



# **Faculty of Engineering**

University of Sri Jayewardenepura



"Prosper Lives through Education"





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# Vice Chancellor's Message



It is with great pleasure that I write this message for the Student Guide of the Engineering Faculty of the University of Sri Jayewardenepura. You are privileged to have gained admission to the Engineering Faculty of the University of Sri Jayewardenepura, which is one of the prestigious and leading state-owned universities in the country. Within the short period since its inauguration, the Faculty of Engineering of the University of Sri Jayewardenepura has progressed at a fast pace and has now become a leading engineering education institute in Sri Lanka,

which caters to the needs of the country by producing high-quality engineering graduates.

It is noteworthy that the University had to traverse an arduous route in establishing the Faculty of Engineering. In this endeavor, I express my sincere thanks to Prof. D. A. Tantrigoda, Advisor to the Vice Chancellor/Chairman of the Advisory Board for establishing the Faculty of Engineering, Prof. N. R. Arthenayake, Lead Consultant of the Faculty, for their brilliant insights and guidance, and the first four academic recruits who, amidst the uncertainty, willingly joined the faculty before it was even properly established.

Since its inauguration, the Faculty has grown in terms of infrastructure, qualified academics, staff, and student population. Modern state-of-the-art laboratory equipment are being added to provide students the best academic experience. I am also delighted to mention that with the support of the Asian Development Bank, the University has commenced the process of constructing a permanent building complex for the Faculty at the newly acquired land in Maththegoda, which is in close proximity to the main university.

Finally, let me wish you the very best of luck in your academic endeavors during your tenure as a student of the University of Sri Jayewardenepura, and hope that each of you would be able to become a world class engineering professional who will contribute to the betterment of our motherland.

Senior Prof. Sampath Amaratunge Vice Chancellor University of Sri Jayewardenepura



# Dean's Message



Welcome to the Faculty of Engineering, University of Sri Jayewardenepura, your latest academic space to shape up yourself to become a knowledge-empowered intellectual and a socially responsible personality, while preparing yourself to win the world as a world-class Engineer. Faculty of Engineering, USJ is the latest addition to the Engineering Faculties of Sri Lanka's state-owned Universities, established in January 2016 under the leadership of the Vice Chancellor Senior Professor Sampath Amaratunge. Faculty aims to produce globally recognized quality Engineering professionals to drive the country towards a

knowledge-based economy while serving the University's vision, "Prosper Lives through Education".

We offer you Bachelor of the Science of Engineering degree in four different disciplines namely, Civil Engineering, Computer Engineering, Electrical and Electronics Engineering, and Mechanical Engineering. The curricular that follow locally and internationally recognized standards has been formulated by a panel of eminent academics in engineering along with consultation from experts from industry and with guidance from the Institution of Engineers, Sri Lanka (IESL), the apex body for the profession in Sri Lanka. Moreover, you get the advantage of choosing to follow a minor subject area from an emerging field of engineering where you can improve your overall competency by widening the study area to match with the latest demands of the industry.

With a very short history from formation, our Faculty has come a long way in terms of international and local achievements, with our undergraduates winning many competitions with their innovative thinking, outstanding skills and remarkably effective use of resources within the Faculty. Despite being established a few years ago and operating in a temporary premises, our infrastructure facilities such as laboratories have improved substantially to match the needs of the current and future students.

The academic staff of the Faculty of Engineering thrive to make you become skilled and outstanding engineers by not only developing your technical competency but also focusing on your academic and personal integrity and discipline. I am sure that you will enjoy the resourceful and friendly teaching and learning environment at our Faculty. You are equally benefited from the diversely nurtured, excellent educational and extracurricular facilities and infrastructure and futuristic yet culturally established values of University of Sri Jayewardenepura. The faculty aims to moves to its own building complex with state-of-the-art facilities at Mattegoda, Kottawa in the near future.

We believe that you all will be another valuable addition to our talented student body. I, together with my academic, academic support and non-academic staff, wish you every success during your tenure at our Faculty. We eagerly look forward to guiding and helping you in achieving your goals.

Dr. K. M. C. Konthesingha Dean of the Faculty of Engineering University of Sri Jayewardenepura



# University of Sri Jayewardenepura

### History of the University

The University of Sri Jayewardenepura is one of the oldest Universities in Sri Lanka. The origin of the University of Sri Jayewardenepura dates back to 1873, when Ven. Hikkaduwe Sri Sumangala Nayaka Thero laid the foundation stone for the Vidyodaya (meaning "awakening of knowledge") Pirivena.

Vidyodaya Pirivena was granted University status in 1959, and the name was changed to 'Vidyodaya University of Ceylon'. In 1961, the University was relocated from Maligakanda to a beautiful setting at Gangodawila, Nugegoda, in the outskirts of Colombo. Later, in 1978, the name of this higher educational institution was changed to 'University of Sri Jayewardenepura' and was granted an autonomous University status.



# **University Today**

The University of Sri Jayewardenepura derives its authority from the Universities Act No. 16 of 1978 as amended. As one of the Universities established under the University Grants Commission, the University is empowered to confer degrees on persons who have duly registered to follow a programme of study and have satisfactorily completed all the requirements in conformity with the By-laws of the University as applicable to the Faculty of Engineering.

Vice Chancellor is the Chief Executive and Principal Academic Officer of the University while the Deans of Faculties, Registrar, Librarian and the Bursar are recognized as Officers of the University. The Council, Senate and Faculty Board of each Faculty are recognized as authorities of the University. Council is the governing authority of the University whereas the Senate is the highest academic body. Faculty Boards are responsible for conducting study programmes under the directions of the Senate.

The University of Sri Jayewardenepura consists of eight Faculties, namely; Faculty of Humanities and Social Sciences, Faculty of Applied Sciences, Faculty of Management Studies and Commerce, Faculty of Medical Sciences, Faculty of Graduate Studies, Faculty of Technology, Faculty of Engineering, and Faculty of Allied Health Sciences. The University commits itself for the pursuit and transmission of knowledge through teaching, scholarship, and research. It aims to serve the community through producing well-rounded graduates with creativity, freedom of intellectual thought and expression, and professional growth through nourishing an environment of equal opportunity and fairness.

In addition, University of Sri Jayewardenepura plays an active role in conducting research in areas of national relevance such as Dengue, Cancer, Kidney and Water quality.

All these activities are accomplished with the dedication of academic members and the support extended by the administrative divisions such as academic and nonacademic establishment, general administration, finance, examinations, and student welfare.



# **Faculty of Engineering**

The Faculty of Engineering, University of Sri Jayewardenepura, is the latest addition to the Faculties of Engineering in the state Universities coming under the purview of the University Grants Commission. Established in January 2016, it consists of five Departments of Study with a mandate to offer study programmes in Engineering, and in particular an undergraduate study programme in Engineering leading to the award of the degree of the 'Bachelor of the Science of Engineering'.

The government in its budget speeches of 2014 and 2015, made provisions to establish a Faculty of Engineering and Technology in the University of Sri Jayewardenepura. This is in-line with the national requirement for professionals to drive the country towards a knowledge-based economy. Following the government initiative, the Vice Chancellor of the University, Professor Sampath Amaratunge appointed an Advisory Board consisting of renowned personalities to proceed with modalities in establishing the new Faculty. This Advisory Board comprised Professors, D. A. Tantrigoda, M. M. Karunanayake, A. M. Abeysekara, K. Deheragoda, and P. B. Mandawala. Emeritus Professor N. R. Arthenayake, who was a former Vice Chancellor of the Open University of Sri Lanka (OUSL), former Dean of the Faculty of Engineering Technology of the OUSL and Senior Professor of Mechanical Engineering, was appointed as the Lead Consultant to shoulder the task of establishing the Faculty of Engineering and Technology.



After extensive deliberations with regard to the differences in Technology and Engineering streams as well as the difference in the admission criteria applicable to respective study programmes together with prevailing practicalities, the Vice Chancellor proposed to establish two new Faculties, namely, Faculty of Engineering and Faculty of Technology. This decision was approved by the Senate and the Council of the University. Four Senior Lecturers, namely Dr. S. A. A. M. Subasinghe, Dr. C. de Alwis, Dr. M. Mohomed, and Dr. K. M. C. Konthesingha, were recruited to the proposed Faculty of Engineering to be engaged in the task of developing an Engineering Degree Programme, under the guidance of Professor Arthenayake.

A Consultative Committee in Engineering (CCE) consisting of eminent academics in Engineering Education in the country, together with the representation of the Institution of Engineers, Sri Lanka (IESL) were appointed to spearhead the development of the Engineering Degree Programme. Leading industrialists in the country were consulted to incorporate their inputs to the curriculum development process and the delivery of Degree programmes. This paved the path for the new Faculty of Engineering to build enduring relationships with the industry.

Together with the inputs from the CCE and the Industry, a proposal was formulated to be formally submitted to the University Grants Commission. The University Grants Commission approved the proposal to establish a new Faculty of Engineering at the University of Sri Jayewardenepura in December 2015. The new Faculty along with its Departments of Study, was gazetted by the government in January 2016.

The Departments of Study in the Faculty and their abbreviations are as follows:

Civil Engineering	CE
Computer Engineering	CO
Electrical and Electronic Engineering	EE
Mechanical Engineering	ME
Interdisciplinary Studies	IS

The first four Departments are responsible for delivery of the Study Programme in four specializations in engineering as "Civil Engineering", "Computer Engineering", "Electrical and Electronic Engineering", and "Mechanical Engineering". The Department of Interdisciplinary Studies functions as a service department and is responsible for the delivery of courses in Engineering Mathematics, Management, and Humanities.

Innagural batch of students was enrolled in November 2016, which was followed by two subsequent batches in 2017 and 2018.

### **Research & Innovation**

Aiming to be a Future Engineering Research Hub, the Faculty creates an excellent research environment by encouraging practice-oriented and innovative research. Students, with the guidance of the staff, create design solutions for real-life challenges and are encouraged and facilitated to participate in University, National, and International level competitions to showcase them. Students of the Faculty have won many awards of excellence in such competitions despite being the youngest state-owned Engineering Faculty.

The Faculty is initiating collaborations with industry to produce young engineers to fit the contemporary needs for the engineering sector of the country, which is essential for continuing national development.

Research Committee of the Faculty of Engineering (RCFE) has been established to facilitate research and innovation activities.

### **Quality Assurance**

The Faculty actively take measures to improve the academic standards to align with international quality standards. This process is facilitated by the Internal Quality Assurance Cell (IQAC) of the Faculty.

IQAC is responsible for carrying out and coordinating quality assurance activities of the Faculty in line with national and international standards for an engineering degree programme, namely the Sri Lanka Qualifications Framework (SLQF) and the Washington Accord of the International Engineering Alliance, for which the IESL is the authorized organization for the accreditation.

# **Study Program**

The Faculty of Engineering offers a study programme leading to the award of the Honours Degree of the 'Bachelors of the Science of Engineering', in four specializations in Engineering.

The mission of the study programme is to produce engineering graduates who have the knowledge and the aspiration to become competent engineers in a wide range of emerging engineering disciplines within the conventional engineering spheres, by offering a curriculum with flexibility to meet the current and emerging needs of the country and the profession, as acceptable to the global community.



# **Graduate Profile**

The engineering graduates of the Faculty of Engineering would be able to;

Investigate, identify, formulate and analyse complex engineering problems with creativity and innovative approach,

Apply the principles of engineering, science, technology and mathematics in the design of systems, processes and procedures as solutions to complex engineering problems, along with applying intellectual and life skills within realistic constraints (economic, environmental, social, political, ethical, health and safety) and sustainability through creative and innovative approach,

Recognize the importance of working as an individual, in teams as well as in multi-disciplinary settings, depending on specific situations in solving complex engineering problems and act accordingly, while maintaining high ethical standards in the practice of engineering,

Engage in lifelong learning for continuous professional development and uphold the advancement of engineering with research and scholarship.

### Terminology

The following terminology are in frequent use within the Study Programme. Students are requested to be familiar with them.

In addition, please note that this section is intended to provide with a brief understanding of the important terminology only. For comprehensive understanding of the information provided, students are advised to refer to relevant By-Laws, Rules and Regulations of University of Sri Jayewardenepura.

#### **Academic Year**

An Academic Year comprises of two teaching semesters followed by a period allocated for vacation, industrial training and any other academic activities, as applicable to the Faculty of Engineering. Academic Year does not necessarily coincide with the normal calendar year. The Programme of Study spans over four Academic Years or eight Semesters.

#### Semester

A Semester consists of 20 weeks including time allocated for teaching, examinations as well as mid-semester and end-semester vacations.

#### Course

A 'Course' is the basic teaching/learning unit (equivalent of a 'Subject') and includes lectures and other academic activities.

### **Course Code**

It is a unique combination of alpha-numeric characters that would identify a particular Course. Courses are coded using the Academic Year in order to enable the Faculty to offer a particular Course in either of the two Semesters in the given Academic Year. Information can be derived from the code of a Course as described by the example below.

CO1201 Introduction to Computer Systems

First two characters:	Abbreviation of the Department of Study responsible for administering the Course [Department of Computer Engineering]
Third character:	Academic Year [First Academic Year]
Fourth character:	Academic Credits [Two Academic Credits]
Last two characters:	Serial Number of the Course

#### First Year Common Curriculum

All students will follow a Common Curriculum during the first Academic Year (first and second Semesters) of study.

#### Workload of a Course

Workload of a Course is expressed in terms of 'Hours/Week' and presented as Lectures, Practical Work, Tutorials, etc.

#### **Academic Credits**

Academic Credits (AC) is a measure of the academic workload of a 'Course'. Computation of Academic Credits for a Course is based on "Active Hours (AH)", which is defined according to the requirements stated in the Accreditation Manual of the IESL.

1 hour of lectures	= 1.0 AH
1 hour of lab work	= 0.5 AH
1 hour of tutorials	= 0.5 AH
1 hour of design or field work	= 0.5 AH

$$AC = \frac{\text{Number of Active Hours}}{14}$$

For activities in which contact hours cannot be properly identified, 1 AC is defined as follows (without considering AH).

week of project work	= 1AC
2 weeks of camps	= 1AC
weeks of industrial training	= 1AC



#### **Continuous Assessment**

Continuous Assessment (CA) has been introduced for every Course in order to maintain the motivation in the learning process as well as to guide the student towards achieving the learning outcomes. This consists of components such as mid semester examinations, practical work, fieldwork, assignments, quizzes, and mini projects, which evaluate the performance of a student throughout the semester. Components of CA vary from Course to Course depending on the nature of the Course. The aggregate mark derived from different components of CA is referred to as the Continuous Assessment Mark (CA Mark).

#### **End of Semester Examination**

End of Semester Examination (ESE) is the final assessment component of a Course, which is conducted at the end of each semester.

#### **Overall Assessment Mark**

Overall Assessment Mark (OA Mark) is computed by combining both the CA Mark and the ESE Mark according to a pre-defined relationship, which may differ from Course to Course. The OA Mark determines the academic standing of the student in the Course.

#### **Compulsory Course Requirements**

Compulsory Course Requirements (CCR), if any, need to be satisfied in order to sit the ESE of the Course. These requirements may include successfully completing the prescribed CA components, attendance at lectures, etc. This information will be made available to the students prior to the commencement of academic activities.

#### Re-sitting the ESE of a Course

A student is required to re-sit the ESE without following the Course in full if,

- a. CA Mark is above the pass mark, and
- b. OA Mark is below the pass mark.

In such cases, the CA Mark may be brought forward while the best grade obtainable by the student is limited to 'C'.

#### **Repeating a Course**

A student has to repeat a Course if,

- a. both the CA Mark and the OA Mark are below the pass mark, or
- b. CCR is not satisfied, hence not permitted to sit the ESE.

In this case, the student has to follow the Course in full. This implies that the student must satisfy the CCR and successfully complete the CA Component and the ESE. The best grade obtainable by repeating a Course is limited to 'C'.

#### **Academic Concession**

A student is permitted to postpone academic activities of a Course for a valid reason subject to the approval of the Faculty Board and the Senate. Such permission, if granted, is known as an Academic Concession. Student who has been granted Academic Concession is required to fulfil the requirements of the Course, as applicable, in the subsequent academic years.

#### Learning Management System

A Learning Management System (LMS) is a software application used to facilitate e-learning in the delivery of the Courses.

#### **Fields of Specialization**

Selection of students to one of the four fields of specialization will take place at the end of the first Academic Year. The selection process is strictly based on the preference and performance of the students during the first Academic Year (first and second Semesters).

#### Minor

A student has the option to claim for a 'Minor' relevant to his field of specialization after successfully completing an approved combination of Courses. Students will be made aware of such Courses in advance. Minors on offer include emerging fields of Engineering such as 'Biomedical Engineering', 'Building Services Engineering', 'Environmental Engineering', 'Mechatronics Engineering' and 'Data Management', and may vary from time to time, as determined by the Faculty Board.

#### **Industrial Training**

Industrial Training, which is compulsory, is an integral component of the degree programme. The total duration of training is not less than twelve weeks to comply with accreditation requirements of the IESL. At present, the training is implemented after the conclusion of the ESE of Semester 6.

### Framework of the Study Programme

The upward mobility of a student after gaining admission to the Faculty is depicted in the following diagram.





# **Registration for Courses**

Each student is required to register for all Compulsory, Elective and Optional Courses he intends to follow, prior to the commencement of a given Semester. The student has the option to 'Add' or 'Drop' elective and optional Courses within a period of 14 days from the beginning of the semester. Elective Courses should be selected as stipulated by the Faculty Board. In the selection of Courses, the students are required to ensure that he has fulfilled the necessary prerequisite requirements to enroll for a Course.

### National and International Standards

The curriculum of the Study Programme meets both national and international standards for engineering education.

Nationally, the Curriculum has been drawn-up in keeping with the requirements of the Sri Lanka Qualification Framework and the IESL, which is the apex body for the Engineering Profession in Sri Lanka.

In addition, the curriculum has been designed in compliance with the international standard for an Engineering Degree Programme, namely the Washington Accord of the International Engineering Alliance.

## **Assessment Criteria**

#### **Assessment of a Course**

Assessment in respect of each Course consists of CA and ESE. Contribution from various CA components to the final CA mark as well as the contribution to the final grade from CA and ESE may vary from Course to Course. This information will be made available to the students prior to the commencement of academic activities.

#### Requirements to sit the End of Semester Examination

In order for a student to sit the ESE in a Course, he should have satisfied the Compulsory Course Requirements (CCR) in that Course.

#### Grading the Performance in a Course

Grade assigned to a student for a Course is based on the Overall Assessment Mark. This information together with relevant Grade Point Values (GPV) are as given in the table below.

Grade	Grade Point Value (GPV)	Implication		
A+	4.00	Outstanding		
А	4.00	Event		
A -	3.70	Excellent		
B+	3.30			
В	3.00	Good		
B-	2.70			
C+	2.30	Catiafactory		
С	2.00	Satisfactory		
R		Referred and Re-sit the ESE		
F	Not Applicable	Failed and Repeat the Course		
L	Not Applicable	Resume academic activities in the subsequent academic year		

Any grade "C" and above (GPV  $\ge 2.0$ ) is considered as a Pass grade. Student re-sitting ESE or repeating a Course cannot secure a grade greater than "C".

### Grade Point Average (GPA)

A student's Grade Point Average (GPA) is computed considering the GPVs of all the Courses categorized as "Contributing to GPA".

 $GPA = \sum \{ (Academic Credit of the Course) \times (GPV of the Course) \}$ 

 $\sum$ (Academic Credit of the Course)

Semester Grade Point Average (SGPA): GPA calculated considering all Courses, marked as 'Contributing to GPA', followed by a student during a given semester.

Cumulative Grade Point Average (CGPA):

Overall Grade Point Average (OGPA):

OGPA is also referred to as "GPA", and is calculated considering all Courses, marked as 'Contributing to GPA', followed by a student during the entire degree programme. GPA will be used in deciding the award of a "Pass" degree and the "Class Honors", as applicable.

GPA calculated considering all Courses, marked as 'Contributing to GPA', followed by a student up to a given Academic Semester.



# Dean's List

A student who achieves an SGPA of 3.80 or higher, after successfully completing all Courses prescribed for the purpose of determining the Dean's list for a semester and have no act of indiscipline committed by him, will be recommended by the Board of Examiners to be included in the Dean's List. Such an achievement will be recorded in the Student's Academic Transcript.

### **Graduation Requirements**

#### Requirement for the Award of the Degree

In order for the award of the degree of the Bachelor of the Science of Engineering, a student has to fulfil the following requirements.

- 1. Obtained pass grades for the Faculty approved combination of Courses<sup>1</sup> accounting for a minimum total of 144 Academic Credits, and
- 2. Successfully completed Industrial Training Course accounting for 6 Academic Credits, and
- 3. Satisfied the above requirements within a period of not more than eight academic years.

#### **Requirement for Award of Class Honours**

A student will be awarded the degree with Pass or Class Honours according to Grade Point Average as given below.

3.00 > GPA ≥ 2.00	Pass
3.30 > GPA ≥ 3.00	Second Class Honours (Lower Division)
3.70 > GPA ≥ 3.30	Second Class Honours (Upper Division)
GPA ≥ 3.70	First Class Honours

However, a student is entitled for the award of Class Honours only if he has successfully completed the above requirements within the minimum stipulated time of five Academic Years.

<sup>&</sup>lt;sup>1</sup>Faculty approved Course combinations are given in the 'Departments and the Curriculum' section.

# **Departments and the Curriculum**

With the aim of producing knowledgeable, competent, confident, and innovative engineering graduates, the curriculum offered at the Faculty of Engineering of the University of Sri Jayewardenepura has been carefully designed by distinguished academics and industry partners to comply with the international standard for engineering programmes, namely the Washington Accord of the International Engineering Alliance.

During the first year of the degree programme, every student should follow a common curriculum to acquire basic knowledge in engineering and be prepared to select a suitable field of specialization. In the subsequent three academic years, students should follow compulsory courses of the selected specialization.

Additionally, the students continue to follow courses in Mathematics, English, and complementary interdisciplinary study areas, and will undergo Industrial Training that aligns with their specialized field of study. Students will also have the opportunity to obtain a minor within their specialized stream by taking elective courses in respective streams in the third and fourth years of the degree programme. Further, in the fourth year (the final two semesters), students will undertake a major engineering/research project in their field of specialization.



# First Year Common Curriculum

The common curriculum consists of preliminary courses in Engineering, Mathematics, History, and English communication and presentation skills.

Semester 1					
Course Code	Title	Credit Value	Category	Contributing to GPA	
CE1201	Properties of Materials	2	Compulsory	Yes	
CO1201	Introduction to Computer System	2	Compulsory	Yes	
EE1201	Electricity	2	Compulsory	Yes	
ME1301	Engineering Machanics	3	Compulsory	Yes	
ME1202	Introduction to Thermodynamics	2	Compulsory	Yes	
IS1301	Engineering Mathematics 1	3	Compulsory	Yes	
IS1151	English for Communication	1	Compulsory	No	
IS1171	History of Science and Technology	1	Compulsory	No	
IS1281	Engineering Measurement	2	Compulsory	Yes	

Semester 2					
Course Code	Title	Credit Value	Category	Contributing to GPA	
CE1202	Introduction to Fluid Mechanics	2	Compulsory	Yes	
CO1302	Programming for Engineers	3	Compulsory	Yes	
EE1302	Electronics	3	Compulsory	Yes	
ME1303	Basic Manufacturing Processes	3	Compulsory	Yes	
ME1304	Engineering Drawing	3	Compulsory	Yes	
IS1302	Engineering Mathematics II	3	Compulsory	Yes	
IS1152	Presentation Skills in English	1	Compulsory	No	

At the end of the first academic year, selection of students to the four fields of specialization will take place. The selection process is strictly based on the preference and performance of the students during the first academic year (first and second semester).

The following four fields of specialization are offered by the respective departments.

Civil Engineering Computer Engineering Electrical and Electronic Engineering Mechanical Engineering



# Course Selection in Subsequent Years

- Once a student has been assigned a field of specialization by the Faculty, he is required to take all compulsory courses as stated in the curriculum of the relevant department.
- In addition, the student is required to take elective courses from each basket of Elective Courses, such that the minimum stipulated credit requirement is satisfied.
- Elective Courses on offer may vary from time to time, as determined by the Faculty Board.
- Optional Courses taken by a student will be indicated in the academic transcript upon request.





# **Department of Civil Engineering**

Civil Engineering specializes in a broad spectrum of engineering aspects, including envisioning, planning, designing, and construction of buildings, highways and bridges, reservoirs, dams and irrigation schemes, power houses and transmission systems, water supply and sewerage schemes, tunnels and underground structures, and so on. The graduates can choose from a wide range of opportunities in industry and consulting practices as well as in research and development, which has both local and global significance. They also would have the option of pursuing an academic career combined with research, innovation, and development work among local and international research communities.

Amongst its many courses, the Department of Civil Engineering offers subjects that cover the key specialization areas in Civil Engineering, such as Structural, Geotechnical, Transportation and Highways, Hydraulic Engineering, and Environmental Engineering, while bestowing an in-depth knowledge in sustainable designs, construction technology, and management as well as surveying. These streams are taught in an intertwined manner so that the students gain a thorough grounding of the diverse subject areas and their cross-applicability, which would enable them to be competent and innovative engineers in whichever specialized area they engage in the future as Civil Engineering professionals.



# Academic Staff



#### Dr. Ganga Samarasekara B.Sc.Eng. (Hons) (Moratuwa) M.Eng. (Saitama) Ph.D. (Saitama)

Head/Senior Lecturer email: gangas@sjp.ac.lk

Research Interests: Green Walls, Pedestria Behaviour, Sustainable Transportation



Dr. Niranji Satanarachchi B.Sc.Eng. (Hons) (Moratuwa) M.Sc. (UTokyo) Ph.D. (UTokyo)

Senior Lecturer email: niranji@sjp.ac.lk

Research Interests: Eco-inspired Sustainable Materials, Socio-ecological System Change, EIA in Developing Countries



Dr. Nilan Weerakoon B.Sc.Eng. (Hons) (Peradeniya) M.Eng. (Hokkaido University) Ph.D. (Hokkaido University)

Senior Lecturer email: ranjananrw@sjp.ac.lk

Research Interests: Solidification of Soft Soils, Ground Improvement, Slope Stability, Studying Peat Soils, Long-Term Consolidation of Clayey Soils



Mr. Gajaba Kaluarachchi B.Sc.Eng. (Hons) (KDU) Ph.D. (Reading) (Moratuwa)

Lecturer email: dulgajaba@sjp.ac.lk

Research Interests: Hydraulics and Hydrology, Geographic Information System Applications, Environmental Engineering

### Non-academic Staff

Mr. Harsha Jayakody, Technical Officer

Ms. Madubhashini Rajakaruna, Management Assistant

Ms. Koshila Soysa, Lab Attendant

Mr. Thushara Guruge, Lab Attendant

Mr. Ruwan Herath, Works Aid



Dr. Chaminda Konthesingha B.Sc.Eng. (Hons) (Moratuwa) M.Sc. (Moratuwa) Ph.D. (Newcastle)

Senior Lecturer email: konthesingha@sjp.ac.lk

Research Interests: Structural Masonry, Lightweight Concrete, Fire Safety of Buildings, Retrofitting and Strengthening



Dr. Isuru Wijayawardane B.Sc.Eng. (Hons) (Moratuwa) M.Sc. (Moratuwa) Ph.D. (Saitama)

Senior Lecturer email: isuruskw@sjp.ac.lk

Research Interests: Lightweight Concrete, Green Concrete, Self-healing Concrete, Cement Technology, Non-destructive Testing Methods



Mr. Irindu Rahal Upasiri B.Sc.Eng. (Hons) (Peradeniya) Ph.D. (Reading)

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Research Interests: Fire Safety of Buildings, Lightweight Concrete, Thermal and Mechanical Properties at Elevated Temperature



# Curriculum of Civil Engineering

	Semester 3			
Course Code	Title	Credit Value	Category	Contributing to GPA
CE2301	Structural Mechanics	3	Compulsory	Yes
CE2302	Fluid Mechanics	3	Compulsory	Yes
CE2203	Building Design Process	2	Compulsory	Yes
CE2304	Surveying I	3	Compulsory	Yes
IS2301	Engineering Mathematics III	3	Compulsory	Yes
IS2202	Engineering Mathematics IV	2	Compulsory	Yes
IS2261	Accounting for Engineers	2	Compulsory	Yes

Semester 4				
Course Code	Title	Credit Value	Category	Contributing to GPA
CE2305	Structural Analysis I	3	Compulsory	Yes
CE2306	Hydraulic Engineering	3	Compulsory	Yes
CE2307	Soil Mechanics and Engineering Geology I	3	Compulsory	Yes
CE2208	Construction Materials	2	Compulsory	Yes
CE2209	Environmental Engineering	2	Compulsory	Yes
CE2210	Highway and Transportation Engineering	2	Compulsory	Yes
CE2211	Surveying II	2	Compulsory	Yes
IS2303	Engineering Mathematics V	3	Compulsory	Yes
IS2262	Economics and Management	2	Compulsory	Yes

	Training			
Course Code	Title	Credit Value	Category	Contributing to GPA
CE2300	Industrial Training - Phase I	3	Compulsory	No

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Semester 5					
Course Code	Title	Credit Value	Category	Contributing to GPA	
CE3301	Structural Analysis II	3	Compulsory	Yes	
CE3202	Design of Steel Structures	2	Compulsory	Yes	
CE3203	Engineering Hydrology	2	Compulsory	Yes	
CE3204	Soil Mechanics and Engineering Geology II	2	Compulsory	Yes	
CE3205	Construction Planning and Cost Estimation	2	Compulsory	Yes	
CE3251	Design of Timber Structures	2	Fleative		
CE3261	Environmental Hydraulics	2	Elective (2)	Yes	
CE3271	Traffic Engineering	2	(2)		
IS3261	Quantitative Methods in Management	2	Compulsory	No	
IS3162	Intellectual Property	1	Compulsory	No	
IS3171	Sri Lankan History and Culture	1			
IS3172	Ethnic Cohesion and Social Harmony	1	Elective	No	
IS3173/	Sinhala/Tamil	1	(1)		
IS3174		'			

Semester 6					
Course Code	Title	Credit Value	Category	Contributing to GPA	
CE3306	Design of Concrete Structures I	3	Compulsory	Yes	
CE3207	Hydraulic Design	2	Compulsory	Yes	
CE3308	Geotechnical Engineering	3	Compulsory	Yes	
CE3209	Construction Management	2	Compulsory	Yes	
CE3110	Surveying Field Project	1	Compulsory	No	
CE3252	Design of Masonry Structures	2			
CE3262	Environmental Geotechnics	2	Elective (2)	Yes	
CE3272	Rail Transport Systems	2	(2)		
IS3263	Industrial Law	2	Compulsory	Yes	
IS3151	Technical Writing	1	Compulsory	Yes	
IS3175	Introduction to Philosophy	1			
IS3176	Scientific Method	1	Elective	No	
IS3177	Introduction to Psychology and Human Behaviour	1	(1/0)	NO	

Training				
Course Code	Title	Credit Value	Category	Contributing to GPA
CE3300	Industrial Training - Phase II	3	Compulsory	No

Semester 7				
Course Code	Title	Credit Value	Category	Contributing to GPA
CE4301	Design of Concrete Structures II	3	Compulsory	Yes
CE4202	Geotechnical Design	2	Compulsory	Yes
CE4603	Research Project	3	Compulsory	Yes
CE4404	Comprehensive Design Project	2	Compulsory	Yes
CE4351	Advanced Structural Analysis and Design I	3		
CE4352	Bridge Engineering	3		Yes
CE4361	Water and Wastewater Engineering	3	Elective	
CE4362	Environmental Pollution Control	3	(6)	
CE4371	Highway Engineering Design	3		
CE4372	Transportation Planning and Economics	3		
IS3171	Sri Lankan History and Culture	1		
IS3172	Ethnic Cohesion and Social Harmony	1	Elective	No
IS3173/	Sinhala/Tamil	1	(1)	
IS3174				

Semester 8					
Course Code	Title	Credit Value	Category	Contributing to GPA	
CE4603	Research Project	3	Compulsory	Yes	
CE4404	Comprehensive Design Project	2	Compulsory	Yes	
CE4353	Advanced Structural Analysis and Design II	3			
CE4254	Building Services	2			
CE4355	Construction Technology	3		Yes	
CE4363	Limnology	3			
CE4365	Environmental Management	3	(10)		
CE4373	Traffic Management and Safety	3	(10)		
CE4264	Environmental Impact Assessment	2			
CE4374	Air and Water Transport Systems	3			
CE4256	Sustainable Design and Construction	2			
IS4171	Ethics in Engineering	1	Compulsory	Yes	
IS3175	Introduction to Philosophy	1			
IS3176	Scientific Method	1	Elective	No	
IS3177	Introduction to Psychology and Human Behaviour	1	(0/1)		

# **Department of Computer Engineering**

The Department of Computer Engineering offers courses to undergraduates from fundamentals to complex and advanced topics in modern computer engineering such as computer hardware and embedded system design, software engineering, bioinformatics, artificial intelligence, computer vision, robotics, parallel computing, networking, computer security, cloud computing, and database systems.

Minor speciality areas such as Data Management and High-Performance Computing have been introduced with the degree programme. Students who follow Data Management shall explore the topics of natural language processing, quality engineering, and machine learning, where it integrates current data science research and data-analytic techniques to find solutions in various domains. Students who follow High-Performance Computing shall study topics such as cloud computing and applications, advanced computer architecture, and GPU programming. Students will be able to gain experience in those areas by involving in multiple projects.

With the knowledge and skills gained, a Computer Engineering undergraduate will be provided with countless opportunities to work in the industry as a Computer Engineer, System Design Engineer, System Architect, Software Engineer, or can continue onto postgraduate studies and research.



# Academic Staff

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Dr. Randima Dinalankara B.Sc.Eng. (Hons) (Moratuwa) Ph.D. (University of Missouri)

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Research Interests: Machine Learning, Image Processing, Artificial Intelligence



Dr. Udaya Wijenayake B.Sc. (Hons) (Colombo) M.Sc. (KNU, Korea) Ph.D. (KNU, Korea)

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Research Interests: Computer Vision, Image Processing, Machine Learning



Mr. Ishara Dissanayake B.Sc. (Middlesex) M.Sc. (Middlesex)

Lecturer email: isharaglobal@gmail.com

Research Interests: Cloud Computing, Computer Networks, Authentications and Authorizations

### Non-academic Staff

Ms. Umega Rathnayaka, Technical Officer Ms. Chamari Herath, Technical Officer Ms. Shakila Silva, Management Assistant Ms. Tharuka Rathnayake, Lab Attendant Mr. Nalaka Munasinghe, Lab Attendant Mr. Samantha Wijenayake, Works Aid



Dr. Krishanthmohan Ratnam B.Sc.Eng. (Peradeniya) Ph.D. (NUS)

Senior Lecturer email: rkmohan@sjp.ac.lk

Research Interests: Optical Networks, Survivability Issues, Cloud Networking



Ms. Dilani Ranaweera B.Sc. (Wayamba) M.Sc. (Reading) (UCSC)

Lecturer email: dilani.ranaweera20@gmail.com

Research Interests: Artificial Intelligence, Cryptography, Human-Computer Interaction

# Curriculum of Computer Engineering

Semester 3				
Course Code	Title	Credit Value	Category	Contributing to GPA
CO2201	Data Structures and Algorithms	2	Compulsory	Yes
CO2202	Computer Organization	2	Compulsory	Yes
CO2203	Object Oriented Programming	2	Compulsory	Yes
C02204	Data Communication	2	Compulsory	Yes
CO2105	Field Visit	1	Compulsory	Yes
EE2206	Circuit Theory	2	Compulsory	Yes
IS2301	Engineering Mathematics III	3	Compulsory	Yes
IS2202	Engineering Mathematics IV	2	Compulsory	Yes
IS2261	Accounting for Engineers	2	Compulsory	Yes

Semester 4					
Course Code	Title	Credit Value	Category	Contributing to GPA	
CO2206	Operating Systems	2	Compulsory	Yes	
CO2307	Software Engineering	3	Compulsory	Yes	
CO2208	Computer Networks	2	Compulsory	Yes	
CO2209	Embedded Systems	2	Compulsory	Yes	
CO2210	Programming Quest	2	Compulsory	Yes	
ME2208	Theory of Control Systems	2	Compulsory	Yes	
IS2303	Engineering Mathematics V	3	Compulsory	Yes	
IS2262	Economics and Management	2	Compulsory	Yes	

Training				
Course Code	Title	Credit Value	Category	Contributing to GPA
CO2300	Industrial Training - Phase I	3	Compulsory	No

Semester 5					
Course Code	Title	Credit Value	Category	Contributing to GPA	
CO3201	Database Systems	2	Compulsory	Yes	
CO3302	Computer Engineering Project	3	Compulsory	Yes	
CO3203	Computer Security	2			
CO3251	Natural Language Processing	2			
CO3252	Management Information Systems	2	Elective	Voc	
CO3353	Data Mining	3	(7)	res	
CO3261	Cloud Computing and Applications	2			
CO3262	Advanced Computer Architecture	2			
IS3202	Discrete Mathematics	2	Compulsory	Yes	
IS3201	Algorithms and Optimization Methods	2			
IS3203	Newtonian Mechanics and Lagrangian Dynamics	2	Optional	No	
IS3204	Mathematical Modelling and Simulation	2			
IS3261	Quantitative Methods in Management	2	Compulsory	No	
IS3162	Intellectual Property	1	Compulsory	No	
IS3171	Sri Lankan History and Culture	1			
IS3172	Ethnic Cohesion and Social Harmony	1	Elective		
IS3173/ IS3174	Sinhala/Tamil	1	(1)	No	

	Semester 6					
Course Code	Title	Credit Value	Category	Contributing to GPA		
CO3204	Robotic Design	2	Compulsory	Yes		
CO3205	Intelligent systems	2	Compulsory	Yes		
CO3554	Data Management Project	3	Elective	Yes		
CO3563	High Performance Computing Project	3	(3)			
CO3255	Information Security	2				
CO3256	Quality Engineering	2	Elective (6)	Yes		
CO3264	Advanced Operating Systems	2				
CO3265	Parallel Programming	2				
IS3205	Operations Research	2				
IS3206	Advanced Probability and Statistical Analysis	2	Ontional	No		
IS3207	Time Series and Stochastic Processes	2	Optional	NO		
IS3208	Linear Models and Multivariate Statistics	2				
IS3151	Technical Writing	1	Compulsory	Yes		
IS3263	Industrial Law	2	Compulsory	Yes		
IS3264	Management for Engineers	2	Compulsory	Yes		
IS3175	Introduction to Philosophy	1	Ele etitue			
IS3176	Scientific Method	1	LIECTIVE (0/1)	No		
IS3177	Introduction to Psychology and Human Behaviour	1				



Training				
Course Code	Title	Credit Value	Category	Contributing to GPA
CO3300	Industrial Training - Phase II	3	Compulsory	No

Semester 7				
Course Code	Title	Credit Value	Category	Contributing to GPA
CO4301	Individual Research/Design Project	3	Compulsory	Yes
CO4002	Engineering Project	4	Compulsory	Yes
CO4203	Micro Controllers and Applications	2	Compulsory	Yes
CO4204	Computer Vision and Image Processing	2	Compulsory	Yes
CO3554	Data Management Project	2	Elective	
CO3563	High Performance Computing Project	2	(2)	Yes
CO4351	Advanced Database Systems	3		Yes
CO4352	Advanced Algorithms	3	Elective	
CO4361	Concurrent Processing	3	(3)	
CO4362	GPU Programming	3		
IS4161	Sustainability and Disaster Management	1	Compulsory	Yes
IS3171	Sri Lankan History and Culture	1		
IS3172	Ethnic Cohesion and Social Harmony	1	Elective	No
IS3173/ IS3174	Sinhala/Tamil	1	(1)	INO

Semester 8				
Course Code	Title	Credit Value	Category	Contributing to GPA
CO4002	Engineering Project	6	Compulsory	Yes
CO4205	Compilers	2	Compulsory	Yes
CO4306	Software Architecture and Design	3	Compulsory	Yes
CO4353	Distributed Systems	3		
CO4254	Machine Learning	2	Elective (5)	Yes
CO4255	Bioinformatics	2		
CO4256	Mobile Application Development	2		
CO4263	Scientific Computing	2		
IS4171	Ethics in Engineering	1	Compulsory	Yes
IS3175	Introduction to Philosophy	1	Flootivo	
IS3176	Scientific Method	1	(1/0)	No
IS3177	Introduction to Psychology and Human Behaviour	1		



# **Department of Electrical and Electronic Engineering**

The Department of Electrical and Electronic Engineering offers a specialization that spans across all scales of Electrical and Electronic Engineering. Courses are designed and constantly improved with the intention that students shall gain knowledge and competence, starting from fundamentals of circuits, electronic signals and signal processing through digital electronics and system-on-chips to the design of large-scale power and telecommunication systems. The department offers two minors in Biomedical and Telecommunication Engineering. The students who follow the Biomedical Engineering minor shall acquire state of the art knowledge in applying engineering provides to medicine and healthcare. The minor in Telecommunication Engineering provides the students with a comprehensive understanding of the design and implementation of telecommunication systems.

The industry collaborations of the department allow the students to enjoy further opportunities to use their knowledge acquired from the courses and gain experience required by the industry. An Electrical and Electronics graduate could work locally or internationally in a wide range of industries, including power generation, industrial and power electronics, automation systems, computer programming, telecommunications, robotics, health care, manufacturing, and water and energy systems.





#### Dr. Chamitha de Alwis B.Sc.Eng. (Hons) (Moratuwa) Ph.D. (Surrey)

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Research Interests: Information Theory and Coding, Mobile Communication, Multimedia Communication



Dr. Nishan Dharmaweera B.Sc.Eng. (Hons) (Monash) Ph.D. (Monash)

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Research Interests: Optical Communication, Network Optimization



Dr. Bhathiya Pilanawithana B.Sc.Eng. (Hons) (Moratuwa) Ph.D. (UniMelb)

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Research Interests: Wireless and Digital Communication, Hardware Acceleration, Machine Learning in Communication



Ms. Umaya Balagalla B.Sc.Eng. (Hons) (KDU) M.Phil. (Reading) (USJP)

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Research Interests: Medical Image/Video Processing, Biomechanics and Prosthetics, Medical Instrumentation



Dr. Akila Subasinghe B.Sc.Eng. (Hons) (Moratuwa) M.E.Sc (Western University) Ph.D. (Western University)

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Research Interests: Machine Learning, Biomedical Imaging, Radiation Biodosimetry



Mr. Uditha Wijewardhana B.Sc.Eng. (Hons) (Moratuwa) M.Eng. (AIT) Ph.D. (to be conferred) (Oulu, Finland)

Senior Lecturer email: uditha@sjp.ac.lk

Research Interests: Wireless Communication, Network Optimization, Signal Processing



Ms. Charithri Yapa B.Sc.Eng. (Hons) (Moratuwa) M.Sc. (Manitoba, Canada)

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Research Interests: Power Systems Stability and Control, Power Systems Protection, Electrical Machines



Ms. Chamali Gamage B.Sc.Eng. (Hons) (Moratuwa)

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Research Interests: Control Systems, Mathematical Modelling, Power Systems, Power Electronics

### Non-academic Staff

Ms. Ayodya de Silva, Technical Officer Mr. Lakshitha Mendis, Management Assistant Mr. Vajira Dissanayaka, Lab Attendant Mr. Madushanka Priyanjith, Lab Attendant

Mr. Pathum Samarasinghe, Works Aid



# Curriculum of Electrical & Electronic Engineering

Semester 3				
Course Code	Title	Credit Value	Category	Contributing to GPA
EE2201	Power Systems I	2	Compulsory	Yes
EE2203	Machines and Drives I	2	Compulsory	Yes
EE2305	Analog Electronics	3	Compulsory	Yes
EE2206	Circuit Theory	2	Compulsory	Yes
CO2202	Computer Organization	2	Compulsory	Yes
CO2203	Object Oriented Programming	2	Optional	No
IS2301	Engineering Mathematics III	3	Compulsory	Yes
IS2202	Engineering Mathematics IV	2	Compulsory	Yes
IS2261	Accounting for Engineers	2	Compulsory	Yes

Semester 4				
Course Code	Title	Credit Value	Category	Contributing to GPA
EE2202	Power Systems II	2	Compulsory	Yes
EE2204	Communication I	2	Compulsory	Yes
EE2207	Digital Electronics	2	Compulsory	Yes
EE2208	Embedded Systems	2	Compulsory	Yes
EE2309	Electrical Installations	3	Compulsory	Yes
ME2208	Theory of Control Systems	2	Compulsory	Yes
IS2303	Engineering Mathematics V	3	Compulsory	Yes
IS2262	Economics and Management	2	Compulsory	Yes

Training				
Course Code	Title	Credit Value	Category	Contributing to GPA
EE2300	Industrial Training - Phase I	3	Compulsory	No

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Semester 5				
Course Code	Title	Credit Value	Category	Contributing to GPA
EE3201	Signal Processing	2	Compulsory	Yes
EE3202	Machines and Drives II	2	Compulsory	Yes
EE3151	Introduction to Biomedical Engineering	1		
EE3252	Anatomy and Control Systems of the Human Body I	2	Electives (8/7)	
EE3253	Introduction to Image Processing	2		Yes
EE3361	Communication II	3		
EE3262	Data Communication	2		
CO3201	Database Systems	2	Optional	No
IS3201	Algorithms and Optimization Methods	2		
IS3202	Discrete Mathematics	2	Electives	
IS3203	Newtonian Mechanics and Lagrangian Dynamics	2	(2)	Yes
IS3204	Mathematical Modelling and Simulation	2		
IS3261	Quantitative Methods in Management	2	Compulsory	No
IS3162	Intellectual Property	1	Compulsory	No
IS3171	Sri Lankan History and Culture	1		
IS3172	Ethnic Cohesion and Social Harmony	1	Elective	No
IS3173/ IS3174	Sinhala/Tamil	1	(1)	INU

	Semester 6				
Course Code	Title	Credit Value	Category	Contributing to GPA	
EE3203	Electromagnetics	2	Compulsory	Yes	
EE3204	Industrial Automation and System Design	2	Compulsory	Yes	
EE3205	Digital System Design	2	Compulsory	Yes	
EE3354	Machine Learning	3			
EE3255	Anatomy and Control Systems of the Human Body II	2	Elective	Yes	
EE3363	Next Generation Networks	3	(7/8)		
EE3264	Digital Communication	2			
IS3205	Operations Research	2			
IS3206	Advanced Probability and Statistical Analysis	2	Optional	No	
IS3207	Time Series and Stochastic Processes	2			
IS3208	Linear Models and Multivariate Statistics	2			
IS3263	Industrial Law	2	Compulsory	Yes	
IS3264	Management for Engineers	2	Compulsory	Yes	
IS3151	Technical Writing	1	Compulsory	Yes	
IS3175	Introduction to Philosophy	1			
IS3176	Scientific Method	1	Elective	No	
IS3177	Introduction to Psychology and Human Behaviour	1			

Training				
Course Code	Title	Credit Value	Category	Contributing to GPA
EE3300	Industrial Training - Phase II	3	Compulsory	No

Semester 7				
Course Code	Title	Credit Value	Category	Contributing to GPA
EE4301	Research and Design Project	3	Compulsory	Yes
EE4002	Engineering Project	3	Compulsory	Yes
EE4303	Robotics	3	Compulsory	Yes
EE4204	Power Electronic Circuit Design	2	Compulsory	Yes
EE4205	Electronic Manufacturing Systems	2		
EE4209	Energy Studies	2	-	Yes
EE4351	Biomedical Image Analysis	3		
EE4252	Biomedical Instrumentation	2	Elective	
EE4253	Biomechanics	2	(5)	
EE4361	Wireless Communication	3		
EE4262	Internet of Things	2		
IS4161	Sustainability and Disaster Management	1	Compulsory	Yes
IS3171	Sri Lankan History and Culture	1		
IS3172	Ethnic Cohesion and Social Harmony	1	Elective	No
IS3173/ IS3174	Sinhala/Tamil	1	(1)	No

Semester 8				
Course Code	Title	Credit Value	Category	Contributing to GPA
EE4002	Engineering Project	7	Compulsory	Yes
EE4308	VLSI Circuits	3	Elective	N
EE4354	Mobile Application Development	3	(3)	Yes
EE4206	Power Systems III	2		
EE4207	High Voltage Engineering	2	Elective	Vaa
EE4255	Genetics	2	(6)	res
EE4256	Medical Informatics	2		
EE4263	Information Theory and Coding	2		
IS4171	Ethics in Engineering	1	Compulsory	Yes
IS3175	Introduction to Philosophy	1		
IS3176	Scientific Method	1	(1/0)	No
IS3177	Introduction to Psychology and Human Behaviour	1	(1,0)	





# **Department of Mechanical Engineering**

The courses offered by the Department of Mechanical Engineering are designed to give students the broad skill set required to pursue their goals – whether that is working as a Mechanical Engineer, Product Designer, Energy Consultant, founding a company, or continuing to graduate study and research throughout the globe. This specialization combines a broad-based education in the engineering sciences with a strong grounding in quantitative, problem-solving, design, and communication skills. In the department of Mechanical Engineering, students learn by doing, experiencing a level of understanding that only occurs through creation.

The department offers minors in areas of emerging sciences in Mechanical Engineering. Currently the minors in Mechatronics and Manufacturing Engineering are offered by the department. The minor in Mechatronics Engineering covers the areas of robotics, vision systems, control systems, advanced automation, and micro mechatronics. The minor in Manufacturing Engineering covers the areas of production and operations management, advanced manufacturing systems, and computer-aided designing and manufacturing. The curriculum of the Mechanical Engineering ranges across the fundamentals of engineering mechanics, thermodynamics, energy engineering, building services, manufacturing, and aerodynamics to designing products with a significant impact on the society.



# Academic Staff



#### Dr. Thilaksiri Bandara B.Sc.Eng. (Hons) (Ruhuna) M.Phil. (UniMelb) Ph.D. (RMIT)

Head/Senior Lecturer email: thilaksiri@sjp.ac.lk

Research Interests: Microfluidics, Nanofluidics, Heat Transfer, Electronic Cooling, CFD, Nanomaterials



Ms. Piumi Athauda B.Sc.Eng. (Hons) (Moratuwa) M.Sc. (Ucalgary)

Senior Lecturer email: piumi@sjp.ac.lk

Research Interests: Energy and Environment, Solar Energy, Renewable Energy, Thermodynamics



Mr. Yasun Sampath B.Sc.Eng. (KDU) M.Phil. (Reading) (Moratuwa)

Lecturer email: yasun@sjp.ac.lk

Research Interests: CFD, Automobile Engineering, Design & Manufacturing



Dr. Dulini Mudunkotuwa B.Sc.Eng. (Hons) (Moratuwa) M.Eng. (UTokyo) Ph.D. (UTokyo)

Senior Lecturer email: dulini@sjp.ac.lk

Research Interests: Computational Fluid Dynamics, Numerical Weather Prediction, Data Assimilation



Mr. Tharaka Ruwan Bandara B.Eng. (Hons) (RMIT) Ph.D. (to be conferred) (RMIT)

Lecturer email: hmtrbandara@gmail.com

Research Interests: Bioenergy and Biofuels, Membrane Transport, Heat Transfer, Strength of Materials



Mr. Sayuru Bandara B.Sc.Eng. (Hons) (Moratuwa)

Lecturer email: sayurudjayalath@gmail.com

Research Interests: Mechatronics, Robotics and Automation

### Non-academic Staff

- Mr. Eranga Perera, Technical Officer
- Mr. Nizlan Mohamed, Management Assistant
- Mr. Kokila Kumara, Lab Attendant
- Mr. Lakshman Kumara, Lab Attendant
- Mr. Pasan Palihena, Lab Attendant
- Mr. Kavinda Weerarathna, Works Aid



# Curriculum of Mechanical Engineering

	Semester 3				
Course Code	Title	Credit Value	Category	Contributing to GPA	
ME2301	Theory of Machines	3	Compulsory	Yes	
ME2302	Fluid Dynamics	3	Compulsory	Yes	
ME2303	Applied Thermodynamics I	3	Compulsory	Yes	
ME2104	Sensors and Actuators	1	Compulsory	Yes	
EE2191	Electrical Machines	1	Compulsory	Yes	
IS2301	Engineering Mathematics III	3	Compulsory	Yes	
IS2202	Engineering Mathematics IV	2	Compulsory	Yes	
IS2261	Accounting for Engineers	2	Compulsory	Yes	

Semester 4				
Course Code	Title	Credit Value	Category	Contributing to GPA
ME2305	Strength of Materials I	3	Compulsory	Yes
ME2206	Analysis of Manufacturing Processes	2	Compulsory	Yes
ME2307	Design of Machine Elements	3	Compulsory	Yes
ME2208	Theory of Control Systems	2	Compulsory	Yes
ME2209	Fundamentals of Mechatronics	2	Compulsory	Yes
IS2303	Engineering Mathematics V	3	Compulsory	Yes
IS2262	Economics and Management	2	Compulsory	Yes

Training				
Course Code	Title	Credit Value	Category	Contributing to GPA
ME2300	Industrial Training - Phase I	3	Compulsory	No

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Semester 5				
Course Code	Title	Credit Value	Category	Contributing to GPA
ME3201	Strength of Materials II	2	Compulsory	Yes
ME3202	Fluid Machinery	2	Compulsory	Yes
ME3203	Dynamics of Mechanical Systems	2	Compulsory	Yes
ME3205	Automobile Technology	2	Compulsory	Yes
ME3250	Manufacturing Systems	2	Elective (5)	Yes
ME3351	Production and Operations Management	3		
ME3352	HVAC systems	3		
ME3253	Piped Services	2		
ME3354	Robotics and Vision Systems	3		
ME3255	Microcontrollers and Microprocessor Based Systems	2		
IS3201	Algorithms and Optimization Methods	2		Yes
IS3202	Discrete Mathematics	2	Elective (2)	
IS3203	Newtonian Mechanics and Lagrangian Dynamics	2		
IS3204	Mathematical Modelling and Simulation	2		
IS3261	Quantitative Methods in Management	2	Compulsory	No
IS3162	Intellectual Property	1	Compulsory	No
IS3171	Sri Lankan History and Culture	1	Elective (1)	No
IS3172	Ethnic Cohesion and Social Harmony	1		
IS3173/ IS3174	Sinhala/Tamil	1		

Semester 6				
Course Code	Title	Credit Value	Category	Contributing to GPA
ME3806	Mechanical Engineering Design	8	Compulsory	Yes
ME3207	Applied Thermodynamics II	2	Compulsory	Yes
ME3256	Product – Process Design	2	Elective (5)	Yes
ME3357	Group Project (Manufacturing)	3		
ME3258	Electrical Installation, Distribution and Lighting	2		
ME3359	Group Project (Building Services)	3		
ME3260	Advanced Automation	2		
ME3361	Mechatronics Project	3		
IS3205	Operations Research	2	Optional	No
IS3206	Advanced Probability and Statistical Analysis	2		
IS3207	Time Series and Stochastic Processes	2		
IS3208	Linear Models and Multivariate Statistics	2		
IS3263	Industrial Law	2	Compulsory	Yes
IS3151	Technical Writing	1	Compulsory	Yes
IS3264	Management for Engineers	2	Compulsory	Yes
IS3175	Introduction to Philosophy	1	Elective (1/0)	No
IS3176	Scientific Method	1		
IS3177	Introduction to Psychology and Human Behaviour	1		

Training				
Course Code	Title	Credit Value	Category	Contributing to GPA
ME3300	Industrial Training - Phase II	3	Compulsory	No

Semester 7				
Course Code	Title	Credit Value	Category	Contributing to GPA
ME4801	Engineering Project I	8	Compulsory	Yes
ME4102	Solid Mechanics	1	Compulsory	Yes
ME4103	Advanced Fluid Dynamics	1	Compulsory	Yes
ME4262	Green Engineering and Environmental Compliance	2	Elective (5)	Yes
ME4363	Advanced Manufacturing Processes	3		
ME4364	Building Power Systems and Design	3		
ME4265	Energy Performance in Buildings	2		
ME4366	Computer-Based Measurement Systems	3		
ME4267	Graphical Programing and Virtual Instrumentation	2		
IS4161	Sustainability and Disaster Management	1	Compulsory	Yes
IS3171	Sri Lankan History and Culture	1	Elective (1)	No
IS3172	Ethnic Cohesion and Social Harmony	1		
IS3173/ IS3174	Sinhala/Tamil	1		

Semester 8				
Course Code	Title	Credit Value	Category	Contributing to GPA
ME4604	Engineering Project II	6	Compulsory	Yes
ME4205	Heat Transfer	2	Compulsory	Yes
ME4106	Advanced Machine Dynamics	1	Compulsory	Yes
ME4369	Computer Aided Manufacturing	3	Elective (5)	Yes
ME4270	Industrial Automation	2		
ME4271	Building Acoustics	2		
ME4372	Facility and Building Environment Management	3		
ME4373	Smart Sensors, Actuators and Intelligent Systems	3		
ME4274	Introduction to Micro-mechatronics	2		
IS4171	Ethics in Engineering	1	Compulsory	Yes
IS3175	Introduction to Philosophy	1	Elective (0/1)	No
IS3176	Scientific Method	1		
IS3177	Introduction to Psychology and Human Behaviour	1		





# **Department of Interdisciplinary Studies**

The Department of Interdisciplinary Studies functions as a service department and caters to all four specializations in which the faculty offers its degrees. This is implemented via offering courses to the undergraduates that provide them with a plethora of competencies that a professional engineer is expected to possess.

In line with the above, currently, the department delivers a wide range of core engineering modules such as engineering mathematics, modelling & simulation, and measurements while also offering supplementary courses in the fields of communication, management, law and humanities. Further, the undergraduates are also provided with comprehensive knowledge on mathematical and statistical software packages, which are essential for solving practical problems in engineering.

All of the above courses are being offered by the department with the aim of developing and enhancing soft skills, managerial skills as well as leadership skills of the engineering undergraduates which will eventually aid them in their career advancement.



# Academic Staff



# Non-academic Staff

Ms. Anushka Weerakoon, Management Assistant

Ms. Gangani Hettiarachchige, Works Aid



# **Office of the Dean**

Dean is the academic and administrative head of the Faculty. The office of the Dean co-ordinates the academic and administrative activities of the Faculty. Each academic department is headed by a Head of Department who functions under the supervision of the Dean of the Faculty.

The main task of the office of the Dean is to provide the administrative mechanism and support required for coordinating the departments and the degree program. Also, it would be responsible for activities such as program scheduling (specially the common programs of the first year), coordinating, academic advising, and maintaining student records.

The administration division of the faculty is headed by the Assistant Registrar under the supervision of the Dean. Similarly, the financial administration of the faculty is headed by the Assistant Bursar.

## Staff of the Office of the Dean

Assistant Registrar Ms. Sudarika Sandarenu, Assistant Bursar Ms. Champa Malawaraarachchi, Senior Staff Management Assistant Ms. Deshani Kandekumbura, Management Assistant Ms. Subashini Dissanayaka, Management Assistant Mr. Eranda Rathnayaka, Management Assistant Ms. Prasadini Sooriyaarachchi, Management Assistant Mr. Bimalka Disanayaka, Management Assistant Mr. Sarath Paragoda Arachchi, Works Aid Mr. Ishan Munasinghe, Works Aid Mr. Ishan Munasinghe, Works Aid Mr. Dananjaya Herath, Works Aid Mr. Dananjaya Herath, Works Aid Mr. Daminda Gamage, Plumber Mr. Lakshman Jayasekara, Carpenter Mr. Chaminda Malinna Arachchi, Mason



# **General Information & Facilities**

## **Student Record Book**

Each student registered to follow the Degree Programme in Engineering will be issued with a Student Record Book (SRB) by the University. The SRB must be updated as the student progresses in the study programme. This book contains basic information of the student, such as his name, registration number, date of registration, contact information, and national identity card number.

The SRB is a property of the University and should not be abused, altered and tampered with or transferred to a third party. In the event of the loss of the SRB, a student should immediately report the loss to the Students Affairs Division/Dean of the Faculty. In the event a duplicate SRB is to be issued, the student concerned will be liable to pay a surcharge and the cost of issuing the record book.

## **Student Identity Card**

All students are provided with an Identity Card issued by the University. Each student is required to carry the Identity Card in person at all times within the University premises. Student should produce the Identity Card and prove his identity on being asked to do so by any Academic Staff member, security personnel or any other person authorized to do so by the Vice Chancellor.



The Identity Card is a property of the University and should not be abused, altered and tampered with or transferred to a third party. In the event of the loss of the Identity Card, the student should immediately report the loss to the Students Affairs Division/ Dean of the Faculty. The student concerned will be liable to pay a surcharge and the cost of issuing a duplicate Identity Card.

# By-laws on Student Discipline

Students are expected to behave responsibly without disrupting activities of the Faculty. In case a student behaves otherwise, he may be subjected to disciplinary action by the University in accordance with the 'By-laws on Student Discipline'. It is the declared policy of the University that there will be zero tolerance on "Ragging". All students must be aware of the provisions in the "Prohibition of Ragging and Other Forms of Violence in Educational Institutions Act, No. 20 of 1998".

# Policy on Excusing from Academic Activities

A student may be excused from academic activities such as lectures, tutorials, practical work, and assignments due to the demise of a parent, a sibling, or spouse, or due to any valid medical reason. The student is responsible for submitting authentic evidence, within fourteen (14) days of the event due to which 'excuse' is being sought.

The acceptability of such evidence would be determined by the Faculty.

### **Examination Procedure**

The procedure a student should follow during examinations are described in the "Examination criteria, rules and regulations, examination irregularities, punishments applicable to candidates sitting first degrees, postgraduate degrees and external degrees conducted by the University" in Student Hand Book of University of Sri Jayewardenepura. Violation of the provisions described in the document under reference, will result in the student being disciplinarily dealt with. All students are required to educate themselves about the examination procedure and the respective Rules and Regulations of the University of Sri Jayewardenepura.

# Financial Assistance for Students

### Mahapola Scholarships

Mahapola scholarships are awarded to selected students based on merit or need where they would receive financial assistance as determined by the Mahapola Trust Fund. Students are informed via public notice by the Welfare Division about the dates on which the instalments will be paid



#### **University Bursaries**

Those who are not eligible for the Mahapola scholarship may apply for University Bursaries for financial assistance. Further information will be available with the Welfare Division<sup>2</sup> of the University, who will receive and process the applications.

### Library

The Library plays an important role in the university's education, supporting the three main pillars of the university: teaching, learning, and research. In the Main Library of the Sri Jayewardenepura University<sup>3</sup>, there is a collection of more than two hundred thousand books, and hundreds of journals and electronic databases. The library has acquired a number of electronic resources such as e-books, e-journals, bibliographies and full text databases covering varieties of subject areas. All these databases and free sources are listed under e-resources in the library website.

Students from the Faculty of Engineering can use both the Main Library located within the main campus premises and the branch Faculty Library located within the Engineering Faculty premises.

<sup>2</sup>http://www.sjp.ac.lk/students/student-welfare-division <sup>3</sup>http://lib.sjp.ac.lk/

# Library of the Faculty of Engineering

The library of the Faculty of Engineering contains all the relevant textbooks in the four major disciplinary streams of Engineering along with supportive subject areas and other relevant reading materials. Students could also use the computers in the Faculty Library to access electronic databases and journals.

The usual opening hours of the library are from 8.15 am to 4.15 pm on weekdays. However opening hours could be extended based on special requirements.

# **Computer Center**

The students could access the Computer Center of the Faculty of Engineering, which is equipped with modern computers that are networked and provided with Internet facilities. The Computer Centre is equipped to facilitate both the first-year common courses and some of the courses taken under specialized streams.

All students will be provided with a university student email account upon request.

Free Wi-Fi is available within the Faculty premises to all the students.

### Canteen and Convenience Store

The Faculty canteen provides cooked meals, hot/cold beverages, and other food items for the students at concession rates.

The Convenience Store offers products such as confectioneries, snacks, cold beverages, stationary items, printed media, and other daily commodities. A photocopy service is also available at the Convenience Store.

# Hostel Facility

Separate hostel accommodation is available for both male and female students of the Faculty. The priority is given to first year and fourth year students. Since accommodation in hostels is limited, please be noted that university authorities may not be able to provide accommodation to all applicants.

### Mentors

Each student is assigned with an Academic staff member as his/her mentor to support smooth engagement in academic activities. Students are encouraged to discuss the academic/personal issues that hinder his/her studies with the assigned mentor.

# University Student Council, Faculty Unions, and Societies

As provided in the Universities Act No. 16 of 1978 and as amended, there exist University Student Council, Faculty Unions and other societies<sup>4</sup>, which function under By-laws approved by the University.

Further, there is a multitude of University approved learned societies, which will engage students in religious, educational and recreational activities.

The students of the Faculty are encouraged to take part in the activities organized by the Student Chapter of IESL. IESL is the apex/body for the profession of Engineers in Sri Lanka, and is located at 120/15, Wijerama Mawatha, Colombo 7 .The Student Membership of the IESL can be obtained by every student of the Faculty.

### Sports and Healthcare

Sports and recreational activities<sup>5</sup> of the University are managed by the Department of Physical Education. The Department of Physical Education provides an opportunity for students to take part in different recreational and sports activities and to develop personalities and qualities of teamwork through such participation. The students may also enjoy a game of carom and badminton within the Faculty premises.

Medical facilities are provided to students and staff of the Faculty through the Medical Centre<sup>6</sup>, which is open on weekdays from 8.00 a.m. to 4.00 p.m.

### Career Guidance Unit

The Career Guidance Unit<sup>7</sup> of the University of Sri Jayewardenepura offers assistance to students in developing skills that would shape them to be productive in the local and international industry.

<sup>&</sup>lt;sup>4</sup> http://www.sjp.ac.lk/students/student-societies

<sup>&</sup>lt;sup>5</sup> http://www.sjp.ac.lk/sports

<sup>&</sup>lt;sup>6</sup> http://www.sjp.ac.lk/students/medical-centre-and-medical-facilities

<sup>&</sup>lt;sup>7</sup> http://www.sjp.ac.lk/career

### Student affairs and welfare

#### Welfare

To obtain advice for student welfare activities such as hostels, canteens, scholarships and bursaries a welfare committee has been formed by the Faculty Board under the approval of the Senate. The following faculty member acts as Deputy Director of the student welfare committee of the Faculty.

Dr. Chamitha De Alwis chamitha@sjp.ac.lk

#### Discipline

The following faculty member acts as Deputy Proctor for student related disciplinary matters.

Dr. Dulini Mudunkotuwa dulini@sjp.ac.lk





# **Student Life**





#### **Editorial Remarks**

The Editorial Committee wishes to acknowledge that certain contents of the Student Guide may contain reproductions of previous editions of the faculty Student Guide.

#### **Editorial Supervision**

Dr. Chaminda Konthesingha Dean, Faculty of Engineering

Emeritus Prof. N. R. Arthenayake Lead Consultant, Faculty of Engineering

#### **Chief Editor**

Dr. Udaya Wijenayake

#### Editors

Mr. Tharaka Bandara Dr. Ramzia Begam Dr. Niranji Satanarachchi Dr. Bhathiya Pilanawithana

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# **Contact Information**

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**Department of Computer Engineering** Tel:011-3041601 Email: head.co@sjp.ac.lk

#### **Department of Electrical and Electronic Engineering** Tel:011-3041602

Email: head.ee@sjp.ac.lk

#### **Department of Mechanical Engineering**

Tel:011-3041604 Email: head.me@sjp.ac.lk

#### **Department of Interdisciplinary Studies** Tel: 011-3041605 Email: head.is@sjp.ac.lk

University Website http://www.sjp.ac.lk/

**General Line** Tel: 011-2758000/ 011-2802696 Email: info@sjp.ac.lk

**Proctor (University of Sri Jayawardenepura)** Tel: 011-2758330

Deputy Proctors (Faculty of Engineering) Tel: 011-3041603, 011-3041601

Main Library Tel: 011-2758525/011-2758526

**Library at the Faculty of Engineering** Tel: 011-3024654

Medical officer Tel: 011-2758525/011-2758500

#### **Student Welfare Division** University of Sri Jayawardenepura

Tel: 011-2802010/011-2758270

#### **Student Welfare Division**

Faculty of Engineering Tel: 011-3041603

This Student Guide is for information purpose only. Faculty of Engineering reserves the right to amend this Student Guide without prior notice. Authentic information relevant to the Degree Programme is available in the By-laws.

Please read this student guide together with all relevant documents including but not limited to the following;

- Student Hand Book, University of Sri Jayewardenepura
- By-laws, Regulation and Rules as approved by the Council of the University

(University of Sri Jayewardenepura Regulations and Rules for the award of Bachelor of Science of Engineering; By-laws for the award of Academic Distinctions by the Faculty of Engineering. https://eng.sjp.ac.lk/ ).



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