regional and international food sectors.
2. Develop the knowledge, skills and attitudes through theoretical, laboratory and out-door/field practical components in experiencing the real world practices in the field to establish and manage socially acceptable, economically viable and environmentally friendly food industries.
3. Identify problems and issues related to the food industry and conduct independent research in order to find the most appropriate solutions.
4. Develop ICT skills

5. Develop interpersonal, teamwork and leadership skills.
6. Develop self management and professional development skills
7. Maintain an acceptable moral conduct

### **Association of Food Science and Technology (AFST)**

The Association of Food Science and Technology (AFST) is made of a collection of enthusiastic, skilled and dynamic undergraduates who work hard every day for the progress of the field of Food Science and Technology with a high degree of professionalism and develop and fine tune their skills through their hard work. The AFST was established on the 11th of January 2007 and the membership of the association is available for any undergraduate who follows the degree of Food Science and Technology at University of Sri Jayewardenepura.

Members of AFST come across many opportunities every year to increase their subject knowledge, develop contacts and gather more information about the vastly expanding and improving industry. One such event is Pro Food Pro Pack Exhibition which is the largest International Food Exhibition in Sri Lanka where our university has been able to win more than 8 awards throughout these years competing with other Universities and Industries. In addition, there are many events organized by the AFST, such as fun match and annual trip, awareness programmes on

World Food Day, Vidujaya Exhibition in 2009, Food Nights, Sankalpana in 2011, Arunella in 2012 and have also taken part in massive events like Dayata Kirula 2014.

Web address <http://www.sjp.ac.lk/sites/foodscience/>

*For further advice and information, please contact;*

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## **Dr. Sashie Abeywickrema**

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Mr. T. Ruwansiri	Mr. G. A. S. Fernando	Mrs. U. L. A. S. Liyanage
Mr. I. K. M. Wickramasinghe		





# Department of Forestry and Environmental Science

The Department offers multidisciplinary programs in Conservation, Management and Utilization of Forest and Other Natural Resources and Environmental Protection (Pollution Prevention and Waste Management).

## Introduction

The Forestry education in the University of Sri Jayawardenapura has a history of more than 30 years. Department of Forestry and Environmental Science is the only one of its kind in Sri Lanka which offers both undergraduate and postgraduate courses in Environmental Management and Forestry. Especially through its postgraduate program, the department has been able to reach wide horizons in training professional in both government and non-government sectors who are capable of contributing effectively to the country's developmental process. About 1000 professionals have been trained up to 2023, many of whom are employed in forestry and environmental sectors.

## Mission of the department

To assist in sustainable management of natural resources and environment through manpower and knowledge development.

## Objective of the Course

To develop decision making knowledge and skills required to manage natural resources in natural and man-made environments.

## Degree Programmes

The Department offers multidisciplinary programs in Conservation, Management and Utilization of Forest and Other Natural Resources and Environmental Protection

(Pollution, Prevention and Waste Management).

## Undergraduate Degrees

B.Sc. Degree Programme in Environmental Management and Forestry (3 years)

B.Sc. Honours Degree in Environmental Management and Forestry (4 years)

## Field/ Factory Assignment (Internship)

In the third year, students are placed in leading public and private sector institutes in the fields of forestry, agriculture, environmental, sustainability, wildlife, rural development and policy formulation for field/ factory assignments (internship). This is intended to provide students with an opportunity to acquire knowledge of a “real work” environment. This program has made our graduates more employable in the previous years.

## Postgraduate Degrees

The Department offers the following programs at postgraduate level.

- M.Sc./Postgraduate Diploma in Forestry and Environmental Management
- M.Phil. and Ph.D. Degrees by research

## M.Sc./Postgraduate Diploma in Forestry and Environmental Management

The overall objective of this course, which has been offered since 1983, is to develop decision making knowledge and skills required to manage forests and other natural environmental resources and to prevent

and control environmental pollution. The target groups for this programme are those who are already employed in forestry, environment and natural resource management sectors and others who wish to pursue careers in the above sectors.

### **M.Phil and Ph.D. Degrees by Research**

The department enrolls students for M.Phil and Ph.D degrees by research in areas within the specialization and research interests of the staff.

### **Departmental Research**

Research in the Department carried out by staff, special degree students and postgraduate students cover a wide range of topics relevant to Forestry and Environment Science and management. This includes research in forest management, silviculture, forest ecology, wood science and timber technology, agroforestry and social forestry, tree improvement and propagation, forest management, wildlife management, forest economics, pollution control, waste management etc.

Several collaborative research projects have been conducted with foreign universities such as University of Bangor, UK; Yale University, USA; Edith Cowan University, Australia, University of Calgary, Canada, other governmental agencies, industry, national and international NGOs with a view to provide a more pragmatic and realistic approach in solving problems.

### **Facilities**

Among the many facilities of the department, a fully equipped auditorium and lecture rooms with audio-visual facilities and a computer center can be highlighted. There are fully equipped laboratories, instrumental centers and greenhouses for practical and field work. The department manages 100 acres of Forest Reserve and a Field Research Center at Yagirala, which offers opportunities to study and practice Forest Management, Biodiversity and Ecotourism. The department is fully facilitated with specialized centers that serve as valuable resources for sharing knowledge and facilitating research such as,

- Center for Sustainability
- Center for Forest and Environment
- Timber Process Innovation Center
- Forest Research and Conservation Education Center
- Mangrove Conservation Center

### **Centre for Forestry and Environment**

The Centre for Forestry and Environment (CFE) was established in 2016 with the objective of supporting pioneering research in forestry and environment by the academic staff of the Department of Forestry and Environmental Science, in collaboration with researchers from other departments of the University of Sri Jayewardenepura and leading Research institutes in Sri Lanka and other countries. The facilities available at the Centre are also used to further train the students of the Department of Forestry and Environmental Science at B.Sc., M.Sc., M.Phil. and

Ph.D. levels in conducting cutting-edge research.

The main objectives of the CFE are to conduct high quality research projects aimed at solving pressing issues in forestry and environment sectors in Sri Lanka and to contribute to the national development by finding appropriate solutions through applied research. While serving the needs of the nation, these researches are expected to reach global audiences by having them published in premier scientific journals. The uniqueness of this centre is its ability to bring together many researchers to form multi- disciplinary teams that can undertake tasks which may not be completed by one or two individuals. The wide coverage of the forestry and environment sectors, such collaborations are essential to achieve innovative results useful for the progress of the country.

### **Center for Sustainability**

The Center for Sustainability (CFS) is a body for professional environmental services, research and extension attached to the Department of Forestry and Environmental Science. A variety of services including environmental consultancy and advisory services and short courses and training programs on environmental management and sustainability are offered especially for the corporate sector.

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### **Other Collaborations**

The department maintains close collaborations with other institutions in forestry and environment. Every year opportunities have been provided for two Range Forest Officers of the department to follow the B.Sc. Degree programme with Environmental Management & Forestry as a subject.

### **Further Training/Workshops**

Apart from the regular training programs conducted by the department, short-term training workshops are also being conducted targeting relevant government and non-government officials, personnel from the industry and others on a variety of subject areas with mutual interest to both parties.

### **Role of the Department in Natural Resource Management**

The department also plays an important role in national development by its contribution to national and international activities. One such activity which has gained international recognition is the Annual Forestry and Environment Symposium which is being held for the 28<sup>th</sup> consecutive time this year. The

academic staff of the Department serves in national committees, conducts environmental assessments for national and international projects and provides advice to the government as well as private sectors in the fields of forestry and environment. The staff also liaise closely with forestry and environment related institutions and carries out research solely and in collaboration with other institutions in fields of great importance. The department is also heavily engaged in dissemination of knowledge among the general public and personnel in other sectors.

### **Career opportunities**

With the environment becoming an essential component in decision making, there is a rising demand for competent graduates in environment related professions. The course in Environmental Management and Forestry will take you towards diverse and rewarding careers in government ministries, non-governmental organizations, environmental and business consultancies, public sector organizations, and manufacturing and service industries in the private sector.

### **Memberships and societies**

#### **1. Forestry and Environmental Science Society**

Forestry and Environment Society is one of the leading student societies in the university. The society organizes both intra-curricular and extra-curricular activities such as field trips, training programs in Yagirala Field Research Centre, workshops, lectures, film festivals and social service activities. The main

objective of the society is to enhance different skills of members while nourishing them with current knowledge in the field.

### **2. International Forestry and Environment Symposium**

Distinguished as the oldest and most renowned Forestry and Environment Symposium in South Asia, the International Forestry and Environment Symposium, organized by the Department of Forestry and Environmental Science is the premier event where researchers, academia, professionals, policymakers, and the industry meet to discuss and learn about the latest developments in forestry and environment sectors. The Honors Degree students of the Department of Forestry and Environment Science can also present their research findings at this event, which will enhance their confidence to engage with the scientific community.



### **Contact Details**

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### **Ms. K. Deshika De S. Jayasekara**

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Mr. Nishantha Gamage	Mr. E.W. Gettler	Mr. Dinusha Dharmarathna
Mr. Susantha Perera	Ms. Sanduni Hasara	Mr. Sachintha Peramunage



## Department of Mathematics

Mathematics alone will enable a person to make a positive contribution to the society through logical thinking rather than rules & regulations.

## **Mathematics is the “Queen of Sciences”.**

Scientific and industrial progress in recent years have made Mathematics one of the most important subjects of our time. In modern times, being versed in the language of mathematics helps one to make progress in day-to-day life. More than its role as a mere language, Mathematics has now found an increasingly significant influence in many diverse fields, from management to medicine. An undergraduate degree in Mathematics will open the way to a future filled with wide opportunities for jobs and professions. Mathematics related professionals such as Actuarial Scientists, Accountants, and Statisticians are quite high in demand worldwide.

Furthermore, Mathematics alone will enable a person to make a positive contribution to the society. Mathematics is, in addition to being the language of science in its own right, a way of logical thinking rather than rules and regulations.

### **Degree Programmes offered by the department**

- General Degree
- Honours Degree
- Postgraduate Diploma/M.Sc. Programs

### **Postgraduate Diploma/M.Sc. Programs**

Being the first Faculty of Applied Science of the country and realizing the potential of graduates with a strong mathematical background, we launched

the first Postgraduate Diploma/M.Sc. program in Industrial Mathematics in Sri Lanka, in 1996.

### **Computer Technologies and Facilities**

Though the Department of Mathematics has only a handful of academics, we are fortunate to have a sound blend of both 'Pure' and Applied' Mathematicians. As a result, the programs and courses of the Department of Mathematics are designed to cater to students, who are either strong in abstract thinking or more applied oriented. As there is a high demand for Computational Mathematics, the department has introduced a practical component each to most of the mathematics course units in the department with the students having access to a well-equipped computer laboratory.

There is a good collection of books on Mathematics in the main library, covering almost all sections of Mathematics. We strongly advice the students to refer these books whenever possible. Mathematics is an exciting field, which is not difficult to grasp, contrary to the view of the general public, and the lecturers in the department of Mathematics are willing, to help the students with their academic work and to guide them on other matters.

### **Career Opportunities in Mathematics**

What can you do with a degree in Mathematics? Almost anything! As our world and economy becomes more and more science and technology-oriented, there is an increasing demand for people



**Dr. R. Sanjeewa**

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Mr. M. D. K. Chathuranga

Mr. S. K. Guruge

Mr. W. G. D. D. Ariyadasa



## Department of Physics

“Physics is a creative activity of the human mind. Studying Physics provides you with a delightful and rewarding experience that will make you suitable for any future career.”

## Introduction

Physics is a dynamic discipline where new knowledge, applications and technologies are born every day. A degree in physics offers you the ability to stay ahead in the competitive world by offering you not only the subject knowledge but also the right tools to be creative and to think differently. It equips you with the analytical and personal skills that are essential for personal development, for whatever path you decide to take in the future.

The Department of Physics at the University of Sri Jayawardenepura offers courses that integrate both the foundational knowledge and the recent advances of the field, thereby ensuring students gain knowledge across the breadth of the discipline. Additionally, optional courses are offered in specialized subject areas that enable students to follow industrial aspects of physics. Not limited to the technical know-how of the field, students are also offered optional courses to help develop their soft skills such as presentation and communicational skills.

Hands-on learning is offered through the various laboratories at the department. These include an Elementary Laboratory, Optics Laboratory, Electronic Laboratory, Applied Physics Laboratory, Embedded Systems and Robotics Laboratory, Computational Laboratory and Advanced Physics Laboratory. The department also has a workshop equipped with machinery and instruments.

## Degrees Offered by the Department.

B.Sc. (General) Degree program with Physics as a subject

B.Sc. (General) Degree program with Electronics and Embedded Systems as a subject

B.Sc. (Honours) Degree in Physics

Special Degree students are provided with the opportunity to apply their knowledge and gain industrial experience through an industrial placement include, ITI, Atomic Energy Authority, ACCIMT, SLSI, Petroleum Resources Development Agency and CEA.

## Postgraduate Level

The Department accommodates M.Phil. and Ph.D. students. Present Postgraduate projects are centered on Geophysics, Digital Electronics and Mathematical Computational Physics, and Material Physics.

## The Physics Society

The sharing of knowledge is not limited to the course material. The physics society is an active organization which organizes exhibitions, film festivals and popular talks that make the student life at the Department more vibrant and exciting. The Department also organizes seminars and



informal discussions on the topics such as Science,  
Religion, Literature and Philosophy.

*For further information, please contact;*

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Mr. W.A.D.T.P.M. Padmasiri	Mrs. P.N.C.M. Sikurajapathi	Mr. B.K. Chaminda
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Mr. I. D. Palpola		



## Department of Polymer Science

With the rapid development of science and technology, the study and invention of more advanced materials have reached a new level. Polymer Science is a field that deals with both natural and synthetic materials like rubbers, plastics and fibers that provide the basis of many materials which have predominantly replaced conventional materials like steel and glass. It, then branches into several disciplines such as polymer physics, rheology, and synthesis.

## Introduction

Department of Polymer Science offers B.Sc. Honours Degree in Polymer Science and B.Sc. General Degree with Polymer Science and Technology as a subject. It is focused to have high quality graduates having sound knowledge in polymer science and polymer technology with preliminary exposure in industrial atmospheres to endow polymer scientists, polymer chemists and polymer technologists for working with new challenges, M.Sc. in polymer science and technology introduced in 1976 with the help of University of Aston is conducted at the degree is well recognized postgraduate program to polymer industry of the country.

Polymer science has exponentially expanded in a global context and global production of polymers have exceeded the production volume of steel. Polymers become a good replacement for the applications of steel, glass and ceramic because of its light weight, energy serving production processes and acceptable chemo mechanical properties. Engineering polymers, domestic polymers, paints and adhesives and elastomers are some examples of the application-based categories of polymers.

According to the Flory (Nobel price, 1974), modern polymer science is a blend of organic chemistry, some aspects of physical chemistry, material physics, statistical mathematics, and some aspects of inorganic chemistry. Polymer technology is a combination of polymer science, some aspects of chemical engineering, rheology and reactor designing for polymerization, some mechanical aspects and mould designing. Its interdisciplinary nature makes it a fascinating and challengeable subject.

## Degree programs offered by the department

B.Sc. Degree with Polymer Science and Technology  
B.Sc. Honours Degree in Polymer Science.

## Postgraduate Courses

Department of Polymer Science offers M.Sc./ Postgraduate diploma in Polymer Science & Technology.

## Facilities

The Department of Polymer Science provides laboratory facilities, including instrumentation for rubber compounding, processing, testing, and plastic processing and testing. The available instruments include an internal mixer, two-roll mill, universal testing machine, compression mold, and moving die rheometer. These resources are available to the academic and industrial research community, both within and outside of USJP, and are overseen by a dedicated team of professional academic staff.

## Career opportunities

This degree is designed for students to obtain an in-depth knowledge in polymer science and to thereby produce professionals for the polymer industry and academia. As there are over five thousand polymer related industries including plastics, rubber, textile, etc. in Sri Lanka, the students who graduate with a degree in polymer science have a high opportunity to enter into the employment market and to contribute to the country's economy through research and development in the field of polymer science and by sharing their knowledge with the industries and helping these industries to prosper.

Also, the program would open up great opportunities for student to follow postgraduate degrees through research in recognized universities and research institutes in the world.

### **Society of Polymer Science**

The Society of Polymer Science which is established in 2021 is one of the most active student societies in the university. The purpose of the society is to promote interest in Polymer Science among university students and schools and to provide the opportunity for experience and enrichment in the field.



### **For further advice and information, Please contact**

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**Dr. Madhubhashini Maddumaarachchi**

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Professor

*Research Interests: Smart materials: materials reactive to light, heat, mechanical energy, pH etc; Absorbing, materials: oil-sorbers (absorbing polymers), hydrogels (agricultural applications, sanitary products, etc); Surfactants, green polymers:*

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## Department of Sports Science

The Department of Sports Science offers a comprehensive approach to understanding and enhancing sports performance through a blend of scientific principles and managerial practices. It integrates disciplines such as physiology, biomechanics, psychology, and nutrition with sports management, preparing students for diverse careers in sports coaching, fitness management, performance analysis, and sports management.

### **Introduction**

The Department of Sports Science was established in December 2017. The Department offers the B.Sc. Honours Degree in Sports Science and Management.

The Sports Science and Management Degree Programme is an interdisciplinary programme which focuses on the areas of anatomy and physiology, psychology, sociology, biomechanics sports technology, forensic science, sports medicine and sports management. One strength of the Sports Science and Management Degree Programme offered by USJ is the strong knowledge base required to cover all areas of the field of Sports Science, that can offer a comprehensive Degree Programme. At present, the Degree Programme is offered in collaboration with the Faculty of Management Studies and Commerce, Faculty of Medical Sciences and Gampaha Wickramarachchi University of Indigenous Medicine.

With national and international collaborations, the Department intends to enhance the depth and spectrum of Sports Science and Management education in Sri Lanka.

### **Advanced Diploma in Sports Science and Management**

The Advanced Diploma in Sports Science and Management is designed to meet the increasing demand for sports practitioners who are striving to excel in their theoretical and practical knowledge in sports, sports science, and sports management. This two-year advanced diploma programme is approved

by the Ministry of Education for school-level coaches. The entry qualifications are stipulated to align with the requirements of the Sri Lanka Qualification Framework. Students enrolled in the programme have the option to follow it in either Sinhala or English languages.

### **Facilities at the department**

The Department of Sports Science is equipped with cutting-edge facilities designed to enhance the student learning experience and support advanced research. Our smart classroom features a smart board and interactive technology that fosters dynamic, immersive learning environments, enabling students to engage with the latest sports science concepts in real time. Additionally, the department features an activity room fully equipped with the latest sports equipment, ensuring all necessary tools are available for effective practical sessions. This space is not only dedicated to hands-on learning but also serves as a hub for cutting-edge sports testing and research. Outfitted with advanced testing equipment, it supports innovative research initiatives and comprehensive studies, empowering students and researchers to explore new frontiers in sports science with precision and excellence.

### **Career Opportunities**

Graduates in this field may pursue careers as performance analysts, sports coaches, sports therapists, fitness center managers, sports administrators, strength and conditioning specialists, entrepreneurs in sports-related businesses, or physical education teachers/instructors. Additionally, they may be well-prepared to undertake further specialized training to become accredited physiotherapists, exercise physiologists, clinical exercise consultants, or dietitians/nutritionists.

### **Team of Sports Science: The Students Association of Department of Sports Science**



The Team of Sports Science (TOSS), the Students Association of the Department of Sports was established in 2018 under the patronage of the academic staff of the Department. TOSS aims to enhance the potential of its members integrally through its diverse activities. In collaboration with a wide network of public and corporate sector organizations, TOSS periodically organizes various sports skills and facility development programmes, focusing on different stakeholders such as undergraduates, the university

community, school-level students, and the general public.

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## Supporting Staff

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Mr. R.P. Edirisinghe

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## Department of Statistics

Our aim of training undergraduates in Statistics is to provide a broad knowledge in the subject Statistics; technical skills and the ability for critical statistical reasoning; opportunities to participate in statistical research; preparation for higher studies and for professional careers.

## Introduction

The Department of Statistics offers Statistics as a subject for B.Sc. Degree and also offers a B.Sc. Honours Degree in Statistics. Physical science undergraduates can follow Statistics for their three year general degree depending on the subject combination they are placed. Students are selected for subject combinations on the basis of their request and A/L z-scores.

The mission of the Department of Statistics is to produce high quality graduates and postgraduates in Statistics who can contribute to the national development and to the development of the discipline.

## Programme Details

Aims and learning outcomes of course units, course contents, methods of assessment, handouts, past question papers, details on recent research activities and postgraduate programs etc. are available at our website <http://science.sjp.ac.lk/sta/>

## Statistics for reliable decision making under uncertainty

Statistics is the scientific application of mathematical principles for collection, analysis, interpretation and presentation of any kind of data under uncertainty. Statisticians begin to contribute to scientific inquiry by applying their mathematical and statistical knowledge through the design of surveys and experiments and proceed until the final presentation of results. Statistics is an essential tool in any field where decisions are made based on data. Statisticians apply

their knowledge of statistical methods to a variety of subject areas such as biology, economics, education, engineering, medicine, public health, psychology, marketing, sports etc.

## History of Learning Statistics in the University of Sri Jayewardenepura

Teaching Statistics in the university dates back to 1968. Until 1998, Statistics was offered by the Department of Mathematics. Later, the Department of Statistics and Computer Science was established in 1998. The present Department of Statistics was formed in early 2014. The department offers Statistics as a subject for the General Degree Program as well as the Honours Degree Program in Statistics. In addition, the department conducts two postgraduate programs in Applied Statistics, namely Postgraduate Certificate in Applied Statistics and M.Sc. program in Applied Statistics. This is an evolution of the first ever self-financed post graduate program in Sri Lanka, the Postgraduate Diploma in Statistics, which was established in 1968.

At present, about 470 undergraduates are studying Statistics as a subject. In addition to the essential theoretical knowledge, statistics undergraduates are given ample opportunities to collect and analyze data, and prepare statistical reports related to real world problems.

They are also given sufficient exposure to statistical software in analyzing data. Diversified learning

activities and assessment methods such as individual and group assignment, presentations, seminars, individual and group projects are used to encourage active learning. This diversification helps to improve soft skills such as communication skills and teamwork. Independent learning is encouraged at all levels.

Candidates for the Honours Degree in Statistics are selected at the beginning of the third year, based on the performance in the first two years. Statistics Honours Degree students are required to undertake a comprehensive guided project. In addition,, they are exposed to the real world applications by means of a four-month, full-time, industrial training. They also gain vital experience in solving real world problems through the Statistical Consultancy unit in the department which offers its services to both on campus and off campus researchers.

The Department is dedicated to providing a conducive learning environment to produce statisticians who are capable of solving practical problems and contribute to the national development using their skills.

### Statistic Society

The Statistics Society of the Department of Statistics was formed in the year 2009 with the intention of promoting Statistics among the students of the Faculty of Applied Sciences. Over the past few years, the society has undertaken many



initiatives in order to enhance the interest towards Statistics. Each year, the Statistics Society publishes a magazine, “STAT Plot”. STAT Plot allows our Statistics undergraduates to voice their thoughts about Statistics. This is the place where their thoughts about Statistics. This is the place where their creativity and divergent thinking take to the pinnacle. This is where their knowledge about Statistics is heard loud and clear. The society also annually organizes a “STAT Day” which brings together a variety of individuals including undergraduates, staff and industry professionals with a timely theme. The Annual “STAT Quiz”, held as a part of the “STAT Day”, is a synonym for the Clash of Statistics Geniuses. It is the perfect arena to show off their knowledge and skills, and a splendid opportunity to work as a team.

Knowing how and where your skills and knowledge can be best utilized would certainly be beneficial in the long run. What use of your knowledge can there be if you do not know how to give value for it? Therefore, the Statistics Society introduces career opportunities for undergraduates.

**For further advice and information, please contact:**

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## Department of Zoology

Department of Zoology offers three subjects namely, Zoology and Aquatic Resources Management and Biology to undergraduates of the Faculty of Applied Sciences.

### History

Teaching of science at Vidyodaya was initiated in 1962 and teaching of Zoology as a subject was also commenced. However, Botany and Zoology Departments were amalgamated as the Department of Biology in 1966 but later again that Department was separated as Zoology and Botany in 1982 which continues up to date under the Faculty of Applied Sciences.

### Present status

At present, Zoology as a subject is offered by blending its applications focusing more towards the skill development of the students to suite the present day needs of the country. As a result, study components stem from the Department are Fisheries and Aquaculture, Limnology, Molecular Biology, Wildlife, Microbial Ecology, Insect Pest Management, Environmental Physiology etc.

Apart from that as a combination of marine and freshwater study components Aquatic Resources Management has been introduced as a new subject providing more opportunities for the students to learn specialized areas with a multidisciplinary approach

### Aquatic Resources Management

This subject provides more opportunities for the students to use their knowledge in development activities of the country in a sustainable manner. We have resources with expertise knowledge in fresh, brackish and marine components to improve the skills of the students.

As in many other developed countries this will help the students to learn about the interactions of watersheds with the aquatic environment through water resources management, coastal resources management, water resources modeling, conservation strategies, aquatic resources planning and management, the use of Geographic Information Systems as a tool in management of aquatic resources etc

Finally, this will provide an opportunity for the students to develop their skills to suite the present requirements of the country.

### Mission

The mission of the Department is to promote and excel in Teaching, Learning and Research and Application in the fields of Zoology.

### Undergraduate programme

The Department of Zoology offers three subjects for undergraduates: namely, Zoology Aquatic Resources Management and Biology. Students can select different subject combinations for their undergraduate degree programme.

The Department offers

Three-year B.Sc. (General) Degree

Four year B.Sc. Honours Degree.

### Field Visits for Zoology and Aquatic Resource Management Students

Most of our Course Units are field oriented and are designed to widen the field experience and gain skills and practical knowledge in Aquaculture, Fisheries,

Limnology, Environmental Science, Wildlife Ecology and Ecology etc; The students will get the opportunity to conduct their field studies in Fisheries at Udawalawe Reservoir, Chilaw and Negombo estuaries etc. Aquaculture field studies are in Dambulla and Udawalawa freshwater fisheries stations. Limnology field studies are at Beira Lake, Kandy Lake and Bolgoda lagoon etc. Wildlife studies are at Sinharaja Man & Biosphere Nature Reserve, Roomassala Coral Reef, Giritale Nature Reserve, Sigiriya Nature Reserve, Bundala Ramzar site and Anawillundawa Ramzar site. Visits will be arranged to the National Zoological Garden in cooperation with the Zoological Garden staff for the studies on Animal Diversity and Primate Evolution. These courses will be supported by means of video films and practical classes.

### **Industrial Training**

The Department offers Industrial Training for B.Sc. Aquatic Resources Management and Zoology students to provide exposure to industries and other Research Organizations. Industry placements include the Central Environmental Authority (CEA), Industrial Technology Institute (ITI), Medical Research Institute (MRI), Tea Research Institute (TRI), Coconut Research Institute (CRI), National Aquatic Resources Research and Development Agency (NARA), Marine Environmental Protection Authority (MEPA), National Water Supply and Drainage Board (NWSDB), Coast Conservation Department (CCD), Department of National Zoological Gardens, National Aquaculture Development Authority (NAQDA) and other Private Sector Institutes.

### **Post Graduate Programme**

The Department offers the following programmes at Postgraduate level;

- M.Sc./PGDip in Fisheries and Aquatic Resources Management

The Masters Degree / Postgraduate Diploma Program is designed to meet the increasing need for highly skilled Managers, Biologists or Biologically literate Mathematicians and Statisticians to work in Aquatic Resources Management.

### **Course structure**

Two years in duration for M.Sc. and one year for Postgraduate Diploma. The course is Teaching Intensive with Practical Classes, Assignments, Field Visits and Individual Research Projects (M.Sc. only). Lectures will be conducted during weekends.

### **M.Phil and Ph.D. Degrees by Research**

The Department registers students for M.Phil and Ph.D. Degrees by full time Research in areas within the Specialist and Research Interests of the academic staff.

### **For further advice and information, please contact:**

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Mr. K.G.N.S. Gamlath

Mr. G. D. P. Weerasiri

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Emeritus Prof.  
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Emeritus Prof. P.C.B. Fernando

**Department of Zoology**



Emeritus Prof. J. Jinadasa



Emeritus Prof. S. Piyasiri



Emeritus Prof. S.M.D.A.U. De Alwis



# DELT

## Department of English Language Teaching

### *Department of English Language Teaching*

#### *About English Language Proficiency Courses*

##### ***Rationale***

The English proficiency courses offered by the Department of English Language Teaching to the students of the Faculty of Applied Sciences are geared to assist students to deal with the English language skills they need when they follow their academic courses in English medium. The two courses in the first year first and second semesters will cover the four major skills of English language; listening, speaking, reading and writing. It is a mandatory requirement to complete the two English courses in order to obtain the degree in the university.

##### ***Course content***

ENG 101 2.0 Compulsory English (Scientific Communication) is offered in the first year first semester. ENG 102 2.0 English for Scientific Discourse is offered in the first year second semester. ENG 301 2.0 Professional English (Optional) is offered in the third year first semester. All these three course units consist of the lessons focused on the general use of the language, the use of English in scientific contexts and in professional environments. The module-based teaching materials, interactive language learning methods supported by audio-visual teaching aids will be utilized in the language learning process of the above-mentioned courses.



# Department of English Language Teaching

## Examination and Evaluation

The final examination consists of both a written paper and continuous assessments. Continuous assessments will carry 40 marks and written paper is scaled for 60 marks.

### Semester I

ENG 101 2.0      Compulsory English (Scientific Communication)\*      a

### Semester II

ENG 102 2.0      English for Scientific Discourse      c

### Semester I

ENG 301 2.0      Professional English      o

## Course Type

-a-  
Compulsory

-o-  
Optional

-c-  
Core

\* To obtain the degree, a minimum grade of 'C' should be obtained.



## Genetics & Molecular Biology Unit

The Genetics & Molecular Biology Unit was established in 2018 to cater to Sri Lanka's increasing need for competent Molecular Biologists with a strong Genetics background.

## Introduction

Genetics and Molecular Biology are central to all biological sciences. Our mission is to provide the necessary toolset for our students to contribute to national development and the advancement of the field within the nation and worldwide. Graduates of our program will have a thorough understanding of the fundamental concepts of Genetics and Molecular Biology, in-depth knowledge of selected advanced concepts and techniques in these areas, and a good skill set. In a world where everything is intertwined with biotechnology, this knowledge and skill set combined with soft skills refined through various activities embedded within the courses will allow our students to integrate into any system where opportunity calls. Students will also have the opportunity to job shadow and train in an industrial setting to gain exposure and experience firsthand the applicability of what they are learning in the real world.

The unit, in concordance with other departments, offers the following two subject combinations:

- Biology, Chemistry, Genetics and Molecular Biology
- Environmental Management and Forestry, Chemistry, Genetics and Molecular Biology

## Degree programmes offered by the Unit

B.Sc. General degree with Genetics and Molecular Biology as a subject

B.Sc. (Honours) degree in Genetics and Molecular Biology

B.Sc. (Honours) degree in Applied Sciences (Genetics and Molecular Biology)

## Facilities:

The Genetics and Molecular Biology Unit is budding, with its recent access to teaching and research laboratories with the basic equipment required to conduct Molecular Biology experiments and research. Further, laboratory visits are organized to state-of-the-art facilities such as GeneLabs, Institute of Biochemistry, Molecular Biology and Biotechnology (IBMBB) at the University of Colombo, the Genetics laboratory at Lanka Hospitals Pvt. Ltd., and Plant Virus Indexing Centre to maximize the student exposure to various technologies in the field ranging from the most basic to the most advanced in the country.

## Genetics and Molecular Biology Society

The Genetics and Molecular Biology Society (GeMSoc) of the Unit was formed in November 2020 with the intention of disseminating knowledge, developing soft skills, and providing entertainment for the students, especially during the hard times of COVID-19 closures. The society has conducted many activities during the four years since its inception; recently, the students organized SciDiplomatiX'23, Sri Lanka's first all-island science diplomacy competition. Further, students conducted an online trivia competition for interschool and interuniversity participants, webinars and discussions with experts in academia and the industry in Sri Lanka and from

abroad, online workshops for O/L and A/L students and game-nights to relieve stress and strengthen the bonds between the students and academics of the Unit to name a few. The humanitarian project “Akura” is a commendable community service project conducted by the students where they provided all the school supplies to students entering Grade 1 at a school in Neluwa, Galle.

*For further advice and information, please contact;*

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*Research Interests: Host-parasite and vector-parasite interactions of Lymphatic Filariasis (LF) causing nematodes, Developing diagnostics for LF, Biotechnological solutions for current issues*  
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**Dr. Kasun M. Thambugala**  
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Lecturer

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**Dr. S. H. Tennakoon**  
B.Sc. (India), M.Sc. (UK), Ph.D. (Austria)

Lecturer (Un-confirmed)

*Research Interests: Cell signaling, Molecular basis of diseases, Herbal medicine, Molecular diagnostics*  
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**Dr. P. D. Dayananda**  
B.Sc. (Colombo), Ph.D. (USJP)

Lecturer (On contract)

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# Management Science Unit

“Management is the science that professionals in a wide range of industries should possess to advance managerial and organizational decision-making and problem-solving. Management science is a broad discipline that deals with the science behind decision-making, and can be applied to mainly any professional field.”

## Introduction

With a blend of scientific essentials, the Management Science Unit (MSU) within a faculty is a lively and dynamic academic unit committed to giving students a thorough understanding of the management concepts and procedures of industrial awareness. Experienced and well-known academics actively involved in cutting-edge research and industrial partnerships make up our unit. They ensure students are exposed to the most recent managerial concepts and best practices by bringing their knowledge and perspectives to the classroom. Students can participate in case studies, simulations, and internships that give them practical experience in managerial issues.

### *Our Mission*

***“To provide students with the resources and enduring professional skills they need to succeed in the demanding global managerial aspects, navigate the business side of scientific ventures, and drive innovation to contribute to national and international development.”***

In a world that is changing quickly, the Management Science Unit provides students with the information, abilities, and mindset they need to become creative and accountable leaders. The unit also helps its students develop a strong sense of community through various organizations, groups, and networking opportunities.

Prominent companies across multiple industries greatly value graduates from the unit. Hence, our dedication fosters interdisciplinary collaboration with the faculty, allowing students to understand various industries’ scientific and managerial aspects comprehensively. Science degrees provide a solid basis for quantitative and analytical abilities, which are critical for managerial problem-solving and data-driven decision-making. Together with our other departments, the unit provides the following combination of subjects;

- Chemistry, Mathematics, Biology, Forestry and Environmental Science, Physics

### **Degree programs offered collaborated with the MSU**

- Bachelor of Science in Biological Sciences-3 Year
- Bachelor of Science (Honors) in Applied Sciences–4 Year

Students studying science may encounter challenging issues that require a combination of administrative and scientific knowledge. In addition to scientific information, our unit provides students with frameworks for problem-solving and decision-making. Graduates with management and scientific expertise are in great demand across various science-based sectors, including research and development, technology, healthcare, manufacturing, pharmaceuticals etc. In a world that is changing quickly, the Management Science Unit is dedicated to giving students the information, abilities, and mindset

they need to become creative and accountable leaders.

### Benefits of Selecting Management Science in Degree programs

- It offers a strong basis for professions in math, science, technology, and engineering (STEM).
- A degree in management science disciplines offers a strong basis for employment in supply chain management, operations research, consulting, and entrepreneurship, among other commercial domains.
- Students who study multidisciplinary courses are exposed to a variety of viewpoints and fields of knowledge, which promotes a comprehensive comprehension of challenging issues.
- Employees with managerial experience are highly valued in many sectors.
- A strong basis for future leadership through personal growth and development.

### Social and Community Benefits of MSU

Our network and affairs generate a sense of community and belonging for our students, fostering connections, friendships, and shared university values. We promote diversity and inclusion by fostering a welcoming atmosphere for students from various ethnic and cultural backgrounds. Additionally, our unit gives

students the chance to organize activities engage in teamwork, and develop leadership. The unit consistently encourages international partnerships with foreign scholars to participate in guest lectures to exchange expertise in a variety of multidisciplinary areas, including workshops, research, career development, and leadership and communication.

**For further advice and information, please contact:**

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Management Science Unit  
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**Dr. K.A. Kamal Gnanaweera**

PhD (TPU, Japan), MBA (USJ), MFE (UOC), MSc (AeU, Malaysia), PDPM (CIM, UK), PGD (UOC), BSc. (MSU, USA), CPM (Asia)

Coordinator- Management Science Unit / Senior Lecturer

*Research Interest: Corporate sustainability management, Professional marketing insights, Entrepreneurship's progression in SMEs, Digital experience, and effects of economic development*  
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**Dr. Anuradha Iddagoda**

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## Career Guidance Unit

Career Guidance Unit helps undergraduates to develop their skills and abilities of self-assessment, information seeking and decision making required for coping with the needs of the complex world of work and to develop lifelong learning ambitions by providing services in Career Education, Career Guidance and Career Management.



## Career Guidance Unit

The Career Guidance Unit (CGU) of the University of Sri Jayewardenepura aims to support and facilitate undergraduates to develop and enhance employability skills to be aligned with their life goals and to assist the graduating students in their employment search and career projects through different platforms.



## Objectives of CGU

- To provide a service in Career Education, Career Guidance and Career Management
- To expose undergraduates and recent graduates of the university to a variety of resources including people, data and information
- To support undergraduates in their efforts to set life goals, plan future careers and put those plans into effect
- To support students for employability skills development through various activities and programs
- To help graduating students in their job search and career projects through recruitment related services

## Facilities and Services Provided by the CGU

- Facilitating the young person's transition from school to university by conducting awareness programs for the A/L students the government schools

- Counseling and advising on careers
- Conducting employ ability skill development workshops
- Conducting CV writing and mock interview sessions Career-related information provision
- Networking with the industry by conducting Job Fairs
- Providing internship training for graduate job placement
- Conducting Outward Bound Training (OBT) camps for undergraduates
- Conducting entrepreneurship skill development programs searching career guidance course units based on modules introduced by UGC Guiding students for research, development and innovations

## Certificate Course offered by CGU HRM Course for non-HRM Students:

This 12 hr short course is conducted to teach the basic concepts of human resource management to students who are not following HRM as a subject in their degree courses in the Faculty of Humanities and Social Sciences, Faculty of Applied Sciences and Faculty of Medical Sciences.

## Clubs and Society Details

### Career Skills Development Society (CSDS)

CSDS is one of the main students' societies belonging to CGU. The CSDS, along with CGU,





annually organizes diverse activities to enhance the employability skills of undergraduates.

### **Touch the Peak - Jpura Annual Job Fair and Workshop Series**

#### **Objectives**

- To prepare the fresh graduates & Interns for the world of work.
- To develop the organizing skills of the undergraduates
- To provide an opportunity for our students to develop a relationship with executive officials of companies and institutes.

These programs will also contribute to the development of a positive image of the university as invited companies and other institutes can have a face to face interaction with graduates and lecturers at the university premises.

### **Sathkaara**

Our initiative to make the under-developed hospitals, more equipped with the aim of levelling up the standard of public health. Health is wealth as we all know. But when our health is at risk if we don't have the proper facilities in our nearest hospital to make us better, how helpless we would feel? So as a club through this CSR, we renovate rural hospitals and provide needed infrastructure to protect the health of humankind.

### **Shadow of Success**

This is conducted throughout the year opens up the pathways to share experiences and ideas of renowned personalities such as veteran artists, athletes, and

chefs who belong to different fields with the young generation to motivate them to pursue their goals of being a successful person who fits into the corporate world. This program feeds you with the portion of motivation, confidence, and self-realization to achieve your desired goals and targets in life. Simply, it says the simple directions to be a remarkable star among thousands of stars in your society.



### **Flair Club**

Flair Club is a newly established association that is monitory under the Career Guidance Unit (CGU) which builds up and enhances the inborn talents of undergraduates of the University of Sri Jayewardenepura.

**Dhaara '24**, the Inter-Faculty Singing Competition organized by the Flair Club of the University of Sri Jayewardenepura, is back! Highlighting the exceptional musical talent of undergraduates, Dhaara pushes them to achieve new heights. From the preliminary round to the grand finale at Nelum Pokuna, Dhaara is a thrilling marathon of musical excellence. Participants have the unique chance to showcase their hidden talents and develop their leadership qualities. Stay tuned for a musical journey filled with passion, talent, and the vibrant spirit of DHAARA'24.

### **Voyage Workshop Series**

Voyage workshop series is based on developing positive values and attitudes along with the career skills of the university students. These workshops will be conducted by renowned motivational speakers and psychological counselors.

### **JESA - J'pura Employability Skills Awards**

This special awarding ceremony paves the path for us to identify the undergraduates with hidden talents, bring them to light and encourage the undergraduates to be actively engaged in extra activities to acquire soft skills and other essential skills. Some of the most famous activities/events among undergraduates are special university events, student mentoring, students' clubs /social events, conferences, presentations, meetings, ceremonies, volunteering, part-time employment, work placements etc.

#### *Objectives*

- To encourage the students to develop their soft skills
- To prepare the graduates to face the challenges in the co-operate sector.
- To attract more students to the Career Guidance Center and further facilitate them.
- To develop the network between the industry and the university undergraduates.
- To make undergraduates aware of the importance of employability skills to get a job in the current job market.
- To give a training opportunity to face interviews.

- To bridge the gap between the students and well-wishers.
- To inspire others to get involved in future endeavours.

### **OBT Camp**

CSDS also organizes OBT camps that help to improve skills of participants while building unity. The most prominent benefits of this kind of training is team bonding and self-confidence building of individuals. These activities help to sharpen and fine-tune the behavioral skills and qualities of individuals and also develop mutual trust and understanding among members of a group. This training helps to generate fresh ideas and better attitudes while boosting the team spirit, thereby ultimately supporting the undergraduates to achieve their life objectives.

### **Donate Happiness Cancer Hospital Project**

“Donate Happiness” project is conducted help the children residing in Cancer Hospital, Maharagama. This program is organized annually at this hospital, providing every child a valuable gift. This programme also intends to develop social responsibility skills among the members of CSDS.

### **Arunella Career Guidance Program for School Children**

The “Arunella” program is conducted to introduce career guidance to the schools and to guide Advanced Level students to plan their future. This program was inaugurated in 2014 and was successful in making

students aware about the career planning after the A/L examination and being qualified graduates in the future.

### **Green Hopes - CSR Annual Project**

This program is designed to develop environmental sensitivity among undergratuity and the active participate will be award certificates.

### **Gavel Club**



The Gavel Club of the University of Sri Jayewardenepura is one of the most prestigious clubs in the university. Over the years the club has reached immense heights by pioneering the public speaking arena among other universities. Most importantly the club is known for its sincere, welcoming and unbreakable bond it has with its members as well as the other undergraduates and clubs in the university. We conduct educational meetings every week to improve the public speaking skills of our undergraduates. The meetings consist of two sessions followed by comprehensive evaluations provided by fellow role-players at the respective meeting, giving a massive opportunity to enhance public speaking skills for our gaveliers. To add variety, we also organize special Themed meetings and Joint meetings with other Gavel clubs of Sri Lanka. The meeting enables any individual to take up roles such as Toastmaster, General Evaluator, Timer, Grammarian,

Ah- Counter and Vote Counter which allows them to get awesome exposure from the respective roles. It also enables students to inspire, persuade and entertain others and in return to be inspired, `persuaded and entertained by the other members throughout the session. The friendly atmosphere that has around the Career Guidance Unit acts as a magnet in attracting the family and gives newfound freedom capabilities and abilities. The educational meetings are indeed a work of miracle

### **Speech Master and Junior Speech Master**

Speech Master is the biggest all-island prepared speech competition rallied out by Japura gavel to drive, motivate, and bring the best orators in the Sri Lankan undergraduates' communities into the spotlight. The Grand Finale of speech master 2024 was held for the Seventh consecutive year at the Sumangala Auditorium of the University of Sri Jayewardenepura. This project builds up a platform for the University and school youth to showcase their youthful spirits and focus on developing and strengthening the public speaking skills needed to take up chances and raise their voices as future leaders.

### **Vorbitor-Intra University Best Speaker Competition**

“Vorbitor” is an Intra-University Best Speaker Competition organized by the Gavel Club of University of Sri Jayewardenepura. It provides a platform for undergraduates to showcase their talents. Being one of the main events conducted talents. Being one of the main events conducted by the Club, it

Being one of the main events conducted talents. Being one of the main events conducted by the Club, it provides a platform for students within the University to showcase their talents irrespective of the year of study or the faculty, The club highly motivates and encourages undergraduates to partake in this event which provides an invaluable opportunity to improve their public speaking and communication skills.

### **Tharanya**

The CSR project to the Gavel Club, consists of a one day program for an under-privileged school within the Colombo suburbs, which includes sessions of team building, motivation and soft skills development and an on-going project in which, students from the Department of English visit the school every Saturday to help improve students' English knowledge.



### **Adventure Club**

Adventure Club has been one of the most anticipated clubs in our university club history. During adventure learning, students work both independently and collaboratively to complete tasks, solve problems, and support one another as they are challenged to go outside of their comfort zones.

The Adventure Club provides opportunities for students to participate in rock climbing, zip lining, ropes courses, OBT sessions, and other activities

that involve appropriate risk-taking. By joining the club, members will gain valuable experience and knowledge, contributing to the long-term success of the club.

The Japura Adventure Club is a platform for enthusiastic undergraduates to develop their skills while pursuing their passion for adventure. The club fosters a close-knit community where every member is treated equally, regardless of their background. These are the main events of the Adventure Club.

- 01.INGRESS – “The Arousal of Adventure Heroism”
- 02.EXORDIUM - “The dawn of an adventurous era”
- 03.SENDERISMO- “Beyond the limitations”
- 04.AVENTUREROS - “To conquer the limits”
- 04.EUPHORIA- “Touch the sky with glory”
- 05.ROBAROSIYA – “Valentine’s Day celebration with Adventurers”

### *Programs*

- Adventure Base Camping
- Fire Camping
- OBT
- Hiking and Hiking Competitions
- Rock Climbing
- Water Rafting
- Leadership and Personality Development Programs/Workshops
- First-Aid/Swimming/Life Saving/Cooking and Map Reading, Notes and adventure-related workshops

## Vow Society



Values of the Wise Society (VOW) is a pioneering initiative under the guidance of the Career Guidance Unit, designed to equip individuals with the virtues and values necessary for thriving in today's dynamic professional world. Established with a forward-thinking mission, VOW is dedicated to fostering an environment where ethical principles and strong values are integral to personal and professional growth.

VOW's mission is to "prepare individuals for the world of work by creating an environment rich in virtues and values to ensure that they meet the requirements of the future." This mission underscores our commitment to not only addressing the practical aspects of career readiness but also emphasizing the importance of character and integrity in shaping successful professionals.

### Objectives:

#### *Understanding Virtues and Values in Professional Development:*

VOW aims to deepen the understanding of how virtues and values play a crucial role in career advancement and global professional settings. By highlighting the intersection of ethical behaviour and career success, we prepare individuals to navigate their careers with a strong moral foundation.

#### *Enlivening a Value-Based Mindset:*

Our objective is to inspire and cultivate a value-based mindset among undergraduates. Through various programs and activities, we encourage students to

integrate core values such as honesty, responsibility, and respect into their academic and professional lives.

#### *Realizing Societal Integration and Personal Growth:*

VOW helps individuals recognize their role as active members of society, emphasizing that personal development is intertwined with societal betterment. By aligning personal values with societal needs, we empower students to contribute positively to both their growth and the welfare of the community.

Through its comprehensive approach, VOW is dedicated to preparing individuals not just for professional success but for meaningful and ethical participation in the global workforce.

### Programs –

#### **I.Be the Change** - Service Learning Program

Certificate of Achievement Service Learning for Leadership and Career Development

Course Duration- 6 months

#### **II.International Conference on Living Values Education**

The conference aims to showcase innovative approaches, share research findings, and foster collaborative efforts to enhance educational outcomes through the promotion of ethical and value-centered learning environments.

#### **III.World Mental Health Day – INSPIRA**

Inspira is an annual program at the university dedicated to enhancing mental health literacy among undergraduates.

#### **IV.Tune In - Active Listening Training**

Tune In is a 5-day active listening training program designed to enhance university students' basic counselling skills. It focuses on improving their ability to understand peers' mental health issues, practice effective listening, and

### ***V. Sign Language Training***

The 5-day Sign Language Training program is designed to cultivate professional interest in working with individuals with disabilities. It enhances empathy and communication skills while opening up new job opportunities in a growing market. Participants gain practical sign language skills, improving their ability to connect with and support the disability community

### **Startup Hub**



Startup Hub is a newly established Society for those who want to be an entrepreneur. . You don't need any prior knowledge of business, as the programme will guide you step-by-step from the very basics of business ideation to finally launching your venture.

### **Japura Rover Scout Crew**

For Rover Scouts, personal development is a key part of their adventures. Rover Scouts may volunteer regularly at a food bank, assist with organizing and running their group's All-Section camp, or they might organize a rappelling adventure or a multi-day portage paddling excursion for undergraduates by the National Rover Scout Association with the collaboration of the Career Guidance Unit.

### **Counselling Services**

We provide psychological counselling services with professional counsellors who take a holistic approach. We believe that integrating the mind, body, and spirit is essential for a healthy and productive student life. We

are committed to safeguarding the confidentiality of all your information.

### **Career Guidance Unit – Staff**

#### **Academic Staff Details**

Dr Eranga Jayasekara  
Director Career Guidance Unit

#### **Academic Supportive Staff Information**

01. Mr. Sameera Jayawardene - Career Adviser
02. Mrs. Chathuranagani Thennakoon Career Adviser
03. Mrs. Nirosha Madhuwanthi - Career Guidance Counselor
04. Mrs. Shashika Niroshani - Career Guidance Counselor

#### **Non- Academic Staff**

Ishara Prarackrama – Management Assistant  
Saman Bandara – Work Aid

#### **For further information please contact:**

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Director – Career Guidance Unit  
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Web: [career.sjp.ac.lk](http://career.sjp.ac.lk)





## The Library

The mission of the library is to provide access to the library and information services in an efficient, effective and useful manner to support teaching, learning and research activities of the intellectual community by making resource materials available, and by assisting users to be acquainted with skills in locating information deemed necessary in the modern age of information.

	Normal Hours	During Examination period
Week days	8.00 am – 6.00 pm	5.00 am – 10.00 pm
Week ends	8.00 am – 6.00 pm	8.00 am – 6.00 pm
Poya days and other public holidays	-	8.00 am – 6.00 pm

hours of the library may change with prior notification.

### Electronic resources

Library has acquired a number of electronic resources such as e-books, e-journals and bibliographic and full text databases covering almost all the subject disciplines. All these databases and other free electronics are listed under e-resources in the library website ([www.sjp.lib.ac.lk](http://www.sjp.lib.ac.lk)). For some databases, user name and password are needed while others can be accessed within the university premises. Remote access is restricted to those who have email facilities in the SJP domain. Some available databases are JSTOR, Emerald, Oxford University Press, Taylor and Francis, and Research Life and Scopus.

### Interactive Study Area

All registered library users can get online access to electronic databases, journals and internet facilities within the multimedia centre, during week-days from 8.00 am to 6.00 pm. There are about 40 terminals in this centre.

### Ceylon Room

The objective of maintaining Ceylon Room is to maintain books written about Sri Lanka and books authored by Sri Lankan authors. Apart from those, Sri Lankan Government publications such as acts, bills, administrative reports, bank reports and publications of government corporations, boards and authorities and manuscripts are available in the Ceylon Room. Postgraduate theses submitted to the University of Sri Jayawardenepura and theses submitted by academic staff members to other University / Higher education institutions are also housed in along with Palm Leaf Manuscript collection.

The entire selection the Ceylon Room is on Permanent Reference basis and not allowed to borrow.

### English Learning Zone (ELZ)

ELZ is maintained for learning English language within the library. Basic grammar books and short story books are stored here.

### How to use the Library:

Registration of new students, issuing of library

## The Library

### Profile

The Library plays an important role in university education supporting the three main pillars of the university: teaching, learning and research. There is a collection of more than two hundred thousand books, hundreds of journals and a few electronic databases in the library mainly to cater the eight main faculties.

The staff headed by the librarian Dr (Mrs) N. D. Wijayasundara ensures that the Library is updated and fully equipped to serve your needs.

There are three branch libraries under the main library; Medical, Engineering and Technology. Medical Library is located in the Medical faculty premises. This collection is specially developed for the users of the Faculty of Medical Sciences, Faculty of Allied Health Sciences, Engineering and Technology libraries are located in their faculty premises.

### Organization of the Collection

Monographs are classified under subjects using an international standard, Dewey Decimal Classification (DDC) system and catalogued using Anglo American Cataloguing Rules (AACR II), All books in the library can be browsed using the Online Public

Access Catalogue (OPAC). This is available via the library home page ([www.sjp.lib.ac.lk](http://www.sjp.lib.ac.lk)). For collection organizing purposes, books are categorized as follows.

**PR (Red R)** : Permanent Reference - Not allowed for borrowing

**SR (Green R)** : Scheduled Reference - Overnight reference

**Lending** - Can be borrowed for a period of two weeks

### Periodicals Division

Serial publications including journals and magazines are kept in the Periodicals Division. Library consists of print journals as well as electronic journals and databases. Scholarly journals including international journals and local journals cover many of the subject disciplines. Current issues are displayed on display racks according to the journal titles in alphabetical order. Bound volumes are also stored according to the same order of the journal titles. Availability of journal issues can be checked using Visible Index at Periodicals Division or through computer catalogues (OPAC).

Serials are only for reference. These are not for lending. Readers can get photocopies of required articles through the Photocopy Service Centre by paying the required amount of money.

Depending on the situational requirements opening

clearance certificates and other reader services are handled through the inquiry counter located at the left side of the ground floor near the main entrance. Bringing personal books, periodicals, news- papers, cameras, food and drinks except water bottles into the library is strictly prohibited. Personal belongings of library users should be kept in the cloak room upon obtaining a token.

### **Library Registration and Obtaining Library User Accounts**

All registered students of the University are entitled to get the membership of the library. Library membership can be obtained by submitting a duly filled application to the inquiry counter together with student identity card or record book issued by the university.

Once a filled application is submitted, a library user account is created and it will be informed through your e-mail. The total responsibility of personal user accounts lies with the user and the library will no longer be responsible for any complaints made after activating individual user accounts. Users are responsible for the passwords of their accounts. Users must report any abuse or anonymous issuing of library materials on their accounts within 7 days of such misuse.

The account holder is responsible for any book issued (checked out) to their account.

Library facilities are terminated at completion of studentship or termination of studentship at the university. Such students should return all borrowed

library books to the library.

### **Issuing of Library Books**

Undergraduates can borrow 04 books at a time (01 - SRScheduled Reference; 03 - Lending books). Books needed to be borrowed should be given to the officer at the main counter along with the student identity card or student record book. The due date is stamped on the date slip of the book and those books are inspected by the library security staff before taking out of the library. Books borrowed should be returned to the relevant counters on or before the due date.

The Loan period for Lending books is two weeks and for Scheduled Reference books it is overnight. Scheduled Reference books should be returned before 10.00 a.m. on the following day.

### **User Education**

The Library conducts orientation programs for all new students. Library resources and their use is explained at this program. Specialized programs on Information Literacy and hands-on practical sessions on electronic resources are conducted to student groups at the request of academic departments.

### **Inter-Library Loan (ILL) Service**

Library conducts a service to provide materials from other network of libraries if a particular item is not available in our library. Library users are able to request this service by submitting a completed request



## Office of the Dean

The Faculty of Applied Sciences (FAS) is headed by the Dean. The office of the Dean co-ordinates all academic and administrative activities of the Faculty. Each academic department runs under the supervision of the Head of the Department who then reports to the Dean of the faculty.

The Faculty of Applied Sciences (FAS) is headed by the Dean. The office of Dean co-ordinates all academic and administrative activities of the faculty. Each academic department runs under the supervision of the Head of the Department who then reports to the Dean of the faculty.

A Senior Assistant Registrar or an Assistant Registrar is appointed to assist all administrative work in the faculty including all matters regarding the non-academic staff, registration of students, examination work and secretarial work of the faculty.

Main task of the office is to provide the administrative mechanism required for coordinating the departments and degree programmes. Also it is responsible for programme scheduling, coordinating, academic advising and maintaining students records.

The record room which is a part of the office, takes care of marks processing programming coordinating the examination processes.

The Assistant Bursar attached to the Faculty of Applied Sciences helps the smooth functioning of the finance and supplies activities under the delegated authority.



## Academic Staff



**Prof. Meththika Vithanage**

B.Sc. (SUSL), M.Sc. (Peradeniya), Ph.D. (Copenhagen, Denmark)

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Professor

*Research Interest : Environmental Chemistry, Air-Water-Soil Pollution*

*Monitoring, Modeling, Remediation and Restoration*

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## Staff-Office of the Dean



**Mrs. A. A. Y. Abeysinghe**

B.A.(Open University)

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Assistant Registrar

*E mail: ar.fas@sci.sjp.ac.lk*



**Mrs. Surdarshani Walpola**

BSc (BA,Special, USJ),MBM( Reading , IHRA)

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Senior Assistant Bursar

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Instructor – Computer Technology)

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**Mr. D.A. Amila Deepal**

B.Sc.(USJ, Sri Lanka), M.Sc. (Comp. Sci.)(USJ, Sri Lanka)

Instructor – Computer Technology)

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Mrs. K.A.R.P. Rathnapala	Mrs. G.S. Damayanthi Perera	Mrs. Nadeesha Perera
Mr. Aruna Udayanga	Mrs. Tharaka De Zoysa	Mr. S.N. Amarasekara
Mrs. Y.H.N. Dahami	Miss. G.G.S. Samanmali	Mrs. Tharushi Galagoda
Miss. Senuri Nanayakkara	Mr. M. Asanka Lakneela	Mrs. S.B.A.H. Prabha Kumari
Mr. H.A.D. Gayan	Mr. G.H. Anil Silva	Mr. D.M.P.C. Dassanayake
Mr. R. Jayaweeran	Mrs. Sachini Wijesuriya	Mr. Chamara Gajaweera
Mr. H.E. Sanath Gunawardana	Mr. Indika Bandara	Mr. T. Jayasinghe



## Instrument Centre

Maintained by the Office of the Dean, Faculty of Applied Sciences, University of Sri Jayewardenepura, the Instrument Centre was established to house state-of-the-art equipment operated by qualified and trained personnel. The Centre's facilities are available to users from all relevant departments of the university, with limited access also extended to other academic institutions across the country.

## Introduction

The Instrument Centre of the Faculty of Applied Sciences (IC-FAS) at the University of Sri Jayewardenepura is a leading central research facility, featuring an extensive array of advanced analytical instruments for scientific research. Governed by the Office of the Dean, IC-FAS is recognized as one of the premier academic laboratories in Sri Lanka.

The IC-FAS is driven by the vision “To be the center of excellence in providing high-end analytical instrument services”. In pursuit of this vision, the Centre’s mission is to be the preferred partner in academic and industrial research by delivering accurate and reliable test results while upholding the highest standards.

The main aim of the Centre is to provide every student with significant hands-on experience using the latest and most sophisticated techniques and instruments relevant to both academic and industrial research.

In addition to supporting undergraduate academic activities, the Centre offers services to the scientific community by:

- Analyzing samples received from academic and research institutions and industries.
- Conducting potential industrial research projects in collaboration with industry partners.
- Organizing short-term courses and workshops on various instrumental techniques for students, technical officers, and personnel from industries.

## Facilities

Instruments available:

Instrument	Model
X-Ray Diffractometer (XRD)	Rigaku Ultima IV
Gas Chromatography Mass Spectrometry (GCMS)	Agilent Technologies 7890A GC couples to 5975C MS with Triple Axis Detector
High Performance Liquid Chromatography (HPLC)	Thermo Scientific Vanquish Core HPLC
Atomic Absorption Spectrometer	Thermo Scientific iCE 3500
UV-Visible Spectrophotometer	Peak Instruments C7200A
Ion Chromatography System	Metrohm 930 IC Flex
Thermal Gravimetric Analyzer	TA SDT 650
FTIR spectrometer	Thermo Scientific Nicolet iS10
Fluorescence Spectrometer	Thermo Scientific Lumina
Multi-parameter SONDE	YSI EXO2

## Contact details

For more information

<https://science.sjp.ac.lk/instrumentcenter/>

For further advice and information, please contact:

Dr. Saranga Diyabalanage  
Director/ Instrument Centre,  
Faculty of Applied Sciences,  
University of Sri Jayewardenepura.  
Telephone: +94 112758409  
Email – [coordinator.cif@sjp.ac.lk](mailto:coordinator.cif@sjp.ac.lk)

## Academic Staff



**Dr. Ravindu Saranga Diyabalanage**  
B.Sc. (Sp) (SUSL), Ph.D. (Peradeniya)

Senior Lecturer and Director

*Research Interest: Environmental Chemistry, Heavy metal pollution and environmental monitoring, Medical geology*  
Email - saranga@sjp.ac.lk



**Prof. Anushka U. Rajapaksha**  
B.Sc. (Peradeniya), M.Phil. (Peradeniya), Ph.D. (KNU, South Korea)

Senior Lecturer

*Research Interest: Environmental Remediation, Adsorption, Biological Environment, Environmental Chemistry, Heavy Metal Contamination*  
Email - anurajaksha@sjp.ac.lk

## Supporting Staff

Ms. Heshani Thathsara

Ms. Vinavee Apsara

Mr. W.S.P. Priyadarshana



# Medical Centre

The Medical Centre of the University takes care of the medical problems of the University community. These include medical care, dental care, counselling, and preventive care.



## Introduction

The Medical Centre of the University provides medical care, dental care, counselling, and preventive care to the students, staff and families of University community.

**Consultation hours:** from 8:30 a.m. to 4:00 p.m during weekdays, on an outpatient basis.

**Staff:** Medical Doctors, Dental Doctor, Nurses, Pharmacists, Public Health officers (PHI), Counselors, Management Assistant, ICT technical officer, Workaids and Labourers.

## Services

- Ambulance service is available for emergencies.
- A special dental care done by Specialists from the Dental faculty apart from the routine dental appointments covered by the Medical center.
- Counselling

The counselors are scattered in the University giving mental support and advice to students and staff. There are two counselors in the Applied Science faculty, three in the Management faculty and one for Engineering and Technology faculties. Their schedule and contact numbers are available in the University website, under Medical center.

(<https://www.sjp.ac.lk/students/medical-centre/>)

- Anti Dengue, Anti Rabies campaign, pest control and food quality control in the university by PHI staff along with Medical officer, Public Health.

## Digitalised System

The Medical centre was fully digitalised in 2021 and has been going paperless for the past 3 years. The software which is used at the Medical centre is the Hospital Health Information Management system (HHIMS).

Our medical center became the first-ever medical center in a higher education institute of Sri Lanka to benefit from the Hospital Health Management Cloud Service adoption.

The benefits include fully-fledged Electronic Health Record (EHR) services ranging from Patient Registrations, Appointment Queue Management, Diagnosis and Prescriptions in compliance with global standards for disease classifications, symptom registrations etc.

The Medical center of Sri Jayawarenepura University is the only Medical center to have obtained ISO 9001:2015 certification for their services.



## Physical Education Unit

The Physical Education Unit at the University of Sri Jayewardenepura promotes sports and recreational activities for students and staff across all faculties. It organizes major events, supports inter-university competition participation, and encourages involvement in international events. The unit is guided by the Sports Advisory Board and Sports Council, enhancing a strong university sports culture.

## Introduction

The Physical Education Unit at the University of Sri Jayewardenepura was established with the primary goal of promoting and enhancing sports within the university. This unit oversees the sports and recreational activities for both students and staff across the university's 11 faculties. It plays a pivotal role in sports development and is responsible for organizing a variety of sports-related activities, including outbound training sessions, leadership camps, and managing participation in 43 competitive sports events as well as non-competitive activities like Zumba and yoga. Each year, the unit hosts significant events such as the Freshers' Meet and the Inter-Faculty Meet, which encourage active student participation. In addition, the unit prepares and supports students for annual inter-university competitions, including the prestigious Sri Lanka University Games held every three years. On a global scale, the unit also facilitates student participation in international events such as the World University Games. These comprehensive initiatives highlight the unit's critical role in cultivating a vibrant sports culture within the university. The Sports Advisory Board, comprising academic and administrative staff, provides crucial support for the activities of the Physical Education Unit. In addition, the unit includes a Sports Council, which is made up of the captains and vice-captains of all sports teams.

Under the expert guidance of experienced instructors, the unit is led by Director Mrs. Nishanthi Vidanage, with Mrs. Ramani Kulathilaka and Mr. H.L. Lahiru

Dilankara serving as permanent sports instructors. The team is further supported by temporary sports instructors, including Mrs. E.D. Priyadarshani, Mrs. N. Karunarathne, Mr. N. Ginige, Mr. P.D. Pasindu Mihiranga, and Mr. G.H.D. Supun Dhananjaya. Together, they ensure the effective execution of the unit's mission to enhance the university's sports and recreational landscape.

## Objectives

- To give an understanding on the values of Physical Education to internal students of the university and to give them a physical development through mental development.
- To provide an opportunity for improvement of sports activities and skills.
- To encourage sports participation by playing tournaments, with internal and external sports bodies.
- To develop discipline by encouraging sports activities among students.

## Programs Conducted by the Physical Education Unit

- **Leadership Training Programs for First-Year Students:** Aimed at fostering leadership skills through interactive workshops and activities that promote teamwork and effective communication.
- **Personal and Professional Development Program:** Focused on enhancing personal growth and career readiness, this program offers seminars and mentorship to build essential life skills.

**Out Boundary Training:** An outdoor program that combines physical challenges with team-building exercises, encouraging resilience and collaboration among students.

### Facilities Available at the Physical Education Unit

- Swimming Pool
- Grounds (Upper Ground and Lower Ground)
- Strength Training Center
- Weightlifting Room
- Basketball Court
- Volleyball Court

- Tennis Court
- Table Tennis Room
- Wrestling Room
- Carom Room
- Chess Room

**For further advice and information, please contact:**

**Mrs. Nishanthi Vidanage**

Director of Physical Education Unit

*Email: [vidanage@sjp.ac.lk](mailto:vidanage@sjp.ac.lk)*



# Student Affairs





## Academic Advisors

Students are strongly advised to obtain guidance from academic advisors prior to registration for courses/course units. Academic Counsellors of each subject are as follows.

### Department Counsellors

Botany	Dr. P.K.C Buddhinie Wijerathne Dr. Rinukshi Wimalasekara
Chemistry	Dr. Ranga S. Jayakody Dr. Isurika Fernando
Computer Science	Mr. D. D. A. Gamini Dr. Anuradha Ariyaratne
Food Science & Technology	Prof. K.W.M.A. Jayasinghe Dr. M.A.D. Somendrika
Forestry & Environmental Science	Dr. Daham Jayawardana Dr. Chaamila Pathirana
Mathematics	Prof. G. H. J. Lanel Dr. M. T. M. Perera
Physics	Dr. W.K.I.L. Wanniarachchi Dr. D.N. Jayawardane Dr. (Mrs.) S. Kandeepan
Polymer Science	Dr. Thusitha Etampawala Prof. K.M.T.D. Gunasekera
Sports Science	Dr. S. Weerasinghe Mr. A.L.K.R. Fernando
Statistics	Dr. Thiyanga Talagala Dr. Manjula Perera
Zoology	Dr. Varuni Gunathilake Dr. F. S. Idroos
Extended degree	Prof.Pahan Godakumbura

## Useful Contact Numbers

The Help Line for Students	072 6885344
Director of Student Welfare Proctor	Dr. Mahesh Fernando- 071 5341832 Mr. Nihal Chandrathilake- 071 8053293
Deputy Proctors/FAS	Prof. Madhura Jayasinghe- 071 6255690 Dr. Ravindra Silva- 077 7464000 Dr. Tharindu Senapathi- 071 7385385 Dr. Chathuranga Vidanage- 071 8483452 Dr. Kaushal Manawadu- 077 8082125
University Medical Officer	0112803199, 0112758499

**Formore details...**

**Link to** [\*Student counsellors and Academic advisors\*](#)

## Scholarships /Medals offered by the faculty

Dr. Sirimathie Wewala Scholarship	Awarded to the Mathematics special degree student who obtains the highest GPA in the first three years of the B.Sc. ( Honours )Degree for Mathematics.
S. V. Wickremasinghe Scholarship	Awarded to the student who obtain highest GPA in the first year among the students with economic
Applied Science 78 Group Scholarship	Awarded to the student who obtains highest GPA in the first year.
Jayantha Pathberia Scholarship	This scholarship is awarded to the student who obtains the highest average marks for the Environmental Management and Forestry subject during the 1st and 2nd academic years of the B.Sc. Degree.
Professor Tuly de Silva Gold Medal	Awarded to the student who obtains highest GPA at the B.Sc. Chemistry (Honours) degree examination.
Professor G.C.N. Jayasuriya Gold Medal	Awarded to the student who obtains overall highest GPA for Chemistry subject in the B.Sc. general degree examination.
Dr. Sirimathie Wewala Gold Medal	Awarded to the student who obtains a First Class Pass with best performance in Mathematics at the B.Sc. (Honours) Degree in Mathematics.
Professor R. A. Dayananda Gold Medal	Awarded to the student who obtains a First Class Pass with the highest GPA at the B.Sc. (Honours) Degree in Statistics.
Professor W. S. Fernando Gold Medal	(i) Awarded to the student who obtains highest GPA physical and Inorganic chemistry at the B.Sc. (Honours) Degree in Chemistry. (ii) Awarded to a General Degree student with highest GPA in Statistics.

Professor P. C. B. Fernando Gold Medal	Awarded to the student who obtains a First Class Honours with the highest GPA for all Physics course units at the B. Sc. (Honours) Degree examination in Physics.
Professor H. G. Nandadasa Gold Medal	Awarded to the student who obtains a First Class or Second upper Pass with highest marks in B.Sc. (Honours) Degree in Plant Biotechnology.
Professor Piyasiri Amilasith Yapa Gold Medal	Awarded to the student who obtains a First Class Pass with highest marks in B.Sc. (Honours) Degree in Plant Biology.
Environmental Management and Forestry Gold Medal	Awarded to the student who obtains a First Class Pass with the highest GPA at the B.Sc. Honors Degree in Environmental Management and Forestry.
Chemical Industries Colombo Ltd. Prize	<b>Award 1 :</b> This prize is awarded to the student who obtains the highest GPA of the final examination in the B.Sc. Chemistry (Honours) degree <b>Award 2 :</b> For 2 students who have obtained the highest GPA at the B.Sc. (Honours) degree 3 <sup>rd</sup> year ending examination
L.A. C. Ailes Award	Awarded to the student who obtains highest qualifications for the Food Science and Technology subject in the B.Sc. (Honours) degree in Chemistry.
Prof. Winstan Eric Ratnayake Memorial Award	Awarded to the student who obtains a First Class Pass with highest GPA in B.Sc.(Honours) Degree in Zoology.
Virtusa Academic Merit Prize	Awarded to the student who obtains a First Class Pass with highest GPA in B.Sc. (Honours) Degree in Computer Science.

Polymer Science & Technology M.Sc.  
Alumni Gold Medal

Awarded to the student who obtains the highest GPA with a Second Class Upper pass and the highest number of 'A' grades for the Polymer Science & Technology subject in the Bachelor of Science Degree.

Dr. Sunethra Weerakoon Gold Medal

Awarded to the student who obtains a First Class Pass with best performance in Mathematics at the B.Sc. (Honours) Degree in Mathematics.

Sports Science and Management  
Gold Medal

Awarded to the student who obtains a First Class pass with the highest GPA and the highest number of 'A' grades in B.Sc. (Honours) Degree in Sports Science and Management.

Prof. S. Chandrani Wijeyarathna Gold Medal

Awarded to the student who obtains a First Class or Second Upper pass with the highest GPA in B. Sc. (Honours) Degree in Microbiology.

Sumangala Gold Medal

Awarded to the student who has shown the highest level excellence in both academic and extra-curricular performances among the students who have secured the highest GPPA at the Bachelor of Science Degree Exam

Dean's Research Scholarship

The Center for Sustainability awards financial assistance for the three best performing students for the first three academic years to conduct Honors Degree research projects at the 4th year.

Gold medal for the "Best Performance in Polymer Science (Hons) degree" sponsored by Dipped Products PLC

Awarded to the student with a First Class with highest GPA and obtaining GPA of 2.00 or above for two subsidiary subjects (Chemistry and Physics) and GP of 2.0 or above for all Polymer Science courses at the first attempt

The Gold Medal of the Aquatic Students Association -

Awarded to the student who obtains a highest GPA at the B.Sc. (Honours) Degree in Aquatic Resources Management.

Professor Arthur Clement Justin Weerakoon  
Memorial Gold Medal -

Awarded to the student who obtains a highest GPA at the B.Sc. (Honours) Degree in Biology.







## Student Life....







**SAHURDA YATHRA**

**Student Life.....  
AMICIZIA 2024**





# THE ALUMNI ASSOCIATION OF THE FACULTY OF APPLIED SCIENCES



PHOTOGRAPHED BY  
SILVIA KASTENHUT

BACK TO CAMPUS

ORGANIZED BY JUPURA SCIENCE ALUMNI

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ON 8TH OF JUNE 2024  
10.00AM ONWARDS  
KEEP THE DATE FREE



# Back To CAMPUS

## **The Alumni Association of the Faculty of Applied Sciences University of Sri Jayewardenepura**

The Alumni Association of the Faculty of Applied Sciences, University of Sri Jayewardenepura was established on 16 March 2013 to foster a lifelong connection between the university and Alumni. The mission of the Alumni is to guide the university to achieve academic excellence by strengthening the ties between its communities.

### **The objectives of the association are:**

- To encourage, foster and promote close relations between the Faculty and its alumni and among the alumni themselves,
- To promote, in the alumni body, an interest in the affairs and well-being of the Faculty. o To provide and disseminate information regarding the Faculty its graduates, staff and students to the alumni,
- To initiate and develop programs for the benefit of the alumni,
- To assist and support the efforts of the Faculty in obtaining funds for its development,
- To serve as a forum through which alumni may support and advance the pursuit of academic excellence at the Faculty, To guide and assist alumni who have recently completed their courses of study at the Faculty: o obtain employment and engage in productive pursuits useful to society.
- To pursue any other activity consistent with the above objectives

### **Office Bearers of the Association for 2023/25**

The President:	Mahinda Ranasinghe
The Vice-Presidents:	Prof. Hiran Amerasekera Thusitha Kariyawasam Kushan Amarasinghe
General Secretary:	Lasantha Perera
Assistant Secretaries	Prof. Kamal Ranatunga Dr. (Ms) Thiyanga Talagala
Treasurer:	Dr. Indika Wanniarachchi
Assistant Treasurer:	Samantha Sudeshpriya

For more information, please visit: <http://science.sjp.ac.lk/alumni/>



**FACULTY OF APPLIED SCIENCES  
UNIVERSITY OF SRI JAYEWARDENEPURA  
NUGEGODA SRI LANKA**

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**P R O S P E C T U S  
2023/2024**