UNDERGRADUATE PROGRAMME

The Faculty of Engineering offers a four-year full-time undergraduate programme leading to the degree of Bachelor of the Science of Engineering (BScEng). Admission to the undergraduate programme in the Faculty of Engineering is subject to government policy on university admissions. The minimum requirements are passes at the GCE (Advanced Level) Examination in the following subjects: Combined Mathematics, Physics and Chemistry.

The four-year full-time BScEng degree programme at the Faculty of Engineering comprises the General Programme during the first year and Specialization Programme in the remaining three years. A student can pursue studies in one of the following fields of specialization:

- Chemical and Process Engineering
- Civil Engineering
- Computer Engineering
- Electrical and Electronic Engineering
- Mechanical Engineering
- Production Engineering

The structure of the undergraduate degree programme at the Faculty of Engineering is illustrated below.

![Programme Structure](image)

Each academic semester is normally made up of 15 weeks of teaching, a recess week and a week-long end-of-semester examinations. The evaluation of performance of a student in each course is carried out through continuous assessments and end-of-semester examinations. The medium of instruction at the Faculty of Engineering is English.

The Rules and Regulations relating to the Degree of Bachelor of the Science of Engineering at the Faculty of Engineering are given in Annexure I.
GENERAL PROGRAMME IN ENGINEERING

The General Programme in Engineering which is conducted in the first academic year is a common programme for all the students at the Faculty of Engineering. There are 12 courses to be completed under the General Programme, which consists of two semesters. The twelve courses are given in Table 2.1 below.

Table 2.1: Courses in the General Programme

<table>
<thead>
<tr>
<th>Course</th>
<th>Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English I</td>
<td>GP 101</td>
<td>3</td>
</tr>
<tr>
<td>English II</td>
<td>GP 102</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics I</td>
<td>GP 103</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics II</td>
<td>GP 104</td>
<td>3</td>
</tr>
<tr>
<td>Computing</td>
<td>GP 106</td>
<td>3</td>
</tr>
<tr>
<td>Electricity</td>
<td>GP 108</td>
<td>3</td>
</tr>
<tr>
<td>Materials Science</td>
<td>GP 109</td>
<td>3</td>
</tr>
<tr>
<td>Engineering Mechanics</td>
<td>GP 110</td>
<td>3</td>
</tr>
<tr>
<td>Elementary Thermodynamics</td>
<td>GP 111</td>
<td>3</td>
</tr>
<tr>
<td>Engineering Measurements</td>
<td>GP 112</td>
<td>3</td>
</tr>
<tr>
<td>Fundamentals of Manufacture</td>
<td>GP 113</td>
<td>3</td>
</tr>
<tr>
<td>Engineering Drawing</td>
<td>GP 114</td>
<td>3</td>
</tr>
</tbody>
</table>

| Total                 |       | 36      |

A student should have successfully or provisionally completed the General Programme in Engineering and he/she should have got selected to a field of specialization as specified in the Rules and Regulations given in Annexure I for him/her to continue studies by registering for the Specialization Programme in Engineering.

Students are chosen to different fields of specialization at the end of their first year of study, based on his/her preference to a particular field of specialization. In case of many students wanting to follow a particular field of specialization, priority of allocation will be given to students with high overall performance during their first year of study at the Faculty of Engineering.
SPECIALIZATION PROGRAMME IN ENGINEERING

During the second, third and fourth years, the engineering students follow the Specialization Programme to which they have been chosen at the end of their first year of study. During these years, they follow courses recommended for their respective fields of specialization and an Industrial Training at the industries for a period of 20-24 weeks, as specified in the Rules and Regulations given in Annexure I. These courses are grouped into two major categories, which are core courses and elective courses.

Core courses comprise taught courses, multi-disciplinary design projects and research projects, laboratory and field works and they contribute to about 75% of the total credits earned during these years. Core courses are specific to the chosen field of study, and are compulsory. Research project means open-ended project carried out by an individual student or by a small group of students under supervision.

Elective courses are divided into technical elective courses and general elective courses. Technical electives are designed to give a deeper understanding of some selected areas within the core or to provide technical knowledge to supplement the core, and are opened to the choice of the students. The core courses and technical elective courses offered by different departments are listed under Departments of Study. General elective courses are generally non-technical courses from outside the field of specialization and are listed under General Elective Courses.
Table 3.1: Credits to be earned in each category of courses of the specialization

<table>
<thead>
<tr>
<th>Field of Specialization</th>
<th>Courses/ Projects</th>
<th>Credits for BScEng degree</th>
<th>Credits for BScEng degree with class honours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical and Process Engineering</td>
<td>Core courses</td>
<td>72</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Regular core courses and design projects</td>
<td>69</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>Research projects</td>
<td>03</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Electives courses</td>
<td>24</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Technical electives</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>General electives</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>Core courses</td>
<td>75</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>Regular courses</td>
<td>69</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>Multi-disciplinary design projects</td>
<td>03</td>
<td>03</td>
</tr>
<tr>
<td></td>
<td>Research projects</td>
<td>03</td>
<td>06</td>
</tr>
<tr>
<td></td>
<td>Electives courses</td>
<td>21</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Technical electives</td>
<td>09</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>General electives</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Electrical and Electronic Engineering</td>
<td>Core courses</td>
<td>75</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>Regular courses</td>
<td>72</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>Research projects</td>
<td>03</td>
<td>06</td>
</tr>
<tr>
<td></td>
<td>Electives courses</td>
<td>21</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Technical electives</td>
<td>09</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>General electives</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Computer Engineering</td>
<td>Core courses</td>
<td>72</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Regular core courses and design projects</td>
<td>69</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>Research projects</td>
<td>03</td>
<td>06</td>
</tr>
<tr>
<td></td>
<td>Electives courses</td>
<td>24</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Technical electives</td>
<td>09</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>General electives</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>Core courses</td>
<td>69</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Regular core courses and design projects</td>
<td>69</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>Research projects</td>
<td>-</td>
<td>06</td>
</tr>
<tr>
<td></td>
<td>Electives courses</td>
<td>27</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Technical electives</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>General electives</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Production Engineering</td>
<td>Core courses</td>
<td>72</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Regular core courses and design projects</td>
<td>72</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>Research projects</td>
<td>-</td>
<td>03</td>
</tr>
<tr>
<td></td>
<td>Electives courses</td>
<td>24</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Technical electives</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>General electives</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Industrial Training</td>
<td>06</td>
<td>06</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>102</td>
<td>114</td>
</tr>
</tbody>
</table>
The department offers a BScEng degree programme in the field of Chemical and Process (C&P) Engineering. C&P engineering graduates have the knowledge, understanding and skills required for the safe, sustainable and economical design, modification, operation, control and the effective management of small- and large-scale physical, chemical and bio processing plants. The products from these plants are as wide ranging as refined fuels, chemicals, processed food, composite and specialized materials, electronics and pharmaceuticals.

The graduates of the department are conversant in the knowledge and skills required for working with refrigeration and air conditioning technology, combustion and emissions technology, sustainable processing technology, energy technology and environmental pollution control technology. They have the knowledge, understanding and skills required for the use of appropriate mathematical techniques, equipment, and pertinent software and appropriate programming language.

Courses offered in the department are designed to prepare its graduates to be gainfully employed at petroleum refineries, chemical manufacturing facilities, pharmaceutical industry, food processing industry, biotechnology industry, process-software development businesses, quality control and management authorities, industrial pollution control and environmental pollution abatement organizations, sustainable development initiatives and strategies development cells, and composite material using industries such as aerospace, automotive, biomedical, electronic, environmental and space industry.

The department provides courses in the fundamentals of chemical engineering and separation processes, theory and design of process equipment and energy systems, reaction and biological process engineering, industrial process technology, industrial safety and health, energy technology for process industry, industrial pollution control system design, industrial and advanced fluid mechanics, instrumentation and measurement, petroleum engineering, food process engineering and in the environmental management systems. Complete design of a selected process industry is carried out through two project-based core courses offered in the final year of study under the close guidance of the academic staff at the department. The department also provides supervision for undergraduate research projects in the project-based courses, Process Engineering Project & Seminar, Independent Study and Process Engineering Research Project. Courses of a broader interest involving thermodynamics, heat transfer, materials science, strength of materials, mechanics of machines and electrical power are provided with the support of other departments.

The department has the following five well developed laboratories for undergraduate, postgraduate and research work:

- Unit Operations and Separation Processes Laboratory
- Instrumentation and Control Laboratory
- Chemical Reaction Engineering Laboratory
- Biological Process Engineering Laboratory
- Pollution Control Engineering Laboratory

The department possesses analytical instruments such as Gas Chromatograph, HPLC (High Performance Liquid Chromatograph), Atomic Absorption Spectrophotometer and UV/Visible Spectrophotometer.
Current research interests and activities of the department include environmental pollution control, image processing techniques, green productivity, cleaner production, sustainable development, combustion, renewable energy, energy conservation, energy economics, biodiesel and bioethanol production, gasification, fluidised bed technology, drying and dryers.

The department provides research supervision for higher degrees leading to PGDip, MSc, MScEng, MPhil and PhD in chemical and process engineering and related fields, and a specialized postgraduate programme in Environmental Pollution Control Engineering (EPCEng).

**Academic Staff**

*Head of the Department*
CS Kalpage, BScEng Moratuwa, PhD Birmingham, MSLEMA

*Senior Professors*
R Shanthini, BASc Moratuwa, MSc Alberta, PhD Luleå, CEng SL, MIE SL

*Senior Lecturers*
DGGP Karunaratne, BScEng Peradeniya, PhD Lisbon
CS Kalpage, BScEng Moratuwa, PhD Birmingham, MSLEMA
MA Elangasinghe, BScEng Peradeniya, MPhil Peradeniya, PhD
A Manipura, BScEng Peradeniya, MEng Moratuwa, PhD Rhodes

*Senior Engineering Teaching Assistants*
MWTPK Ariyaratne, BScEng Peradeniya, PGDip Peradeniya, MPhil Peradeniya

*Engineering Teaching Assistants*
AM Wasantha Menike, BScEng Peradeniya, PGDip Peradeniya, MPhil Peradeniya
Table 4.1 Course structure for specialization in Chemical and Process Engineering

<table>
<thead>
<tr>
<th>CODE</th>
<th>COURSE UNIT TITLE</th>
<th>CREDITS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE201</td>
<td>Mechanics of Materials I</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>CE202</td>
<td>Fluids Mechanics I</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>EE280</td>
<td>Introduction to Electrical Engineering I</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>EM201</td>
<td>Mathematics III</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>ME201</td>
<td>Mechanics of Machines I</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>CP201</td>
<td>Chemical Engineering Fundamentals</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>CE207</td>
<td>Materials Science I</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>EM202</td>
<td>Mathematics IV</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>ME205</td>
<td>Tribology and Power Transmission Elements</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>ME207</td>
<td>Applied Thermodynamics I</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>CP202</td>
<td>Separation Process Principles</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>EM203</td>
<td>Numerical Methods in Chemical &amp; Process Engineering</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>ME303</td>
<td>Applied Thermodynamics II</td>
<td>3</td>
<td>ME207</td>
</tr>
<tr>
<td>ME306</td>
<td>Control Systems</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>CP303</td>
<td>Reaction Engineering</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Technical / General Electives</td>
<td></td>
<td>Recommended for a total of 9</td>
</tr>
<tr>
<td>CP304</td>
<td>Process Equipment Design</td>
<td>3</td>
<td>CP201,CP202</td>
</tr>
<tr>
<td>CP305</td>
<td>Energy Systems Design</td>
<td>3</td>
<td>ME303</td>
</tr>
<tr>
<td>CP308</td>
<td>Process Engineering Project &amp; Seminar</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Technical / General Electives</td>
<td></td>
<td>Recommended for a total of 9</td>
</tr>
<tr>
<td>YEAR 4</td>
<td>SEMESTER 7</td>
<td></td>
<td>SEMESTER 8</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>PR408</td>
<td>Industrial Engineering and Decision Sciences</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>CP407</td>
<td>Independent Study</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>CP408</td>
<td>Basics in Process Engineering Design Project</td>
<td>3</td>
<td>CP304,CP305</td>
</tr>
<tr>
<td>Technical / General Electives</td>
<td>Recommended for a total of 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical / General Electives to earn eligibility for Class Honours</td>
<td>Recommended for a total of 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PR409</td>
<td>Management Principles and Economics</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>CP406</td>
<td>Industrial Safety and Health</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>CP409</td>
<td>Advanced Process Engineering Design Project</td>
<td>3</td>
<td>CP408</td>
</tr>
<tr>
<td>CP 407</td>
<td>Independent Study</td>
<td>Recommended for a total of 3</td>
<td></td>
</tr>
<tr>
<td>CP507</td>
<td>Process Engineering Research Project to earn eligibility for Class Honours</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Technical / General Electives to earn eligibility for Class Honours</td>
<td>Recommended for a total of 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Courses Offered

Core Courses

CP201 Chemical Engineering Fundamentals (3 credits)
CP202 Separation Process Principles (3 credits)

CP303 Reaction Engineering (3 credits)
CP304 Process Equipment Design (3 credits); Prerequisites: CP201, CP202
CP305 Energy Systems Design (3 credits); Prerequisite: ME303
CP308 Process Engineering Project & Seminar (3 credits)

CP406 Industrial Safety and Health (3 credits)
CP407 Independent Study (3 credits)
CP408 Basics in Process Engineering Design Project (3 credits); Prerequisites: CP304, CP305
CP409 Advanced Process Engineering Design Project (3 credits); Prerequisite: CP408

Technical Elective Courses

CP502 Advanced Fluid Mechanics (3 credits); Prerequisite: CE202
CP503 Industrial Process technology (3 credits)
CP504 Biological Process engineering (3 credits); Prerequisite: CP303
CP505 Instrumentation and Measurement (3 credits)
CP506 Industrial Pollution Control System Design (3 credits)
CP507 Process Engineering Research Project (3 credits)
CP508 Energy Technology for the Process Industry (3 credits); Prerequisite: ME303
CP509 Petroleum Engineering (3 credits)
CP511 Food Process Engineering (3 credits)
CP512 Environmental Management Systems (3 credits)
CP513 Industrial Fluid Mechanics (3 credits)

General Elective Courses

CP551 Sustainable Development (3 credits)
DEPARTMENT OF CIVIL ENGINEERING

The Civil Engineering Department is the largest department in the Faculty and has produced about 60 per cent of the engineering graduates from the Faculty. Civil engineering graduates are expected to play key roles in planning, designing, constructing and managing roads, bridges, dams, buildings and public utilities, water supply, sewerage, irrigation, drainage and pollution control schemes etc. The Civil Engineering curriculum covers a wide range of subjects in three main areas:

- Materials and Structural Engineering which includes Properties and Mechanics of Materials and Structures
- Geotechnical and Transportation Engineering which includes Geotechnical Engineering, Engineering Geology, Surveying and Highway Engineering
- Water Resources and Environmental Engineering, which includes Fluid Mechanics, Hydrology, Hydraulics and Environmental Engineering.

The Department also offers specialized courses in Computer Applications in Structural Engineering, Foundation Engineering, Water Resources Engineering, etc. as elective subjects in the final year. Field visits, seminars and final year students' research projects form a part of the curriculum. Practical aspects of civil engineering are emphasised through laboratory, field and design classes, multidisciplinary projects and a field camp.

The Department has the following laboratories with specialized facilities for teaching, research and consultancy services:

- The Materials Laboratory with material and component testing facilities including a 1000 kN universal testing machine, a 10 kNm torsion testing machine and a 3000 kN compression testing machine
- The Metallurgy Laboratory with facilities for microscopic analysis such as metallurgical microscopes and an atomic absorption spectrometer
- The Structures Laboratory with facilities for testing structural models as well as large scale structures, experimental stress analysis and non-destructive tests
- The Computer Aided Design Laboratory with hardware and software for analysis and design of general structural systems
- The Fluid Mechanics Laboratory equipped with tilting flumes, wind tunnels, wave flumes, a towing carriage and facilities for testing scale models, pipes, pumps, turbines and fans
- The Environmental Engineering Laboratory with facilities for water and wastewater analysis, and equipped with a microbiological laboratory
- The Geotechnical Laboratory with extensive facilities for soil and rock testing, geophysical exploration, site investigation and field measurements
The Survey Laboratory equipped with precise theodolites, total stations, levels and electronic distance meters for comprehensive surveys and with facilities for transportation and highway engineering.

The research activities in the Department can be classified under final year student projects, postgraduate diploma and master's degree projects, graduate studies by research students, and activities by academic staff. The current areas of research are development of finite strip programmes for bridges, stress analysis and restoration of structures of archaeological value including ancient stupas, large deflection analysis of cables, plates and beams, applications of electronic spreadsheets in design, behaviour of residual soils and compressible soils, engineering properties of Sri Lankan soils and rocks, development of a geotechnical data base for local soils, use of lime-paddy husk stabilization for rural roads, settlement characteristics of soils, landslides, water yield studies, water supply and sanitation, flow measurements, hydrological modelling, unsteady flow computation, extreme flood modelling, coastal zone management, harbour modelling, water quality in reservoirs, streams and canals, accelerated strength testing and non-destructive testing of concrete, concrete deterioration and repair, mathematical modelling of drainage systems, resource management, and mechanics of composite materials.

Over the years the Department has conducted postgraduate courses leading to the Master's Degree and has admitted graduate students for research studies leading to MPhil and PhD. Part time Postgraduate Diploma and Master's Degree programmes are offered by the Department to provide postgraduate level education in the fields of Structural Engineering, Environmental & Water Engineering, Geotechnical Engineering and Disaster Management. There are also plans to expand the scope of the postgraduate programmes to other areas of Civil Engineering.

The Department maintains close links with industry through consulting work, CPD programmes participation in professional activities and through conferences and seminars conducted by the staff.

**Academic Staff**

*Head of the Department*

PBR Dissanayake, BScEng *Peradeniya*, MEng, PhD *Ehime*, Ceng, FIE SL, MSSE SL

*Senior Professors*

KGHCN Seneviratne, BScEng Ceylon, PhD Cantab, CEng, FIE SL
SBS Abayakoon, BScEng *Peradeniya*, MASc, PhD *British Colombia*, CEng, FIE SL, Int.PE

*Professors*

WSMB Weerakoon, BScEng *Peradeniya*, MEng, DEng Tokyo, CEng, FIE SL, Int.PE
KDW Nandalal, BScEng *Peradeniya*, MEng AIT Bangkok, PhD Wageningen, CEng, FIE SL
KPP Pathirana, BScEng *Peradeniya*, MEng, PhD KU Leuven, CEng, MICE, FIE SL, Int.PE
UdeS Jayawardena, BSc Sri Lanka, MSc AIT Bangkok, DEng kyushu, CEng, MIE SL
PBR Dissanayake, BScEng *Peradeniya*, MEng, PhD *Ehime*, Ceng, FIE SL, MSSE SL
Senior Lecturers

H Abeyruwan, BScEng *Sri Lanka*, MPhil *Hong Kong*, CEng, MICE, MIEAust, CPEng *Australia*, MIEEE
APN Somaratna, BScEng *Sri Lanka*, MS, PhD *Illinois*, CEng, MIE *SL*
ALM Mauroof, BScEng *Peradeniya*, MEng *AIT Bangkok*, DEng *Tokyo*, CEng, MIE *SL*
KRB Herath, BScEng *Peradeniya*, MSc *Illinois*, PhD *California*
AGHJ Edirisinghe, BScEng *Peradeniya*, MEng, PhD *Ehime*
IMS Sathiyaprasad, BScEng *Moratuwa*, MEng *AIT Bangkok*, DEng *Yokohama*
UI Dissanayake, BScEng *Peradeniya*, PhD *Sheffield*, CEng, MIE *SL*
JJ Wijetunga, BScEng *Moratuwa*, PhD *Cambridge*, CEng, MIE *SL*, M.ASCE
LC Kurukulasuriya, BScEng *Moratuwa*, MEng, PhD *Saitama*
DdeS Udakara, BScEng *Peradeniya*, MEng *AIT Bangkok*, PhD *Hong Kong*
GBB Herath, BScEng *Peradeniya*, MEng *AIT Bangkok*, PhD *Tokyo*
SR Herath, BScEng *Peradeniya*, MEng *Nagoya*, PhD *California*
PBG Dissanayake, BScEng *Peradeniya*, PhD *Hong Kong*, MIEAust, Member PMI, AMIE *SL*
KBSN Jinadasa, BScEng *Peradeniya*, MEng *Singapore*, PhD *Saitama*
WMVSK Wickramasinghe, BScEng *Peradeniya*, MEng, PhD *Hokkaido*
KGN Nanayakkara, BScEng *Peradeniya*, PhD *NUS*
HK Nandalal, BScEng *Peradeniya*, MSc *Wageningen*, PhD *Peradeniya*, CEng, MIE *SL*
HD Yapa, BScEng *Moratuwa*, PhD *Cambridge*

Lecturers

CK Pathirana, BScEng *Peradeniya*, MScEng *Peradeniya*, AMIE *SL*, PhD *Peradeniya*
GMPR Weerakoon, BScEng *Peradeniya*, MSc *Newcastle*, AMIE *SL*
DD Dias, BScEng *Peradeniya*
HADS Buddika, BScEng *Peradeniya*
SK Navaratnarajah, BScEng *Peradeniya*, MSc *Oklahoma*, PE *California*
Table 5.1 Course structure for specialization in Civil Engineering

<table>
<thead>
<tr>
<th>YEAR 2</th>
<th>SEMESTER 3:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CODE</td>
<td>TITLE</td>
</tr>
<tr>
<td>CE201</td>
<td>Mechanics of Materials I</td>
</tr>
<tr>
<td>CE202</td>
<td>Fluid Mechanics I</td>
</tr>
<tr>
<td>CE203</td>
<td>Surveying</td>
</tr>
<tr>
<td>EE280</td>
<td>Introduction to Electrical Engineering I</td>
</tr>
<tr>
<td>ME202</td>
<td>Mechanical Engineering for Civil Engineers</td>
</tr>
<tr>
<td>EM201</td>
<td>Mathematics III</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YEAR 3</th>
<th>SEMESTER 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CODE</td>
<td>TITLE</td>
</tr>
<tr>
<td>CE204</td>
<td>Geomechanics</td>
</tr>
<tr>
<td>CE205</td>
<td>Engineering Hydrology</td>
</tr>
<tr>
<td>CE206</td>
<td>Civil Engineering Fieldwork</td>
</tr>
<tr>
<td>CE208</td>
<td>Structural Analysis</td>
</tr>
<tr>
<td>CE209</td>
<td>Building Construction</td>
</tr>
<tr>
<td>EM202</td>
<td>Mathematics IV</td>
</tr>
<tr>
<td>CE313</td>
<td>Marketing and Finance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YEAR 3</th>
<th>SEMESTER 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>CODE</td>
<td>TITLE</td>
</tr>
<tr>
<td>CE302</td>
<td>Environmental Engineering</td>
</tr>
<tr>
<td>CE303</td>
<td>Transportation Engineering</td>
</tr>
<tr>
<td>CE305</td>
<td>Hydraulics</td>
</tr>
<tr>
<td>CE306</td>
<td>Design of Structures I</td>
</tr>
</tbody>
</table>

| CODE | TITLE | CREDITS | PRE-REQUISITES |
| CE314 | Civil Engineering Laboratory I | 2 | At least 2 of: CE 201, CE 202, CE 204 |

General Electives

<table>
<thead>
<tr>
<th>YEAR 6</th>
<th>SEMESTER 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>CODE</td>
<td>TITLE</td>
</tr>
<tr>
<td>CE307</td>
<td>Finite Element Methods in Solid Mechanics</td>
</tr>
<tr>
<td>CE310</td>
<td>Geotechnical Engineering</td>
</tr>
<tr>
<td>CE311</td>
<td>Hydraulic Engineering and Design</td>
</tr>
<tr>
<td>CE312</td>
<td>Design of Structures II</td>
</tr>
<tr>
<td>CE315</td>
<td>Civil Engineering Laboratory II</td>
</tr>
</tbody>
</table>

Technical Electives/ General Electives
Courses Offered

Core Courses

CE201 Mechanics of Materials I (3 credits)
CE202 Fluid Mechanics I (3 credits)
CE203 Surveying (3 credits)
CE204 Geomechanics (3 credits); Prerequisite: CE201
CE205 Engineering Hydrology (3 credits)
CE206 Civil Engineering Fieldwork (3 credits)
CE207 Materials Science I (3 credits)
CE208 Structural Analysis (3 credits); Prerequisite: CE201
CE209 Building Construction (3 credits)

CE301 Mechanics of Materials II (3 credits); Prerequisite: CE201
CE302 Environmental Engineering (3 credits)
CE303 Transportation Engineering (3 credits)
CE304 Fluid Mechanics II (3 credits)
CE305 Hydraulics (3 credits)
CE306 Design of Structures I (3 credits); Prerequisite: CE208
CE307 Finite Element Methods in Solid Mechanics (3 credits); Prerequisite: CE201
CE309 Materials Science II (3 credits); Prerequisite: CE207
CE310 Geotechnical Engineering (3 credits); Prerequisite: CE204
CE311 Hydraulic Engineering and Design (3 credits)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE312</td>
<td>Design of Structures II</td>
<td>3</td>
<td>CE208</td>
</tr>
<tr>
<td>CE313</td>
<td>Marketing and Finance</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CE314</td>
<td>Civil Engineering Laboratory I</td>
<td>2</td>
<td>CE201, CE202, CE204 (at least 2)</td>
</tr>
<tr>
<td>CE315</td>
<td>Civil Engineering Laboratory II</td>
<td>1</td>
<td>CE314</td>
</tr>
<tr>
<td>CE401</td>
<td>Mechanics of Materials III</td>
<td>3</td>
<td>CE301</td>
</tr>
<tr>
<td>CE402</td>
<td>Multi-Disciplinary Design Project</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CE403</td>
<td>Construction Management</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CE405</td>
<td>Civil Engineering Project I</td>
<td>3</td>
<td>CE405</td>
</tr>
<tr>
<td>CE406</td>
<td>Civil Engineering Project II</td>
<td>3</td>
<td>CE405</td>
</tr>
<tr>
<td>CE402</td>
<td>Multi-Disciplinary Design Project</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CE403</td>
<td>Construction Management</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CE405</td>
<td>Civil Engineering Project I</td>
<td>3</td>
<td>CE405</td>
</tr>
<tr>
<td>CE406</td>
<td>Civil Engineering Project II</td>
<td>3</td>
<td>CE405</td>
</tr>
</tbody>
</table>

**Technical Elective Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE511</td>
<td>Advanced Geomechanics</td>
<td>3</td>
<td>CE204</td>
</tr>
<tr>
<td>CE512</td>
<td>Foundation Engineering</td>
<td>3</td>
<td>CE310</td>
</tr>
<tr>
<td>CE513</td>
<td>Geotechnics Design and Construction</td>
<td>3</td>
<td>CE310</td>
</tr>
<tr>
<td>CE530</td>
<td>Transportation Planning and Traffic Engineering</td>
<td>3</td>
<td>CE303</td>
</tr>
<tr>
<td>CE531</td>
<td>Highway Engineering</td>
<td>3</td>
<td>CE303</td>
</tr>
<tr>
<td>CE541</td>
<td>Hydraulic Structures</td>
<td>3</td>
<td>CE311</td>
</tr>
<tr>
<td>CE544</td>
<td>Coastal Engineering and Coastal Zone Management</td>
<td>3</td>
<td>CE311</td>
</tr>
<tr>
<td>CE552</td>
<td>Irrigation and Drainage Engineering</td>
<td>3</td>
<td>CE305</td>
</tr>
<tr>
<td>CE557</td>
<td>Hydropower Development</td>
<td>3</td>
<td>CE305</td>
</tr>
<tr>
<td>CE560</td>
<td>Integrated River Basin Management</td>
<td>3</td>
<td>CE205</td>
</tr>
<tr>
<td>CE567</td>
<td>Industrial Pollution Control</td>
<td>3</td>
<td>CE302</td>
</tr>
<tr>
<td>CE569</td>
<td>Water Supply and Waste Water Engineering</td>
<td>3</td>
<td>CE302</td>
</tr>
<tr>
<td>CE581</td>
<td>Advanced Mechanics of Materials</td>
<td>3</td>
<td>CE201</td>
</tr>
<tr>
<td>CE582</td>
<td>Concrete Technology</td>
<td>3</td>
<td>CE312</td>
</tr>
<tr>
<td>CE583</td>
<td>Construction Planning</td>
<td>3</td>
<td>CE403</td>
</tr>
<tr>
<td>CE584</td>
<td>Computer Aided Structural Design</td>
<td>3</td>
<td>CE307</td>
</tr>
<tr>
<td>CE585</td>
<td>Advanced Structural Design</td>
<td>3</td>
<td>CE306, CE312</td>
</tr>
<tr>
<td>CE595</td>
<td>Disaster Management</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
DEPARTMENT OF COMPUTER ENGINEERING

The Department of Computer Engineering (then known as Computer Science) was established in the Faculty of Engineering in 1985. Although it is the youngest degree awarding department in the faculty, it is one of the premier Computer Engineering Departments in the country's University system. Initially the main function of the Department was to conduct computing related courses to the students in all disciplines of the Faculty. Later, in year 2000, the department started offering the Computer Engineering degree as a specialisation in engineering. Today it is a fully-fledged Department, robust with a capable and energetic staff, rich in its resources and course content and showing maturity which belies its age.

Computer Engineering degree is a unique combination of computer science and electrical engineering. It includes the science and technology of design, construction, implementation and maintenance of software and hardware components of modern computer-controlled systems. Computer engineers have in-depth knowledge in hardware, software design as well as hardware-software integration. They are involved in all aspects of computing, from the design and use of individual microprocessors, circuit design and large-scale system integration, to kernel hacking, databases, networking, security and telecommunications.

Entrance to the Computer Engineering stream of study is highly competitive and its content, though challenging and demanding, is ultimately exceedingly rewarding. The courses offered provide a comprehensive coverage in Computer Engineering. Unlike many Computer Science/Engineering schools that tend to teach the details of the latest in-demand skills, skills that will soon be out-of-dated, we believe in providing a solid understanding of the foundations of Computer Engineering. These principles allow students to adapt to the inevitable changes in technology by developing practical skills on top of the foundations using leading-edge technologies. Such an approach inevitably makes the degree challenging and highly rewarding.

The curriculum of Computer Engineering degree is a four-year program with 150 credit hours including the General Programme and the Industrial Training. It provides the necessary theoretical background and combines it with hands-on practical experience in order to prepare graduates for their future careers. The program focuses on computer architecture and design, computer networks, databases, software engineering and computer applications in industry. It is geared towards the needs of not only industries but also higher educational sectors to ensure a smooth transition after a student’s graduation.

The Department continuously creates and strengthens its ties with other universities and industries. All its examination papers are currently moderated by faculty members from prestigious foreign universities and some of our ongoing researches are conducted in collaboration with researchers from leading foreign universities. Already, some of the courses are offered with industrial collaboration. Industrial ties have further been strengthened by the IFS and hSenid Research and Development (R&D) labs housed within the department. Computer Engineering graduates are highly sought after by local as well as international employers.

Research conducted by the department has greatly expanded over the years. The Embedded Systems and Computer Architecture Laboratory (ESCAL) is a research group whose interests concerns on the architectural aspects of embedded systems and associated problems with a particular focus on the combination of the theory and practice. The
Systems Engineering Group at Peradeniya (SEGPe) is a research group mainly focusing on the use of small kernel technology for secure and reliable systems construction and the application of formal methods to system design and implementation. The Complex Reactive & Intelligent Systems (CRISL) group concentrates on model-based design and formal verification of complex reactive systems, Logic/Supervisory Control and fault diagnosis of Discrete Event Dynamic Systems, and issues related to reconfigurable control of these systems. The department also conducts active research on Cryptography and Network Security.

Laboratory facilities in the department provide the means to experience and practice the Engineering skills acquired during the learning process. The department provides a general laboratory with sixty high performance computers with fast Internet connectivity and this facility is open even after hours to aid self learning. Special laboratories are equipped with proper equipment to get hands on experience on networking, interfacing, digital design and embedded systems. A special laboratory environment is provided for students who participate in projects. They have the freedom to use these resources as required.

The department library is well stocked with text books, CDs, DVDs, etc. which the students can borrow for a specified period (usually for a semester). Advanced teaching aids such as multimedia based teaching and web-based learning resources are used by staff members to enhance the learning experience.

Independent student activities are encouraged via a student body, the Association of Computer Engineering Students (ACES), which aims to further the potential of students by catering to their professional and societal development needs and enhancing their competencies such as leadership skills.

The department’s greatest strength is perhaps in its energetic and passionate staff constantly driving undergraduates to excel in their studies. Academic staff of the department of Computer Engineering has been and continues to be trained from higher education institutions all around the globe from the Silicon Valley in the US to the premier universities in the UK, Europe and Asia Pacific. The warm and welcoming atmosphere created by the exuberant staff has formed a family-like bondage that creates a strong cohesive unit and thus the Department of Computer Engineering has become a home for elites in engineering.
**Academic Staff**

*Head of the Department*

KWHMRDB Elkaduwé, BScEng *Peradeniya*, PhD *UNSW*

*Senior Lecturers*

AU Bandaranayake, BScEng *Peradeniya*, PhD *Cincinnati*
DS Deegalla, BScEng *Peradeniya*, PhLic *Stockholm*, MIEEE, AMIESL
SD Dewasurendra, BScEng *Sri Lanka*, MEng AIT *Bangkok*, DEA INP *Grenoble*, PhD INP *Grenoble, MIMechE, CEng UK, CEng SL, MIE SL, MIEEE advantage of a large database and a team of skilled professionals, ensuring high-quality services.*
KWHMRDB Elkaduwé, BScEng *Peradeniya*, PhD *UNSW*
R Krishanthmohan, BScEng *Peradeniya*, PhD *NUS*
Z Maraikar, BSc Colombo, MSc *Vrije*
S Radhakrishnan, BTech (IT-BHU), PhD *UNSW*, MIEEE
RG Ragel, BScEng Peradeniya, PhD *UNSW*, MIET, SMIEEE
SMKB Samarakoon, BScEng Peradeniya, MEng AIT *Bangkok*, PhD Cardiff, MIET, CEng UK, CEng SL, MIE SL, MIEEE
M Sandirigama, BScEng Peradeniya, MSc, PhD *Ehime*, Attorney-at-Law SL
<table>
<thead>
<tr>
<th>SEMESTER</th>
<th>CODE</th>
<th>TITLE</th>
<th>CREDITS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>CO221</td>
<td>Digital Design</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>CO222</td>
<td>Programming Methodology</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>CO223</td>
<td>Computer Communication Networks I</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>EM201</td>
<td>Mathematics III</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>EM313</td>
<td>Discrete Mathematics</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>EE282</td>
<td>Network Analysis for Computer Engineering</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>CO224</td>
<td>Computer Architecture</td>
<td>3</td>
<td>CO221, CO222</td>
</tr>
<tr>
<td></td>
<td>CO225</td>
<td>Software Construction</td>
<td>3</td>
<td>CO222</td>
</tr>
<tr>
<td></td>
<td>CO226</td>
<td>Database Systems</td>
<td>3</td>
<td>CO222, EM313</td>
</tr>
<tr>
<td></td>
<td>EE285</td>
<td>Electronics I</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>EM202</td>
<td>Mathematics IV</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>EM314</td>
<td>Numerical Methods</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>CO227</td>
<td>Computer Engineering Project</td>
<td>2</td>
<td>CO225, CO226</td>
</tr>
<tr>
<td>SHORT</td>
<td></td>
<td>General Electives</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>CO321</td>
<td>Embedded Systems</td>
<td>3</td>
<td>CO224</td>
</tr>
<tr>
<td></td>
<td>CO322</td>
<td>Data Structures and Algorithms</td>
<td>3</td>
<td>CO225</td>
</tr>
<tr>
<td></td>
<td>CO323</td>
<td>Computer Communication Networks II</td>
<td>3</td>
<td>CO223</td>
</tr>
<tr>
<td></td>
<td>CO324</td>
<td>Network and Web Application Design</td>
<td>3</td>
<td>CO223, CO225</td>
</tr>
<tr>
<td></td>
<td>CO325</td>
<td>Computer and Network Security</td>
<td>3</td>
<td>CO223</td>
</tr>
<tr>
<td></td>
<td>EE386</td>
<td>Electronics II</td>
<td>3</td>
<td>EE285</td>
</tr>
<tr>
<td>6</td>
<td>CO326</td>
<td>Computer Systems Engineering: Industrial Networks</td>
<td>3</td>
<td>CO321, EE386</td>
</tr>
<tr>
<td></td>
<td>CO327</td>
<td>Operating Systems</td>
<td>3</td>
<td>CO224, CO322</td>
</tr>
<tr>
<td></td>
<td>CO328</td>
<td>Software Engineering</td>
<td>3</td>
<td>CO226, CO322, CO324</td>
</tr>
<tr>
<td></td>
<td>EE387</td>
<td>Signal Processing</td>
<td>4</td>
<td>EE282, EM202</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Technical Electives</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>COURSE</td>
<td>COURSE TITLE</td>
<td>CREDITS</td>
<td>SEMIESTER</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>------------------------------------</td>
<td>---------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td>CO421</td>
<td>Final Year Project I</td>
<td>3</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>CO422</td>
<td>Professional Practices</td>
<td>2</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>CO423</td>
<td>Software Project Management</td>
<td>2</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>CO424</td>
<td>Information Systems Management</td>
<td>2</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>CO425</td>
<td>Final Year Project II</td>
<td>3</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Technical Electives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>General Electives</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>General Electives</td>
<td>13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Students are expected to earn 15 credits from general elective courses. Out of these credits:

- 6 credits should be earned from CO422: Professionals Practices (2), CO423: Software Project Management (2) and CO424: Information Systems Management (2).

- In addition:
  - 5 credits should be earned from general electives categorized under Management and Economics.
  - 2 credits should be earned from general electives categorized under Arts and Humanities, and
  - 2 credits should be earned from the general electives categorized under Political and Social Sciences.

**Courses Offered**

*Core Courses*

CO221 Digital Design (3 credits)
CO222 Programming Methodology (3 credits)
CO223 Computer Communication Networks I (3 credits)
CO224 Computer Architecture (3 credits); Prerequisites: CO221, CO222
CO225 Software Construction (3 credits); Prerequisite: CO222
CO226 Database Systems (3 credits); Prerequisites: CO222, EM313
CO227 Computer Engineering Project (2 credits); Prerequisites: CO225, CO226
CO252 Introduction to Programming and Networking for Electrical Engineering (3 credits)
CO321 Embedded Systems (3 credits); Prerequisite: CO224
CO322 Data Structures and Algorithms (3 credits); Prerequisite: CO225
CO323 Computer Communication Networks II (3 credits); Prerequisite: CO223
CO324 Network and Web Application Design (3 credits); Prerequisites: CO223, CO225
CO325 Computer and Network Security (3 credits); Prerequisite: CO223
CO326 Computer Systems Engineering: Industrial Networks (3 credits); Prerequisites: CO321, EE386
CO327 Operating Systems (3 credits); Prerequisites: CO224, CO322
CO328 Software Engineering (3 credits); Prerequisites: CO226, CO322, CO324
CO421 Final Year Project I (3 credits)
CO425 Final Year Project II (3 credits); Prerequisites: CO421

General Elective Courses
CO422 Professional Practices (2 credits)
CO423 Software Project Management (2 credits)
CO424 Information Systems Management (2 credits)

Technical Elective Courses
CO502 Advanced Computer Architecture (3 credits); Prerequisite: CO224
CO503 Advanced Embedded Systems (3 credits); Prerequisite: CO321
CO504 Hardware Software Co-design (3 credits); Prerequisites: CO222, CO224
CO513 Advanced Computer Communication Networks (3 credits); Prerequisite: CO323
CO514 Optical Communication Networks (3 credits); Prerequisite: CO323
CO521 Compilers (3 credits); Prerequisite: CO322
CO523 Programming Languages (3 credits); Prerequisite: CO322
CO524 Parallel Computers and Algorithms (3 credits); Prerequisite: CO327
CO526 Advanced Operating Systems (3 credits); Prerequisite: CO327
CO527 Advanced Database Systems (3 credits); Prerequisite: CO226
CO528 Applied Software Architecture (3 credits); Prerequisite: CO328
CO541 Artificial Intelligence (3 credits); Prerequisite: CO222
CO542 Neural Networks and Fuzzy Systems (3 credits)
CO543 Image Processing (3 credits); Prerequisite: EE387
CO544 Machine Learning and Data Mining (3 credits); Prerequisite: CO322
CO551 Theory of Computation (3 credits)
CO552 Game Theory and Markov Decision Processes (3 credits); Prerequisite: EM202
The Department provides basic courses to all engineering students on the principles of Electrical and Electronic Engineering to a depth appropriate to the generalist, and advanced courses to the specialist student in areas of communication and information engineering, power energy systems and high voltage engineering, electronics and instrumentation engineering and control robotics and automation engineering. Proper choice of technical electives offered from the four sub disciplines above gives opportunity for the undergraduates following electrical and electronic engineering study program to further specialize in one of the below mentioned sub disciplines in electrical and electronic engineering.

- Communication and Information Engineering
- Electronics and Instrumentation Engineering
- Control, Robotics and Automation Engineering
- Power, Energy Systems and High Voltage Engineering

The curriculum of electrical and electronic engineering study program has been cleverly designed in such a way that interested students can also obtain a major specialization in one area while obtaining a minor specialization in another area out of the sub disciplines mentioned above.

The department has an integrated laboratory which caters to all electrical, electronic and communication engineering students. This consists of the following laboratories:
Elementary Laboratory, Communications Laboratory, MIC Fabrication Laboratory, Optical Fiber Laboratory, RF and Microwave Laboratory, Power Systems and Electrical Machines Laboratory, High Voltage Engineering Laboratory, Power Electronic and Industrial Application Laboratory, Electrical Machine and Drives Laboratory, Controls Robotics and Automation Laboratory, ROBOCON Laboratory, Electronics and Digital Instrumentation Laboratory, Energy Laboratory, Innovative Research and Product Development Laboratory

State of the art resources available in the labs for communications are; Network Analyzers, Spectrum Analyzers, RF and Microwave measuring Devices, Blue tooth Development tool Kit, Antenna System Demonstration and Design Kit, Fibre Optic transmitter and Receiver Units, Radar Development Kit, Noise Figure Meter, Protocol Analyzer.

Laboratories for Power, Energy and High voltage area have the following state of the art resources; AC/DC Variable frequency meter standard modules, High Precision Volt, Ampere, Impedance, Active and Reactive Power, Frequency, Harmonics, Noise Detection meters, High Voltage, High Current AC/DC generators, Impulse Generators, Partial Discharge Detectors, Insulation Diagnostic System, Karl fisher titrator and Oil test cell.

State of the art resources available in the laboratories for Electronics & Instrumentation Laboratory are; Logic Analyzers, Signal Pulse and Function Generators, Voltage and Frequency Converters and Counters, Agilent Advisor, Intelligent Universal Programmers, Industrial Embedded Computers, GPIB platforms and FPGA development boards.

Some of the State of the art resources that are available in Control, Robotics and Automation laboratories are; Digital power meter, Digital torque meter, Dynamic signal analyzer, Isolated current measurement system, DSP systems, Flux2D & Flux3D software, 6 DOF Industrial Robot Manipulators and Mobile Robots.
As for computing facilities, the department maintains its own autonomous computer network while still being a part of the main University network. At the centre of this network are the three servers, each dedicated for a unique purpose: mail, web and file services. Postgraduate students are provided with a mini-network of their own, equipped with a file server and specialized software within the Department network. Software ranging from simple demonstration tools to advanced simulation tools in various areas of Electrical Engineering is available for the department members, postgraduates and undergraduates. The recent commissioning of a wireless link within the department provides constant connectivity to a number of roaming users with laptops and for places where wired network access does not exist.

Students are provided with separate computing facilities dedicated for the project and research works. This facility allows them to use some of the advanced simulation tools for their project and research work.

**Academic Staff**

*Head of the Department*

*Professors*
MARM Fernando, BScEng *Peradeniya*, Lic.Tech. *KTH*, PhD *Chalmers*, CEng., Int PE., FIESL, SMIEEE
KM Liyanage, BScEng *Peradeniya*, MEng, DEng. *Tokyo*, CEng, MIESL, SMIEEE

*Senior Lecturers*
KBN Ratnayake, BScEng *Peradeniya*, MSc, PhD *Rensselaer*, MIEEE
SG Abeyaratne, BScEng *Peradeniya*, MEng, PhD *Gifu*, CEng, MIESL SMIEEE
AUAW Gunawardena, BScEng *Peradeniya*, MEngSc *NSW*, PhD *Queensland*, CEng, MIESL, SMIEEE
KRMN Ratnayake, BScEng *Peradeniya*, MEng, PhD *Gifu*, CEng., MIESL, MIEEE
JV Wijayakulasooriya, BScEng *Peradeniya*, PhD N’bria, CEng, MIESL MIEEE
KDR Jagath Kumara, BScEng *Peradeniya*, MEngSc *NSW*, PhD *South Australia*, CEng, MIESL, MIEAust
BGLT Samarawikrama, BScEng *Peradeniya*, Tech Lic, PhD *KTH*, SMIEEE, AMIESL
KRMN Ratnayake, BScEng *Peradeniya*, Tech Lic, PhD *KTH*, CEng, MIESL, MIEEE

*RJRDB Ranaweera, BScEng *Peradeniya*, MScBmEng, PhD *Purdue*, MIEEE*
HMVR Herath, BScEng *Peradeniya*, MS Miami, Dr.-Ing *Paderborn*, SMIEEE, CEng, MIESL, MOSA
PJ Binduweva, BScEng *Peradeniya*, PhD *Manchester*, MIEEE
GMRI Godaliyadda, BScEng *Peradeniya*, PhD *NUS*, AMIESL
MPB Ekanayake, BScEng *Peradeniya*, PhD *Texas Tech*, MIEEE
MB Dissananayake, BScEng *Peradeniya*, PhD *Surrey*, MIEEE, AMIESL
JRSS Kumara, BScEng *Peradeniya*, PhD *Chalmers*, MIEEE, AMIESL
SAHA Suraweera, BScEng *Peradeniya*, PhD *Monash*, MIEEE

*Lecturers*
MAUS Navarathne, BScEng *Peradeniya*, MIEEE
WL Abeygunasekera, BScEng *Peradeniya*, MSc *Purdue* GSMIEEE, AMIESL
Table 7.1 Course structure for specialization in Electrical and Electronic Engineering

<table>
<thead>
<tr>
<th>CODE</th>
<th>TITLE</th>
<th>CREDITS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 201</td>
<td>Network Analysis</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>EE 251</td>
<td>Principle of Electrical Measurements</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>EE 252</td>
<td>Electronic Devices and Circuits</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>EE 253</td>
<td>Digital Logic Design</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>EM 201</td>
<td>Mathematics III</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>ME 201</td>
<td>Mechanics of Machines I</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td><strong>SEMESTER 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE 254</td>
<td>Electronic Instrumentation</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>EE 257</td>
<td>Signals and Systems</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>EE 255</td>
<td>Electric Power</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>EE 256</td>
<td>Power and Energy</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>CO 252</td>
<td>Introduction to Programming and networking for Electrical Engineering</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>EM 202</td>
<td>Mathematics IV</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>ME 210</td>
<td>Thermodynamics for Electrical and Electronic Engineers</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Year 3</td>
<td>Semester 5</td>
<td>Course Code</td>
<td>Course Title</td>
</tr>
<tr>
<td>-------</td>
<td>------------</td>
<td>-------------</td>
<td>--------------</td>
</tr>
<tr>
<td></td>
<td>EE 320</td>
<td>Electromagnetic Theory</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>EE 351</td>
<td>Electronic Circuits</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>EE 322</td>
<td>Embedded Systems Design</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>EE 325</td>
<td>Digital Signal Processing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>EE 352</td>
<td>Automatic Control</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>EE 326</td>
<td>Electrical Machines</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>EM 308</td>
<td>Complex Analysis</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Semester 6</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EE 357</td>
<td>Communication Systems</td>
<td>3</td>
<td>EE 201, EE 257</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EE 353</td>
<td>Discrete Time Control Systems</td>
<td>3</td>
<td>EE352, EE325, EE326</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EE 354</td>
<td>Power Engineering</td>
<td>3</td>
<td>EE326</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EE 355</td>
<td>Applied Electromagnetics</td>
<td>3</td>
<td>EE 320</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EE 356</td>
<td>Electronic Product Design and Manufacture</td>
<td>3</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>General Elective</td>
<td>3</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 4</th>
<th>Semester 7</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EE 401/EE 512</td>
<td>Communication Theory</td>
<td>3</td>
<td>EE357</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EE 402/EE 501</td>
<td>Advanced Control Systems</td>
<td>3</td>
<td>EE352</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EE 403/EE 559</td>
<td>Integrated Analog Electronic Circuits</td>
<td>3</td>
<td>EE252, EE351</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EE 404/EE 572</td>
<td>Electric Power Systems</td>
<td>3</td>
<td>EE354</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EE 405</td>
<td>Undergraduate Project I</td>
<td>3</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Technical/ General Electives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 4</th>
<th>Semester 8</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EE 406</td>
<td>Undergraduate Project II to earn eligibility for Class Honours</td>
<td>3</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
Courses Offered

Core Courses

EE201 Network Analysis (3 Credits)
EE251 Principle of Electrical Measurements (3 Credits)
EE252 Electronic Devices and Circuits (3 Credits)
EE253 Digital logic Design (3 Credits)
EE254 Electronic Instrumentation (3 Credits)
EE255 Electric Power (2 Credits)
EE256 Power and Energy (2 Credits)
EE257 Signals and Systems (3 Credits)
EE280 Introduction to Electrical Engineering I (3 Credits)
EE281 Introduction to Electrical Engineering II (3 Credits)
EE282 Network Analysis for Computer Engineering (3 Credits)
EE320 Electromagnetic Theory (2 Credits)
EE322 Embedded Systems Design (3 Credits); Prerequisites: EE253, CO253
EE325 Digital Signal Processing (3 Credits); Prerequisites: EE257
EE326 Electrical Machines and Drives (4 Credits); Prerequisites: EE255, EE256
EE351 Electronic Circuits (3 Credits); Prerequisites: EE252
EE352 Automatic Control (3 Credits); Prerequisites: EE 257
EE353 Discrete Time Control Systems; Prerequisites: EE 352, EE325, EE326
EE354 Power Engineering: Prerequisites: EE 326
EE355 Applied Electromagnetics (3 Credits); Prerequisites: EE320
EE356 Product Design and Management (3 Credits)
EE357 Communication Systems (3 Credits); Prerequisites: EE201, EE257
EE380 Electrical Power and Machines (3 Credits)
EE381 Machines and Drives(3 Credits)
EE382 Electronics Devices and Circuits II (3 Credits)
EE383 Electronics Laboratory(2 Credits)
EE384 Communication Engineering(3 Credits)
EE385 Digital Signals and Systems (2 Credits)

EE401/EE512 Communication Theory (3 Credits); Prerequisites: EE 357
EE402/EE501 Advanced Control Systems (3 Credits); Prerequisites: EE352
EE403/EE559 Integrated Analog Electronic Circuits (3 Credits); Prerequisites: EE252, EE351
EE404/EE572 Electric Power Systems (3 Credits); Prerequisites: EE354
EE405 Undergraduate Projects I (3 Credits)
EE406 Undergraduate Projects II (3 Credits)
Technical Elective Courses

EE511 Antennas and Propagation (3 Credits); Prerequisites: EE320, EE355
EE522 Telecommunication and Wireless System (3 Credits); Prerequisite: EE357
EE514 Data Communications (3 Credits); Prerequisites: EE357
EE593 Advanced Signal Processing (3 credits); Prerequisites: EE257, EE325
EE518 Digital Communications (3 Credits); Prerequisite: EE512 or EE401
EE521 Computer Networks Laboratory (3 Credits)
EE522 Telecommunication & Wireless Systems (3 Credits); Prerequisite: EE324
EE593 Industrial Robotics and Automation (3 Credits); Prerequisites: EE352
EE538 Electrical Machines and Drive Systems (3 Credits); Prerequisites: EE326, EE352, EE354
EE539 Nonlinear and Multivariable Systems (3 Credits); Prerequisites: EE352
EE540 Nanotechnology for Electrical and Electronic Engineering Applications (3 credits); Prerequisites: EE201, EE251, EE352
EE551 Integrated Micro-Electronic Circuits (3 Credits); Prerequisites: EE202, EE302
EE554 Microwave Techniques (3 Credits); Prerequisites: EE320 and EE355
EE561 Industrial Instrumentation (3 Credits); Prerequisites: EE251, EE254
EE573 AC Machine Analysis (3 Credits); Prerequisites: EE326
EE575 Power Electronic Applications and Design (3 Credits); Prerequisites: EE351
EE576 High Voltage Engineering (3 Credits); Prerequisites: EE255, EE256
EE592 Modern Power Systems (3 Credits); Prerequisites: EE572 or EE404
EE 580 Introduction to Biomedical Engineering (3 Credits); Prerequisites: EE252 or EE284 or EE285
EE582 Computer Architecture (3 Credits); Prerequisites: EE205, EE321
EE587 Digital systems Design and Synthesis (3 Credits); Prerequisites: EE322
The Department of Engineering Management was established in the year 2002, in the Faculty of Engineering, University of Peradeniya in order to cater for the demands of the field of engineering: the multidisciplinary managerial roles that engineers are expected to perform in the industry. The need for the boundary-less organizational activities, which result from increasing competitive business environments as well as globalised technical advancements render it impossible for engineers to confine to a single discipline. In order to be in par with the growing demands of the role of the engineer as a manager, she/he has to be equipped with necessary managerial and soft transferable skills supplementary to the technical expertise gained through their relevant specialization. Department is also expected to contribute in highlighting the conceptual and human skills an engineering manager may require while performing the technical experts role in an organization.

Secondly, the accreditation process for the degree programme in the field of engineering requires to develop, in engineers, the ability to function effectively as an individual and a member of multi-disciplinary and multi-cultural teams, with the capacity to be a leader or a manager as well as an effective team member, the understanding of social, cultural, global and environmental responsibilities of the professional engineer and the need for sustainable development and the understanding of professional and ethical responsibilities and commitment to them. The Department of Engineering Management expects to fulfil these requirements of the accreditation process, while promoting the lifelong learning and building up capacity to do so, in the graduate engineers of Faculty of Engineering, University of Peradeniya.

Finally, the department expects to fulfil the objective of blending all disciplines of engineering together to cater for a ‘whole concept,’ amalgamating the individual, vested interests of every department, which may result in a broader perception of the professional responsibility of an engineer.

**Academic Staff**

*Head of Department*
PBG Dissanayake, BSc Eng Peradeniya, PhD HKU Hong Kong, MIEAust, AMIE SL

*Senior Lecturers*
KKK Sylva, BSc Eng Peradeniya, MEng AIT Bangkok, MBA PIM-US, AMIE SL
A strong background in Mathematics is essential for B. Sc Eng. degree programme in order to develop analytical thinking and the ability to use it as a tool to seek solutions to engineering problems. The courses in Engineering Mathematics have been designed keeping this in mind. In the first two years, Mathematics is taught as core course units for all undergraduates. The courses are continually updated by incorporating current techniques and new applications. As a result, most of the courses offered contain a strong computing component.

The students entering the Faculty have a wide spectrum of abilities and there are many students who are weak in Mathematics. Special attention is given to weaker students through small tutorial groups. A programme of remedial teaching for new entrants is also provided by the Department every year. This is designed to help the students to bridge the gap between the school and the first year course in the Faculty. A particularly important aspect of each lecture series is the evaluation of the teaching performance, by the students, to provide the necessary feedback for improvements.

The Department conducts a postgraduate diploma programme in Engineering Mathematics, which is currently a part time programme. This programme with a significant research component is designed especially to train engineering and science graduates to apply mathematical tools to solve problems in the industry. The Department also provides research supervision to students reading for MPhil and PhD degrees in specified areas.

Several academic divisions have been established within the Department in order to further the mathematics education of the engineers and to facilitate the development of research activities. Divisions have been established in areas in which the department has strong research potential. Currently, there are five distinct divisions within the department.

- Division of Operations Research and Optimization
- Division of Systems Modeling
- Division of Software Engineering
- Division of Decision Sciences and Statistics
- Division of Mathematics and Engineering Education

The members of the Department are also involved in developing mathematical, management and educational software packages for use in the Department and for undergraduate and postgraduate programmes. Some of the specific areas of current interest include computer aided learning packages, optimization routines, mathematical modeling, real time systems, databases for inventory and students’ performance data, and timetable scheduling software.

The Department is also involved in research programmes in collaboration with research groups in foreign universities. Several members of the Department have addressed the national needs by publishing text books for the G.C.E. (Advanced Level) Examination and for undergraduates. These books have been widely acclaimed as being authoritative by the experts in the relevant fields.
**Academic Staff**

*Head of the Department*
DSK Karunasinghe, BScEng Peradeniya, PhD NUS (Singapore)

*Senior Professors*
KS Walgama, BScEng Moratuwa, MEng PII Netherlands, MSc Alberta, PhD Luleå, CEng, MIE SL

*Senior Lecturers*
K Perera, BSc Jayawardenapura, MA, PhD SUNY Albany
DSK Karunasinghe, BScEng Peradeniya, PhD NUS Singapore
KAS Susantha, BScEng Peradeniya, MEng, AIT Bangkok, DEng Nagoya, CEng, MIE SL
GWRMR Palamakumbura, BSc Peradeniya, MSc, PhD Texas Tech
SPC Perera, BScEng Peradeniya, MSc, PhD Texas Tech, MIEEE
MIM Ishak, BSc Peradeniya MSc Kansas, PhD Kansas
R Meegaskumbura, BSc Peradeniya, MSc Massachusetts, PhD Texas Tech
CK Walgampaya BScEng Peradeniya, MSc Louisville, PhD Louisville
NL Jayatilake, BScEng Peradeniya, MPhil Peradeniya

*Lecturers*
BMU Amarakone, BSc Sri Lanka, PGDipAppStats Colombo, MPhil Peradeniya
RMS Dissanayake, BSc Peradeniya

*Senior Engineering Teaching Assistants*
UJ Karunaratne, BSc Sri Lanka, PGDipMaths, MSc Peradeniya, MS Nebraska

**Courses Offered**

*Core Courses*

EM201 Mathematics III (3 credits)
EM202 Mathematics IV (3 credits)
EM203 Numerical Methods in Chemical & Process Engineering (3 credits)

EM308 Complex Analysis (2 credits); Prerequisites: EM201, EM202
EM309 Industrial Statistics (3 credits); Prerequisites: None
EM310 Operations Research I (3 credits); Prerequisites: EM201, EM202
EM311 Mathematical Modelling (2 credits); Prerequisites: EM201, EM202
EM312 Fourier Analysis (3 credits); Prerequisites: EM201, EM202
EM313 Discrete Mathematics (3 credits)
EM314 Numerical Methods (3 credits)
**Technical Elective Courses**

EM501 Operations Research II (2 credits); *Prerequisite:* EM310

EM502 Optimization (3 credits)

EM503 Graph Theory (2 credits); *Prerequisites:* EM201, EM202

EM504 Evolutionary Algorithms (2 credits); *Prerequisites:* EM201, EM202

EM506 Design of Algorithms (2 credits); *Prerequisites:* EM201, EM202

EM507 System Simulation (2 credits)

EM508 Symbolic Mathematics (2 credits)

EM509 Stochastic Processes (2 credits); *Prerequisites:* EM201, EM202

EM510 Decision Theory (2 credits); *Prerequisites:* EM201, EM202

EM511 Regression Analysis (2 credits); *Prerequisites:* EM201, EM202

EM512 Sampling Theory (1 credit); *Prerequisites:* EM201, EM202

EM513 Design and Analysis of Experiments (2 credits); *Prerequisites:* EM201, EM202

EM514 Partial Differential Equations (2 credits); *Prerequisites:* EM201, EM202

EM515 Eigen Function Methods for Differential Equations (2 credits)

EM516 Advanced Engineering Dynamics (2 credits); *Prerequisites:* EM201, EM202

EM517 Nonlinear Dynamical System (2 credits); *Prerequisites:* EM201, EM202

EM518 Advanced Numerical Methods (2 credits); *Prerequisites:* EM201, EM202

EM519 Introduction to Finite Element Method (2 credits); *Prerequisites:* EM201, EM202

EM520 Solar Radiation (2 credits); *Prerequisites:* EM201, EM202

EM521 Integral Equations (2 credits); *Prerequisites:* EM201, EM202

EM522 Tensors (2 credits); *Prerequisites:* EM201, EM202

EM523 Calculus of Variations (2 credits); *Prerequisites:* EM201, EM202
To equip a student with a broad background for a career in Mechanical Engineering, courses are provided in design, research and development, and maintenance and servicing relating to a wide variety of industries concerned with the generation, conversion, control and utilisation of power, the construction of mechanical devices, machines, mechanisms, instruments and electro-mechanical and thermo-fluids equipment.

Graduates in Mechanical Engineering generally go into manufacturing, generation and transmission of power, transportation, refrigeration and air-conditioning, design, development and maintenance of machinery. In order to achieve the competence necessary to undertake such tasks, courses are provided in the basic disciplines of this field. The theory taught to the students is backed by practical work in the laboratories and by exercises in design.

The Department has two large laboratories and a well equipped drawing office. The Applied Mechanics Laboratory has a unique collection of experimental and demonstration equipment, most of which was designed and fabricated in the Faculty.

They have been designed for the purpose of giving the students a clear understanding of fundamentals and an appreciation of mechanical engineering practice. The main areas of interest in this laboratory are mechanics, vibration, control engineering and lubrication. The excellent collection of cut-away models and panel displays of engineering interest is one of the greatest assets of the faculty.

The Thermodynamics Laboratory houses both basic and advanced experimental facilities for heat transfer, combustion, engine testing and agricultural engineering. The laboratory also has several items of laboratory equipment in refrigeration and air-conditioning. It houses the best steam engineering facility in the country.

The Drawing Office has ample space and equipment for teaching engineering drawing and design to about 210 students at a time. The departmental computer facility is accessible to postgraduate students and staff for research and development purposes.

Members of the department have also developed and produced several instructional video films in areas such as Engineering Drawing, Mechanical Vibration, and Kinematics to supplement the work done in the classroom.

The Department has carried out pioneering research of international standing in vibration analysis, solar energy, combustion control and wind power. The current research interests and activities in the department include alternative fuels and fuel additives, corrosion, control systems, mechatronics, automobile engineering and computational fluid dynamics.

The Department has also provided expert advice and consultancy services to industrial establishments in the state, corporate and private sectors in a number of areas relating to mechanical engineering. Among the services provided are the testing of fuels and lubricants, calibration of equipment, measurement of noise and vibration, balancing of rotors, consultation in air-conditioning and refrigeration, design of a pre-calciner and upgrading of the clinker cooler for the cement industry.

Members of the Department have over the years served on several government panels and professional committees concerned with education and training and technological matters.
**Academic Staff**

*Head of the Department*
SDGSP Gunawardane, BScEng *Peradeniya*, MEng, PhD *Muroran*, MIESL, CEng

*Professor*
L. Rajapaksha, BScEng *Peradeniya*, MEng, PhD *London*, MIESL, MIIAR, MASHRAE, CEng, FIMechE

*Senior Lecturers*
EMPB Boyagoda, BScEng *Peradeniya*, MEng, DEng *Yamaguchi*
SDGSP Gunawardane, BScEng *Peradeniya*, MEng, PhD *Muroran*, MIESL, CEng
DAAC Ratnaweera, BScEng *Peradeniya*, PhD *Melbourne*
DHS Maithripala, BScEng *Peradeniya*, Mphil *Peradeniya*, MSc, PhD *Texas Tech*
WPD Fernando, BScEng *Moratuwa*, MSc, PhD *KTH-Stockholm*

*Lecturers*
IW Kularatne, BScEng *Peradeniya*, MScEng *Peradeniya*
LU Bakmeedeniya, BScEng *Peradeniya*, MSc *KTH-Stockholm*
UA Higgoda, BScEng *Peradeniya*, MSc *KTH-Stockholm*

*Senior Engineering Teaching Assistant*
KGS Mangalika, BScEng *Peradeniya*, MEng AIT *Bangkok*

*Engineering Teaching Assistants*
U Kotakadeniya, BScEng *Peradeniya*
Table 9.1 Course structure for specialization in Mechanical Engineering

<table>
<thead>
<tr>
<th>YEAR 2</th>
<th>SEMESTER 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME201</td>
<td>Mechanics of Machines</td>
</tr>
<tr>
<td>ME203</td>
<td>Machine Drawing</td>
</tr>
<tr>
<td>CE201</td>
<td>Mechanics of Materials I</td>
</tr>
<tr>
<td>CE202</td>
<td>Fluid Mechanics I</td>
</tr>
<tr>
<td>EE280</td>
<td>Introduction to Electrical Engineering I</td>
</tr>
<tr>
<td>EM201</td>
<td>Mathematics III</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YEAR 2</th>
<th>SEMESTER 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME209</td>
<td>Machine Design I</td>
</tr>
<tr>
<td>CE207</td>
<td>Materials Science I</td>
</tr>
<tr>
<td>ME207</td>
<td>Applied Thermodynamics I</td>
</tr>
<tr>
<td>ME205</td>
<td>Tribology and Power Transmission Elements</td>
</tr>
<tr>
<td>EM202</td>
<td>Mathematics IV</td>
</tr>
<tr>
<td>EE281</td>
<td>Introduction to Electrical Engineering II</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YEAR 3</th>
<th>SEMESTER 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE301</td>
<td>Mechanics of Materials II</td>
</tr>
<tr>
<td>CE309</td>
<td>Materials Science II</td>
</tr>
<tr>
<td>ME301</td>
<td>Vibrations</td>
</tr>
<tr>
<td>ME303</td>
<td>Applied Thermodynamics II</td>
</tr>
<tr>
<td>ME306</td>
<td>Control Systems</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YEAR 3</th>
<th>SEMESTER 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME302</td>
<td>Machine Design II</td>
</tr>
<tr>
<td>CE304</td>
<td>Fluid Mechanics II</td>
</tr>
<tr>
<td>ME309</td>
<td>Mechanical Engineering Individual Project</td>
</tr>
<tr>
<td>PR311</td>
<td>Production Engineering for Mechanical Engineers</td>
</tr>
</tbody>
</table>

Technical Electives / General Electives
YEAR 4
SEMESTER 7

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR408</td>
<td>Industrial Engineering and Decision Sciences</td>
<td>3</td>
</tr>
<tr>
<td>ME406</td>
<td>Mechanical Engineering Group Project I (to earn eligibility for Class Honours)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Technical Electives / General Electives</td>
<td></td>
</tr>
</tbody>
</table>

SEMESTER 8

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR409</td>
<td>Management Principles and Economics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Technical Electives / General Electives</td>
<td></td>
</tr>
<tr>
<td>ME407</td>
<td>Mechanical Engineering Group Project II (to earn eligibility for Class Honours)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ME406</td>
</tr>
</tbody>
</table>

Courses Offered

Core Courses

ME201 Mechanics of Machines (3 credits)
ME202 Mechanical Engineering for Civil Engineers (3 credits)
ME203 Machine Drawing (3 credits)
ME205 Tribology and Power Transmission Elements (3 credits)
ME207 Applied Thermodynamics I (3 credits)
ME209 Machine Design I (3 credits); Prerequisites: ME201, ME203
ME 210 Thermodynamics for Electrical Engineers (2 credits)

ME301 Vibrations (3 credits)
ME302 Machine Design II (3 credits); Prerequisite: ME209
ME303 Applied Thermodynamics II (3 credits); Prerequisite: ME207
ME306 Control Systems (3 credits)
ME309 Mechanical Engineering Individual Project (3 credits)

ME406 Mechanical Engineering Group Project I (3 credits)
ME407 Mechanical Engineering Group Project II (3 credits); Prerequisite: ME406
Technical Elective Courses

ME501 Heat Transfer (2 credits); Prerequisite: ME 303
ME502 Ergonomics (2 credits)
ME503 Composite Materials (2 credits); Prerequisite: CE309
ME505 Advanced Control Engineering (2 credits); Prerequisite: ME306
ME506 Digital Systems Engineering (2 credits); Prerequisite: ME306
ME508 Automobile Engineering (2 credits); Prerequisite: ME202 or ME207
ME509 Non-linear Control Systems (2 credits); Prerequisite: ME306
ME510 Computer Applications in Mechanical Engineering (2 credits)
ME511 Advanced Vibration Theory (2 credits); Prerequisite: ME 301
ME512 Energy Technology (2 credits); Prerequisite: ME 303
ME513 Applied Thermodynamics III (2 credits); Prerequisite: ME 303
ME514 Maintenance Management (2 credits)
ME515 Mechatronics (3 credits)
ME516 Thermodynamics & Fluid Mechanics for Electrical Engineers (3 credits)
ME517 Project on Introduction to Robotics (2 credits)
ME518 Rigid body Mechanics (3 credits)
DEPARTMENT OF PRODUCTION ENGINEERING

The Department of Production Engineering, established in 1976, has produced about 1000 graduates who specialized in Production Engineering. The Department aims to develop the profile of Production Engineer in two major complementary areas: (i) technological mastery highlighting the skills of harnessing technological resources at all levels, with emphasis on activities at the shop floor level with a clear awareness of the strategic management implications; (ii) mastery of the management of technological resources with emphasis on design and operation of production systems, working in close liaison with strategic management and working closer to the enterprise management with a good knowledge of production technology.

Students are free to make his/her choice by selecting the optional courses appropriately. The core subjects are designed to suit both categories.

The Department conducts specialized courses designed for engineers specialising in Manufacturing Technology and Manufacturing Systems, as well as for Mechanical Engineers. Several of the courses relating to industrial management are conducted with the support of visiting lecturers from Industry.

The Department is well equipped with modern manufacturing and laboratory facilities:
- CAM facility with two CNC Milling Machines, CNC Lathe
- ABB Robot
- Computer Integrated Manufacturing (CIM) System complete with SCARA robots, vision, machining, transport systems.
- EDM Machine
- 3D Printer
- Metrology Laboratory and CMM facility
- Computing Facility
- Instrumentation Laboratory
- Motion Control Laboratory

The Engineering Faculty Workshops are linked to the Department. However, the former are run as an independent administrative unit with its own Director. The Workshops house a variety of conventional machine tools for metal working as well as a wood workshop and a motor vehicle repair unit.

The Department of Production Engineering offers postgraduate programmes in:
- Manufacturing Engineering,
- Engineering Management
The department has ongoing research programmes in the following main thrust areas:

- Advanced Manufacturing systems
- CAD/CAM
- CAD-CAM Integration
- Control of Discrete Event Dynamic Systems
- Control of Dynamic Systems
- Robotics and Mechatronics
- Process Monitoring
- Computer Aided Process Planning
- Industrial Automation
- Intelligent Control

The department provides consultancy services to the local industry in:

- Design, Assembly and Automation of Machines
- Technology Innovation
- Industrial Automation/Robotics/PLC Solutions
- System Design / Evaluation
- CAD/CAM and Die & Mould Design
- Product Innovation and Prototyping
- Hydraulic/Pneumatic systems design
- Welding Automation
- Machine Tools – Diagnostics/Monitoring/Innovative Machining
- Manufacturing Process Improvements
- Lean and Sustainable Manufacturing
- Eco Design and Product Life Cycle Analysis
- Industrial Engineering
- Manufacturing systems modeling and simulation
- Plant Layout Design
- Materials selection and processing
- Manufacturing processes, economics and human factors in manufacturing
- Quality management & Reliability
- Manufacturing process control
- Project management
- Organizational & Educational aspects related to Manufacturing
Academic Staff

Head of the Department
RA Ekanayake, BScEng *Peradeniya*, PhD UNSW

Professor
SD Pathirana, BScEng *Sri Lanka*, MSc RUGhent, DEng Tokyo, MIEEE, CEng, MIET, FIE SL.

Senior Lecturer
NKBMP Nanayakkara, BScEng *Peradeniya*, PhD Deakin
RA Ekanayake, BScEng *Peradeniya*, PhD UNSW
CD Senanayake, BScEng *Peradeniya*
AK Kulatunga, BScEng *Peradeniya* PhD UTS, AMIESL
KMM Dassanayake, BScEng *Peradeniya*, MSc Tokyo, PhD Tokyo, CEng UK, MIMechE

Lecturers
M Dharamawardana, BScEng *Peradeniya*, MSc NFU
P Gamage, BScEng *Peradeniya*
CK Dissanayake, BScEng *Peradeniya*, MBA *Peradeniya*,

Table 10.1 Course structure for specialization in Production Engineering

<table>
<thead>
<tr>
<th>YEAR</th>
<th>SEMESTER</th>
<th>CODE</th>
<th>TITLE</th>
<th>CREDITS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>CE 201</td>
<td>Mechanics of Materials I</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EE 280</td>
<td>Introduction to Electrical Engineering I</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EM 201</td>
<td>Mathematics III</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ME 201</td>
<td>Mechanics of Machines I</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ME 203</td>
<td>Machine Drawing</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PR 203</td>
<td>Manufacturing Technology I</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>CE 207</td>
<td>Material Science I</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EE 281</td>
<td>Introduction to Electrical Engineering II</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EM 202</td>
<td>Mathematics IV</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ME 205</td>
<td>Tribology and Power Transmission Elements</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ME 209</td>
<td>Machine Design I</td>
<td>3</td>
<td>ME 201, ME 203</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PR 202</td>
<td>Production Planning and Control I</td>
<td>3</td>
<td>EM 201</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>CE 301</td>
<td>Mechanics of Materials II</td>
<td>3</td>
<td>CE 201</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EE 380</td>
<td>Electrical Power and Machines</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ME 301</td>
<td>Vibrations</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ME 306</td>
<td>Control Systems</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PR 302</td>
<td>Production Planning and Control II</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Technical / General Electives</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>ME 302</td>
<td>Machine Design II</td>
<td>3</td>
<td>ME 209</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PR 308</td>
<td>Production Engineering</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Technical / General Electives</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>
### Courses Offered

#### Core Courses

- PR202 Production Planning and Control I (3 credits)
- PR203 Manufacturing Technology I (3 credits)

- PR302 Production Planning and Control II (3 credits)
- PR308 Production Engineering (3 credits)

- PR404 CAD/CAM (3 credits)
- PR406 Industrial Assignment (6 credits)
- PR407 Independent Research Project (3 credits)
- PR408 Industrial Engineering and Decision Sciences (3 credits)
- PR409 Management Principles and Economics (3 credits)

#### Technical Elective Courses

- PR303 Machine Tool Engineering (3 credits)
- PR306 Introduction to Industrial Automation (3 credits)
- PR311 Production Engineering for Mechanical Engineers (3 credits)
- PR312 Manufacturing Technology II (3 credits)
- PR501 Simulation & Performance Evaluation of Manufacturing Systems (3 credits); Prerequisites: PR302
- PR502 Robot Dynamics and Control (3 credits);
- PR503 Control of Discrete Event Dynamics Systems (3 credits); Prerequisites: EM202, ME306
- PR506 Manufacturing Processes (3 credits)
- PR507 Industrial/Organizational Psychology (2 credits)
PR508 Product Design for Production (2 credits) *Prerequisite*: CE201
PR509 Plant Layout & Plant Management (3 credits); *Prerequisite*: PR302
PR510 Manufacturing Technology III (3 credits)
PR511 Design for Manufacture (3 credits) *Prerequisite*: PR203
PR512 Principles of Artificial Intelligence (3 credits)
PR513 Modeling and Control of Mechatronic Systems (3 credits); *Prerequisite*: PR306
PR515 Financial and Management Accounting for Engineers (3 credits)
PR516 Sustainable Manufacturing (3 credits)
GENERAL ELECTIVE COURSES

General elective courses are conducted for all fields of specialization in the Specialization Programme. Qualified staff in the respective disciplines are channelled from or outside the faculty to conduct the general elective courses. The general elective courses acceptable for claiming credits for each field of specialization are announced by relevant departments. A student has the freedom to choose his/her general electives from among the list of general elective courses recommended by his/her Department of Study, subjected to the condition that he/she is required to earn a minimum of 02 credits from each one of the following three categories:

Management and Economics, Arts and Humanities, Political and Social Sciences

The current general elective list is given below. The list is subject to periodic revision:

- CP551 Sustainable Development (3 credits)
- PR507 Industrial and Organizational Psychology (2 credits); Prerequisite: PR 408
- EF501 The Engineer in Society (2 credits)
- EF503 Critical Thinking and Writing Skills (2 credits)
- EF505 Management in Practice with Case Studies (3 credits)
- EF507 Government and Politics of Sri Lanka (2 credits)
- EF508 Political Issues in Sri Lanka (2 credits) *
- EF509 Engineer as an Entrepreneur (3 credits)
- EF510 Technology and Economic Development (3 credits)
- EF511 Social Project (2 credits)*
- EF512 Rural Economic Development and Technology (2 credits)
- EF513 Introduction to Music (2 credits)
- EF514 Cinema and Television (2 credits)
- EF515 Theatre and Drama (2 credits)
- EF516 Painting and Sculpture (2 credits)
- EF517 Project in Fine Arts (1 credit)
- EF519 Written English for Communication (1 credit)
- EF520 Effective Communication in English through Speech (1 credit)
- EF521 Intellectual Property (1 credit)
- EF522 Sri Lankan Technology (3 credits)
- EF524 Business Law (3 credits)
- EF526 Marketing and Financial Management (3 credits)
- EF528 Introduction to Digital Art (3 credits)

* These general elective courses are not recommended for students in Civil Engineering specialization.
<table>
<thead>
<tr>
<th>General Elective Course</th>
<th>Management and Economics</th>
<th>Arts and Humanities</th>
<th>Political and Social Sciences</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP551 Sustainable Development</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>PR507 Industrial/ Organizational Psychology</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EF501 The Engineer in Society</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EF503 Critical Thinking and Writing Skills**</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EF505 Management in Practice with Case Studies</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EF507 Government and Politics of Sri Lanka**</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EF508 Political Issues in Sri Lanka**</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EF509 Engineer as an Entrepreneur</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EF510 Technology and Economic Development**</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EF511 Social Project</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EF512 Rural Economic Development and Technology**</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EF513 Introduction to Music</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EF514 Cinema and Television**</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EF515 Theatre and Drama**</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EF516 Painting and Sculpture</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EF517 Project in Fine Arts**</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EF519 Written English for Communication</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EF520 Effective Communication in English through Speech</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EF521 Intellectual Property</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EF522 Sri Lankan Technology</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EF524 Business Law</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EF526 Marketing and Financial Management</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EF528 Introduction to Digital Art</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

** These courses are not offered.
Industrial Training
Industrial Training and Career Guidance Unit (ITCGU) is responsible for arranging, monitoring and evaluation of the industrial training in liaison with the National Apprentice and Industrial Training Authority (NAITA). This unit is also responsible for planning and organizing activities in guiding students for gainful employment prospects.

Industrial Training (TR400)
TR400 Industrial Training (6 credits) is a compulsory course and successful completion of the course is required for the award of the Bachelor of the Science of Engineering. Students are given Pass/Fail grades and the student who scores highest marks at the assessment is awarded the “J.B. Dissanayake prize for Industrial Training”.

A student who fails to satisfactorily complete the Industrial Training course will be required to undergo further training and appear for an assessment to be eligible for the award of the degree of Bachelor of the Science of Engineering.

Placements in the participating industries are arranged for undergraduates during the industrial training sessions in the academic calendar of the Faculty so that 20 to 24 weeks training in industry is achieved.

Undergraduates are expected to acquire hands-on experience not only of the engineering aspects of the work, but also of related matters such as administration, accounting, management, safety, quality assurance etc. Students have to maintain a daily diary during training and submit a comprehensive report covering each period of training. The assessment is done at an interview conducted by a panel consisting of a practicing engineer from industry, an officer from NAITA, a lecturer from the relevant department and staff of the ITCGU. This assessment is normally conducted in the second semester of the final year of studies.

Career Guidance
Career Guidance has been recognized as an important part of the education and training that the undergraduate has to be exposed to. The undergraduates are assisted by the ITCGU to select their future careers to suit their abilities, wishes and expectations. This is to be achieved by means of enhancing the necessary attitude, motivation and the skills demanded by the engineering organizations both in the state and private sectors. The ITCGU liaises with these industrial sector establishments to organize capacity building sessions to develop the skills required for the present day job market among undergraduates. These include orientation of the undergraduates to develop the career related skills such as communication skills, leadership and teamwork skills, managerial skills, marketing and entrepreneurial skills. The ITCGU maintains links with these organizations and exchange information mutually benefiting both. It collaborates with the Career Guidance Unit of the University of Peradeniya.
Academic Staff

Director
WRMU Wickramasinghe, BScEng Peradeniya, PGDipIE OUSL, CEng, MIE SL

Senior Lecturers
SB Wijekoon, BScEng Peradeniya, MEng Moratuwa, MBA Deakin, Dip in Commercial Arbitration, CEng, FIE SL, MICE London, Int PE, FIPM SL
WRMU Wickramasinghe, BScEng Peradeniya, PGDipIE OUSL, CEng, MIE SL

Lecturers
SWMSSK Wijeratne, BScEng Peradeniya, MScEng Peradeniya, AMIE SL
MMGV Shyamalee, BScEng Peradeniya, MEng Nagoya, AMIE SL
Fees payable by students will be determined in accordance with the decisions made by the university authorities and are subject to revision from time to time. Concessions are available to teachers and officers of the University of Peradeniya. Refund of fees is made only under exceptional circumstances.

Sri Lankan students should pay fees to the credit of the relevant account of the University of Peradeniya at the People's Bank or Bank of Ceylon.

Foreign students should pay the fees in foreign currency viz. US dollars. They could do so by sending a Bank Draft/Tele Transfer made in favour of the Registrar of the University of Peradeniya. Non-citizens resident in Sri Lanka may pay the prescribed fees in local currency.

## 1 UNDERGRADUATE COURSES AND EXAMINATIONS

### 1.1 Fees Payable by New Entrants

<table>
<thead>
<tr>
<th>Fee</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission fee</td>
<td>Rs. 600.00</td>
</tr>
<tr>
<td>Registration Fee</td>
<td>Rs.200.00</td>
</tr>
<tr>
<td>Other Fees*</td>
<td>Rs.300.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>Rs. 1100.00</td>
</tr>
</tbody>
</table>

### 1.2 Fees payable in each academic year

<table>
<thead>
<tr>
<th>Fee</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewal Fee</td>
<td>Rs.150.00</td>
</tr>
<tr>
<td>Other Fees*</td>
<td>Rs.300.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>Rs.200.00</td>
</tr>
</tbody>
</table>

### 1.3 Examination Fees*

The undergraduate student is not required to pay any fees for the first attempt of an End-of-Semester examination. Fees are payable for subsequent attempts of the an End-of-Semester examinations of the semesters and special session in the General Programme in Engineering) and Specialization Programme in Engineering

* The fees payable are reviewed by the Faculty and the rates that apply will be announced at the beginning of each semester.
The perception among some professional engineers that postgraduate courses are for those seeking academic careers has by and large been dispelled, and engineers in the field/industry are increasingly aware of the benefits of such courses to update and advance their knowledge. The Faculty has sought to meet the resultant demand for advanced knowledge by offering appropriately designed postgraduate courses, with combinations of lectures, coursework and research in varying proportions and scope that lead to diplomas/degrees. The courses are available at five levels:

- Postgraduate Diploma in Engineering or in any other approved field of study – PGDip.
- Degree of Master of the Science of Engineering – MScEng.
- Degree of Master of Science – MSc
- Degree of Master of Philosophy – MPhil
- Degree of Doctor of Philosophy – PhD

The programmes are sufficiently flexible in structure to accommodate students with diverse professional background and varying degrees of financial and time constraints. Students are admitted to any one of the four distinct categories:

- Regular full-time postgraduate students
- Regular part-time postgraduate students
- Provisional students
- Casual students

Following postgraduate programmes are currently available in Faculty of Engineering.

<table>
<thead>
<tr>
<th>Programme</th>
<th>Coordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Pollution Control Engineering</td>
<td>Prof. R. Shanthini</td>
</tr>
<tr>
<td>Structural Engineering</td>
<td>Dr. UI Dissanayake</td>
</tr>
<tr>
<td>Environmental and Water Engineering</td>
<td>Dr. GBB Herath</td>
</tr>
<tr>
<td>Disaster Management</td>
<td>Dr. LCKurukulasooriya</td>
</tr>
<tr>
<td>Geotechnical Engineering</td>
<td>Dr. D de S Udakara</td>
</tr>
<tr>
<td>Electrical &amp; Electronic Engineering</td>
<td>Dr. JRSS Kumara</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>Dr. DAAC Ratnaweera</td>
</tr>
<tr>
<td>Building Services Engineering</td>
<td>Dr. DAAC Ratnaweera</td>
</tr>
<tr>
<td>Manufacturing Engineering</td>
<td>Prof. SD Pathirana</td>
</tr>
<tr>
<td>Engineering Management</td>
<td>Dr. NKBMP Nanayakkara</td>
</tr>
</tbody>
</table>

All the departments offer Postgraduate Diploma (by research)/ M.Phil/ PhD programmes.
ACADEMIC FACILITIES

1 THE ENGINEERING LIBRARY

The Engineering Library meets the needs of the undergraduates, graduates and academic staff of the Faculty. Its collection is part of the stock of the Library of the University of Peradeniya, a National Library, and contains a wide range of books and periodicals in Civil, Electrical, Mechanical, Production, Chemical, Computer Engineering and Mathematics. It also has a fair collection of books on the Natural Sciences. It is constantly being brought up to date with new accessions. The collection of some important reference journals goes back to the 1930s. Now there are about 40,000 books and periodicals available in this engineering library. The present library in the new building was opened in 2000 to provide more reading facilities for the increasing student population.

All students are required to get themselves registered at the Library in the beginning of the academic year, so that they may be issued with the necessary tickets for borrowing books. Orientation programmes are provided on the general use of the Library early in a student's career, followed by more specific instructions on the literature of particular subject fields, so that a student may have some insight into the depth and breadth of information available to him/her as and when he/she requires it.

Library Hours

Monday to Friday 7.30 am – 6.30 pm
Saturday and Sundays 7.30 am - 4.15 pm
Closed on public holidays

Undergraduates should be able to find most of the literature that they require within the Library itself, but academic staff and post-graduate students with detailed and diversified requirements will, of course, to some extent rely on the inter-library loan system. Every effort is made to obtain the required literature from other libraries in Sri Lanka and abroad. Ready assistance is available to all Library users. Further details of the Library services may be found in the guide supplied to all readers on registration.

Senior Assistant Librarian
KPND Peiris, BSc Peradeniya, M.Phil. Peradeniya, MLS Colombo, ASLLA
2 ENGINEERING WORKSHOPS

The Engineering Workshops consist of the Machine Shop (metal work), the Fitting Shop, the Foundry, the Smithy, the Welding shop, the Carpentry Shop and the Motor Vehicle Repair Unit and Service Facility.

The Engineering Workshops have two main functions. Firstly its resources and facilities are utilized for academic work and training of engineering undergraduates.

Experiments as well as training sessions are conducted for the first, third and final year undergraduates in the areas of Workshop Technology, Production Engineering, Production Technology and Automobile Technology. In addition to these, the manufacture of necessary hardware for student projects is also carried out in the workshops.

The other function includes the manufacture of equipment for teaching and research, maintenance of machines and equipment, industrial training of undergraduates and NAITA (National Apprentice Industrial and Training Authority) trainees, industrial consultancy work (design, manufacturing of machines and mechanisms for industry), evaluation of craftsman and technical personnel, motor vehicle repair (university fleet) and servicing, and a variety of fabrication work for the faculty.

Director
Dean, Faculty of Engineering.

Workshop Engineer
MMK Sirisena, BScEng Peradeniya, CEng, MIE SL

3 THE COMPUTING CENTRE

The University Computing Centre was established in 1971 when the University acquired an IBM 1130 Computing System, the first in the country. In 1973 the CC was moved to a new building. The Computing Centre was absorbed into the newly established Department of Computer Sciences in 1985. Since 1995 it has been functioning as an independent unit.

During the eighties the Centre has began to acquire microcomputers. It now possesses a variety of hardware that includes three servers and about 75 networked workstations that are running on a 100 Mbps switched Ethernet. Commonly used application software, compilers and Internet services are available for users.

The services provided by the Centre include

- The computing facilities for course units which have computer based labs.
- Conducting the basic IT course for the new entrance during their intensive English course.
- Conducting supporting courses for academic and non-academic staff.
- Providing computer and peripheral repairs for the entire university.

The Computing Centre also provide services such as high resolution colour laser printing, colour scanning, high speed line printing and wide paper colour plotting.
4 THE ELECTRONICS WORKSHOP

The central electronics workshop was set up in 1970 as a service unit attached to the Electrical and Electronic Engineering Department to undertake the servicing and repairs to electronic equipment of a scientific nature belonging to all the faculties of the University. It has since extended its capabilities to the design and manufacture of small items of electronic equipment, with its services extended to scientific establishments outside the university. Currently the centre works as a separate unit belonging to the university.

Director
DN Uduwawala, BScEng Peradeniya, Tech Lic, PhD KTH, MIEEE

5 ENGLISH LANGUAGE TEACHING UNIT (ELTU); THE LANGUAGE LABORATORY

The medium of instruction in the Faculty of Engineering is English. New entrants are therefore called upon to communicate effectively in English. Since 1968, the Faculty of Engineering has made special provision for the teaching of English as a second language to the new entrants. An English Language Teaching Unit was set up in the Faculty in 1985 for the purpose of teaching English to first and second year students, and now regular classes are held for third year students as well. Classes are held for fourth year students as well as technical and clerical staff, on request.

A well-equipped language laboratory, installed in 1985, with audio-video facilities for 30 students and a master control unit for teachers, meets the needs of undergraduates and staff of all faculties of the University. In addition to self-access material for learners of English and other languages, expert guidance is also available in the Language Laboratory.

Co-ordinator
UG Karunaratne, BA Peradeniya
8 ENGINEERING EDUCATION UNIT (EEU); AUDIO-VISUAL FACILITY

The Engineering Education Unit was established in the Faculty of Engineering in 1985 primarily with the view to coordinating activities in the following areas:

* Staff development
* Curriculum development
* Provision of audio-visual facilities for educational purposes
* Freshmen orientation

The management and development of the EEU is the responsibility of a committee consisting of the Dean, the Director of the unit and members of the permanent academic staff elected by the Faculty Board. The EEU has a professional audio-visual studio equipped with a U-matic video production system and VHS playback and recording facilities. Also EEU has good digital video and digital still cameras and facilities for non linear video editing. Members of the teaching staff of the Faculty have utilised these facilities to produce educational videos for use in their teaching. Two seminar rooms of capacities 100 and 80 equipped with large screen multimedia projection facilities, a 6 mm portable film projector, a slide projector, a visual system presenter and overhead projectors, are also maintained by the EEU. The EEU maintained and operates the public address system within the Faculty in addition to the audio facilities at the EOE Pereira theatre.

Director
SMKBSamarakoon, BScEngPeradeniya, MEng AIT Bangkok, PhD Cardiff, MIET, CEngUK, CEng SL, MIE SL, MIEEE

9 RESEARCH AND DEVELOPMENT UNITS

(i) Engineering Design Centre (EDC)

The Engineering Design Centre (EDC) of the Faculty of Engineering, University of Peradeniya was established with the assistance from the Commonwealth Science Council in 1993, with the objective of supporting Sri Lankan industries through Industrial consultancy, sponsored research and continuing professional development.

Vision: To become the leading commercial entity in the field of Engineering among the Universities of Sri Lanka.

Mission: To strengthen research and development (R&D) capacity of the University of Peradeniya by establishing sustainable partnership with industries, while supporting to upgrade the science and technology (S&T) education system of the University.

The Engineering Design Centre was funded by the Asian Development Bank (ADB) Science and Technology Personnel Development (STPD) Project under the Ministry of Science and Technology and a full time director heads the EDC. Policy decisions with regard to management and operation of the Centre will be conveyed to the Director by the EDC Committee. This Committee consists of five members of the Faculty Board, a member from the Industry, Director EDC and is headed by the Dean/ Engineering.
EDC directly involves in industrial activities and carries out administrative and financial aspects of engineering projects undertaken by the Faculty. The Faculty staff works with EDC project engineers to provide technical and engineering inputs to the Projects. These projects handle problems in the industry related to the engineering field especially in construction and manufacturing.

The EDC became a self-supporting commercial entity with its own full-time staff with effect from 01.10.2004. Today EDC consists of full-time (contract basis) engineers in the sections of promotion, services and administration, a Senior Project Engineer and the Director.

**Director**

**Engineers**
SM Dissanayake, BScEng *Peradeniya*, MPhil *Hong Kong*, AMIE SL
P Wansekara, BScEng *Peradeniya*
TP Rathnasiri, BScEng *Peradeniya*, MBA SrJ

(ii) Centre for Engineering Research and Postgraduate Studies (CERPS)

The Engineering Research Unit originally established in 1990 was transformed to the Centre for Engineering Research and Postgraduate Studies in 2001. Since then CERPS, as it came to be known thereafter, has coordinated Research Activities and Postgraduate Studies in the Faculty of Engineering, and has been instrumental in the drafting of basic policy framework in this regard along with the Faculty Regulations governing postgraduate studies.

Activities of the Centre are organised along two axes:
- The Postgraduate Studies Arm of CERPS and
- The Research Arm of CERPS.

(a) The Postgraduate Studies Arm of CERPS

**Mission:** The mission of the Postgraduate Studies Arm of CERPS is the facilitation of Postgraduate Studies and related activities in the Faculty of Engineering by networking and coordinating all matters related to policy formulation, establishment, running, funding and development of individual Postgraduate Programmes in the Faculty to foster unhampered development of intra- and inter-departmental Postgraduate Programme initiatives.

The postgraduate studies organisation within the Faculty of Engineering is a network of Postgraduate (PG) Programmes each with a Programme Coordinator.

The Postgraduate Arm of CERPS provides the forum for policy formulation in postgraduate studies in Engineering.
(b) The Research Arm of CERPS

Mission: The mission of the Research Arm of CERPS is the facilitation of research activities in the Faculty of Engineering by networking and coordinating matters relating to policy formulation, establishment, running, funding and termination of individual Research Groups in the Faculty to foster unhampered development of individual and collective research initiatives by faculty members.

The research organisation within the Faculty of Engineering is a network of research groups and research teams.

The Research Arm of CERPS provides the forum for policy formulation in Engineering research.

The Research Arm coordinates Annual Faculty Research Sessions as part of Peradeniya University Research Sessions (PURSE). Coordination of the award and administration of University Research Grants for the Faculty of Engineering is also handled by CERPS.

Director
JJ Wijetunge, BScEng Moratuwa, PhD Cambridge, CEng, MIE SL
UNIVERSITY SERVICE FACILITIES

1 MOTOR VEHICLE REPAIR UNIT (MVRU)

The motor vehicle repair unit was set up within the Machine Shop in 1978 to carry out small repairs to the university's modest fleet of about 20 vehicles. But the work load has since increased considerably and the unit is now expected to deal with a fleet of about 120 vehicles. The MVRU is now housed in a new building of its own, with more repair facilities so that a wide variety of repair work including the overhaul of engines, gear boxes, differentials, brakes, steering and other components can be undertaken. The motor vehicles of the university are also serviced in the MVRU and this facility is now available to the light vehicles of university employees as well.

At present practical classes in Automobile Technology are conducted for the first year undergraduates. In addition, all the undergraduate trainees in the Engineering Workshops are given short spells in the MVRU as part of their training programme.

Superintendent
Head, Department of Mechanical Engineering, Faculty of Engineering

PERADENIYA ENGINEERING FACULTY ALUMNI ASSOCIATION (PEFAA)

The Peradeniya Engineering Faculty Alumni Association (PEFAA), formed in September 1991, is a government registered charity organization. Its main objectives are to encourage, foster and promote close relations between the Faculty and its alumni and among alumni, and also to assist and support, financially and otherwise, the Faculty and its students and alumni. Any person who has completed an undergraduate or postgraduate course in the Faculty or has been a member of the academic staff of the Faculty can be a Life Member of PEFAA. Here ‘Faculty’ means the Engineering Faculties of the University of Ceylon, the University of Sri Lanka (Peradeniya Campus), and the University of Peradeniya. The present membership is around 2000.

PEFAA supports needy students of the Faculty by giving financial assistance through its Needy Students’ Fund, and its Benevolent Fund helps needy alumni. It also helps the undergraduates through orientation programs and by organizing lectures and seminars on industry related topics. PEFAA also supports industrial training of undergraduates and collects material for the Faculty library and laboratories through its members. In the recent past, PEFAA has been involved in managing/administering a number of scholarships to undergraduates, granted by alumni.

In addition to the Annual General Meeting, PEFAA organizes trips, visits and get-togethers for its members to meet and exchange ideas both formally and informally. A quarterly newsletter (PEFAA News) keeps members informed of PEFAA activities.
In 1997 PEFAA embarked on its most ambitious project, the setting up of an Engineering and Technology Centre (ET Centre). The main objective of the ET Centre is to educate, entertain and inspire people of different backgrounds by making Engineering and Technology accessible to them at their own level. The location for the proposed ET Centre is directly opposite the Faculty, across the Upper Gampola Road. Already architectural plans of the Centre have been prepared using donations by the alumni. Funds for the construction of the Centre are requested from donors, governmental and non-governmental sources, and foreign countries.
GENERAL FACILITIES

1  HALLS OF RESIDENCE

The University of Peradeniya is essentially a residential university and most of the students are given comfortable living accommodation and easy access to a wide range of facilities for recreation and relaxation in the University Park that are open to all students. There are eight Halls of Residence and a hostel for men, three Halls of Residence and a hostel for women, and four hostels for bhikkus. Expansion of accommodation has not kept pace with the increase in student intake. However, some of the Halls of Residence have been enlarged recently, and a building programme is in progress to increase residential capacity. Many of the male engineering students are accommodated at the Akbar-Nell Hall, which is close to the Faculty of Engineering.

2  SPORTS AND RECREATION

The campus has extensive facilities for sports and recreation, the hub of which is a large gymnasium for indoor sports such as badminton, basketball, netball, table tennis, weight lifting, wrestling etc. Outdoor sports grounds with ample space exist for cricket, rugger, soccer, hockey, tennis, volleyball and other games. There are separate grounds for track and field athletic activities. Most significantly the 50 m swimming pool at Peradeniya is the only University swimming pool in Sri Lanka. It is available to all members of the University and to the public at large. All sports activities are supervised by the Department of Physical Education, and instructors and coaches are available to help students in their training.

3  STUDENT SOCIETIES

The diverse interests covered by societies open to students comprise a major attraction of life in a residential university. These societies are either university-based or faculty-based. The larger societies in the Faculty of Engineering are departmental groups, which have been in existence long enough to develop their own conventions and traditions. They are the Chemical Engineering Students’ Society (CHESS), the Civil Engineering Society (CES), the Computer Engineering Student Society (CESS), the Peradeniya Electrical and Electronic Engineering Society (PEEES), the Mechanical Engineering Society (MES), and the Production Engineering Students’ Society (PESS). Students interested in music, drama, literature, politics, religion etc. join in the activities of the appropriate university societies or faculty societies based on extra-mural and, sometimes, esoteric interests.
4 RELIGIOUS ACTIVITIES AND PLACES OF WORSHIP

Religious activities are organised for the university as a whole, and there are five registered student societies:

- The Buddhist Brotherhood
- The Hindu Society
- Newman Society (for Roman Catholics)
- The Student Christian Movement
- The University Muslim Majlis

The University Park has places of worship for each of the five major religious denominations.

5 THEATRE

The E.O.E. Pereira Theatre in the Engineering Faculty, with a seating capacity of 582 and excellent acoustics, is the largest theatre in the campus. Although built primarily for academic gatherings of engineering students, it is also a popular centre for plays and musical concerts, and the venue for Special Convocations and meetings of learned societies.

6 STUDENTS CENTRE

The Faculty has a Students Centre with a range of facilities and is freely accessible to the students. It is also a popular venue for social gatherings of students.

7 HEALTH SERVICES

A team of medical officers and supporting staff at the University Health Centre provide health care for the campus community – students as well as staff. The Health Centre also has a medical laboratory. Health care takes the form of daily OPD service and emergency cases are referred to the Peradeniya Teaching Hospital or to the General Hospital, Kandy. Dental care is provided by the Faculty of Dental Sciences.

8 STUDENT COUNSELLING

The University provides counselling service, with assurance of complete confidentiality, to students facing problems of a personal, social or academic nature. The team of counsellors comprises several members of the senior academic staff of the different faculties and the medical officers of the Health Centre. Five of the counsellors belong to the Faculty of Engineering, and attend to the special needs of the engineering students.
9 THE FACULTY CANTEENS

There are two canteens in the Faculty that provide meals and refreshments. The Faculty of Engineering Canteen Committee, comprising staff and students of the Faculty, manages both canteens. The second canteen was opened in 2003 in response to the demands due to the recent increase in student intake. Each canteen has counters for the sale of stationery, drawing instruments etc. as well as facilities for photocopying and bookbinding.

10 ROAD, RAIL AND POSTAL SERVICES

The university community is served by the Sarasavi Uyana railway station and a Special Grade Post Office both located on the perimeter of the campus. There is also a small post office in the heart of the campus. Public roads run through the campus and carry bus services that link the Colombo-Kandy trunk road, which skirts the University Park. The Engineering Faculty is located between the lower Gampola road and upper Gampola road. Both routes have regular bus services. The Peradeniya Junction railway station is within walking distance, around 500 meters, from the Faculty. The distance by road is, however, longer at around 1.5 kilometres.

11 BANKING

The two major state banks, the Bank of Ceylon and the People’s Bank, have had their branches within the campus for many years, but, a few years ago, the former moved into larger premises just outside the perimeter of the University Park. However, sub-branches of both banks, located in the Senate Building Extension, are open in the mornings of working days.
OTHER DETAILS OF THE FACULTY

1. ENGINEERING GRADUATES

<table>
<thead>
<tr>
<th>Number of graduates as of 31st December 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical &amp; Process Engineering</td>
</tr>
<tr>
<td>Civil Engineering</td>
</tr>
<tr>
<td>Computer Engineering</td>
</tr>
<tr>
<td>Electrical &amp; Electronic Engineering</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>Production Engineering</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

2. THE FACULTY COLOUR

The official colour of the Faculty is pink, and is displayed by the garland that the engineering graduand receives at the Annual University Convocation. Since the colours of the University are gold and maroon, the Faculty uses pink and maroon on the covers of its publications.

3. PAST DEANS OF THE FACULTY

<table>
<thead>
<tr>
<th>Professor</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. EOE Pereira</td>
<td>1950-65 &amp; 1966-69</td>
</tr>
<tr>
<td>Prof. RH Paul</td>
<td>1965-66</td>
</tr>
<tr>
<td>Prof. JCV Chinnappa</td>
<td>1969-71</td>
</tr>
<tr>
<td>Prof. HB de Silva</td>
<td>1972-75</td>
</tr>
<tr>
<td>Prof. A Thurairajah</td>
<td>1975-77 &amp; 1982-85</td>
</tr>
<tr>
<td>Prof. WP Jayasekara</td>
<td>1977-82</td>
</tr>
<tr>
<td>Prof. CLV Jayatilleka</td>
<td>1985-86 &amp; 1988-89</td>
</tr>
<tr>
<td>Prof. M Amaratunga</td>
<td>1986-88</td>
</tr>
<tr>
<td>Prof. MP Ranaweera</td>
<td>1989-94</td>
</tr>
<tr>
<td>Prof. S Ranatunga</td>
<td>1994-99</td>
</tr>
<tr>
<td>Prof. WJN Fernando</td>
<td>1999-2002</td>
</tr>
<tr>
<td>Dr. SD Pathirana</td>
<td>2002-2005</td>
</tr>
<tr>
<td>Prof. SBS Abayakoon</td>
<td>2005-2009</td>
</tr>
<tr>
<td>Prof. SB Weerakoon</td>
<td>2009-2012</td>
</tr>
</tbody>
</table>
5. PAST PROFESSORS OF THE FACULTY

Prof. EOE Pereira  Civil Engineering
Prof. RH Paul  Electrical & Electronic Engineering
Prof. JCV Chinnappa  Mechanical Engineering
Prof. EF Bartholomeusz  Engineering Mathematics
Prof. WP Jayasekara  Electrical & Electronic Engineering
Prof. S Mahalingam  Mechanical Engineering
Prof. A Thurairajah  Civil Engineering
Prof. WMG Fernando  Electrical & Electronic Engineering
Prof. HB de Silva  Civil Engineering
Prof. M Amaratunga  Civil Engineering
Prof. JA Gunawardena  Electrical & Electronic Engineering
Prof. CLV Jayatilleke  Mechanical Engineering
Prof. R Galappaththi  Civil Engineering
Prof. RJKSK Ranatunge  Production Engineering
Prof. WJN Fernando  Chemical Engineering
Prof. TDMA Samuel  Engineering Mathematics
Prof. GE Amirthanathan  Civil Engineering
Prof. MPRanaweera  Civil Engineering
Prof. SSivasegaram  Mechanical Engineering
Prof. SRH Hoole  Electrical & Electronic Engineering
Prof. SBSiyambalapitiya  Engineering Mathematics
Prof. N Ekanayake  Electrical & Electronic Engineering

6. EMERITUS PROFESSORS OF THE FACULTY

Prof. RH Paul  1967
Prof. EOE Pereira  1971
Prof. WMG Fernando  1990
Prof. WP Jayasekara  1996
Prof. S Mahalingam  1996
Prof. JA Gunawardena  2003
Prof. CLV Jayatilleke  2004
Prof. TDMA Samuel  2006
Prof. MP Ranaweera  2008
Prof. WJN Fernando  2011
Prof. N Ekanayake  2012
### 7. HONORARY DOCTORS OF SCIENCE

<table>
<thead>
<tr>
<th>Name</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. EOE Pereira</td>
<td>1978</td>
</tr>
<tr>
<td>Prof. RH Paul</td>
<td>1981</td>
</tr>
<tr>
<td>Prof. A Thurairajah</td>
<td>1994</td>
</tr>
<tr>
<td>Eng. ANS Kulasinghe</td>
<td>2005</td>
</tr>
</tbody>
</table>
ANNEXURE I

RULES AND REGULATIONS RELATING TO THE DEGREE OF BACHELOR OF THE SCIENCE OF ENGINEERING
REGULATIONS RELATING TO
THE DEGREE OF BACHELOR OF THE SCIENCE OF
ENGINEERING

1. This regulation may be cited as the University of Peradeniya, Sri Lanka, Regulation Number [ST/349/8.3.1.6/13] and amendment as per the UGC Circular No.901 for the Degree of Bachelor of the Science of Engineering (BSc Eng.) that will come into effect from 1st of October 2011.

2. The programme of study for the Degree of Bachelor of the Science of Engineering shall be of four academic years’ duration and shall consist of General Programme in Engineering and Specialization Programme in Engineering prescribed by this Regulation and the Rules hereunder.

3. Subject to provisions of this regulation, the Faculty Board of the Faculty of Engineering shall make appropriate Rules for the conduct of the degree programme.

4. A candidate may be admitted to the Degree of Bachelor of the Science of Engineering if he/she
   a) has been admitted as a student of the University under the Statutes of the University governing the admission of students to the University;
   b) has thereafter followed to the satisfaction of the Vice Chancellor the courses of study prescribed by this Regulation and the Rules hereunder;
   c) has successfully completed or been exempted from the General Programme in Engineering; and
   d) has successfully completed the Specialization Programme in Engineering.

5. The contents, the method of assessment and the credit values of courses shall be prescribed by the Faculty Board on approval of the Senate for each course of the General and Specialization Programmes in Engineering.

6. Courses shall be offered in semesters scheduled during the programme of study and students shall register for courses they wish to follow in each semester.

7. In order to obtain credits from a course, a student is required to follow the course satisfactorily and attain a minimum specified standard in the evaluation of the course as prescribed by Rules.

8. The credit load of a student in a semester should not exceed a maximum specified by Rules.

9. The Senate may prescribe courses and/or training, whether inside or outside the University, in addition to the courses specified by Rules. A candidate shall not be deemed to be qualified for the Degree of Bachelor of the Science of Engineering unless he/she has completed such courses and/or training to the satisfaction of the Vice Chancellor.
10. A student registered to the programme of study, shall follow the programme of study without discontinuity, except in the event of his/her being prevented by the university from following the programme of study, until he/she completes the programme of study subject to the maximum period stipulated for completion of the programme of study in this Regulation.

11. In the event of discontinuity in following the programme of study without the approval of the Dean as prescribed by Rules, the student will be considered to have abandoned the programme of study. A student who has abandoned the programme of study will not be readmitted except with the approval of the Senate on the recommendation of the faculty Board.

Course Evaluation

12. The Faculty Board with the approval of the Senate shall appoint an Evaluation Panel for each course of the General and Specialization Programmes in Engineering offered in every semester.

13. The Evaluation Panel for a course shall comprise at least three members including a coordinator, a moderator, and members of the academic staff and Visiting Lecturers teaching the course concerned.

14. Each Evaluation Panel shall be responsible for the assessment of students in respective courses by means of oral, practical and/or written assessments as necessary.

15. Due to compelling reasons the performance of a student in a course may be re-evaluated by a Review Panel appointed by the Faculty Board on the recommendation of the Head of the Department concerned and/or the Dean with the approval of the Senate.

16. The Dean may authorize a make-up examination in respect of a student who fails to face a scheduled examination of a course for a valid reason as prescribed by Rules.

17. Under exceptional circumstances the Dean may allow a student who fails to comply with a compulsory requirement of a course to fulfil such requirement at a later date as prescribed by Rules.
18. The General Programme in Engineering shall be of duration of one academic year, and shall be provided as courses equivalent to a total course credits as prescribed by Rules.

19. A student may be exempted from courses of the General Programme in Engineering, provided that he/she has obtained an equivalent qualification or qualifications as approved by the Senate on the recommendation by the Faculty Board.

20. For a student to be deemed to have successfully followed the General Programme in Engineering, he/she shall have followed the courses to the satisfaction of the Vice Chancellor or exempted from the courses prescribed by Rules.

21. (a) A student shall be deemed to have successfully completed the General Programme in Engineering if he/she
   i. has been exempted from all the courses prescribed by Rules; or
   ii. has successfully followed the courses and reached the minimum standard required for the successful completion of the Programme, during the period of study, as prescribed by Rules; or
   iii. has been exempted from some of the courses prescribed by Rules and has successfully followed the remaining courses and reached the minimum standard required for the successful completion of the Programme, during the period of study, as prescribed by Rules.

   (b) A student shall be deemed to have provisionally completed the General Programme in Engineering if he/she
   i. has been exempted from the courses required for the provisional completion of the Programme as prescribed by Rules; or
   ii. has successfully followed the courses and reached the minimum standard required for the provisional completion of the Programme, during the period of study, as prescribed by Rules; or
   iii. has been exempted from some of the courses prescribed by Rules and has successfully followed the remaining courses and reached the minimum standard required for the provisional completion of the Programme during the period of study, as prescribed by Rules.

   (c) A student who has failed to successfully complete the General Programme in Engineering as in (a) above may be allowed to follow the courses in which he/she has not reached the minimum standard required for the successful completion of the Programme.

22. A Special Session may be conducted after completion of the final evaluation of the courses in the General Programme in each academic year

   a) For a student to follow a course in the Special Session he/she should have satisfactorily followed the same course when it was offered during the same academic year.
b) A student who fails to complete General Programme, shall be allowed to follow up to a maximum of three courses in the Special Session subject to (a) above, provided that the grades accumulated by the student will potentially allow the student to provisionally or successfully complete the General Programme in Engineering.

c) A student who has successfully or provisionally completed the General Programme in the same academic year and wishes to improve grades up to “C” grades shall be allowed to register for up to a maximum of three courses subject to (a) above, during the Special Session.

23. A student who has not qualified in a course by the end of the Special Session will be required to follow the course in a subsequent semester in which the course is offered in order to qualify in that course.

24. Any student who does not successfully complete the General Programme in Engineering within one academic year of entering the Faculty may successfully complete the General Programme in Engineering on accumulation of the required minimum grades.

25. Notwithstanding the fact that he/she may otherwise be eligible, a student shall not follow any of the courses of the General Programme in Engineering after a period of three academic years from the time of admission to the Faculty, unless he/she has provisionally completed the General Programme in Engineering. However, a student who fails to meet this requirement may be permitted to follow any of the courses of the General Programme in Engineering with the special consent of the Senate granted on the recommendation of the Faculty Board.

SPECIALIZATION PROGRAMME IN ENGINEERING

26. The Specialization Programme in Engineering shall be of duration of three academic years and shall be offered as courses to a specified total number of credits under different fields of specializations as prescribed by Rules.

27. A student should have successfully or provisionally completed the General Programme in Engineering for he/she to be qualified to register for the Specialization Programme in Engineering.

28. Streaming of a student into a field of Specialization Programme is based on available positions under different fields of Specialization Programmes and his/her preference as well as the performance in the General Programme in Engineering as prescribed by Rules.

29. Where a prerequisite course or courses are prescribed for any course of the Specialization Programme in Engineering, a student shall be permitted to follow that course only if he/she has attained the minimum requirement for the prerequisite course or courses stipulated in Rules. However, a student who has satisfactorily followed but not attained the minimum requirements stipulated for the prerequisite course or courses for a given course may be allowed to follow that course with special permission granted by the Dean, based on a written request.
30. For a student to be deemed to have successfully followed the Specialization Programme in Engineering, he/she shall have followed the courses prescribed by Rules to the satisfaction of the Vice Chancellor.

31. A student shall be deemed to have successfully completed the Specialization Programme in Engineering if he/she has
   a) successfully completed the General Programme in Engineering before the commencement or within a period of three academic years from the commencement of the Specialization Programme in Engineering during the period of study, and
   b) has successfully followed the courses and reached the minimum standard required for the successful completion of Programme, within five academic years from the commencement of the Specialization Programme in Engineering, as prescribed by Rules.

32. A student who has not completed a course as prescribed by Rules may register and follow the course in a subsequent semester in which the course is offered in order to complete that course.

33. A student, upon fulfilment of graduation requirements as prescribed by the Rules, shall apply to Dean of the Faculty of Engineering for the award of the degree of Bachelor of the Science of Engineering.

34. A student shall be deemed to be eligible for the award of the degree of Bachelor of the Science of Engineering with First Class Honours, Second Class Honours (Upper Division or Lower Division) or Third Class Honours if he/she has successfully completed the General Programme, and the Specialization Programme in Engineering within three academic years from the commencement of the Specialization Programme in Engineering and has secured the minimum required grade point average from the courses as prescribed by Rules.

35. Notwithstanding the provisions of 34 above, a student who takes longer than three academic years from the commencement of the Specialization Programme in Engineering may be deemed to be eligible for the award of the degree of Bachelor of the Science of Engineering with Honours by the Senate on the recommendation of the Faculty Board.

36. A student who has successfully completed the Specialization Programme in Engineering but is not deemed eligible for a degree with Honours under the provisions of 34 above shall be eligible for the award of the degree of Bachelor of the Science of Engineering.

Special Considerations
37. Not withstanding the above provisions, each individual case may be dealt with on the basis of its own merit by the Faculty Board, subject to approval by the Senate.

-------- End (Regulations)--------
RULES RELATING TO THE DEGREE OF BACHELOR OF THE
SCIENCE OF ENGINEERING

1. Programme Duration

1.1. The programme shall be of four academic years duration in 8 semesters, with the General Programme in Engineering of one academic year comprising 2 semesters and a Special Session, and the Specialization Programme in Engineering of three academic years comprising 6 semesters and an industrial training course of total duration not less than 20 weeks.

1.2. Each semester shall be normally of 15 weeks’ duration. The Special Session following the second semester of the General Programme shall be normally of 8 weeks’ duration. The General Programme in Engineering may be preceded by a Foundation Term of 6 -10 weeks’ duration.

2. Courses

1.3. One course credit is equivalent to 15 hours of lectures, with an hour of tutorial work or two hours of practical classes or assignments taken as equivalent to a lecture hour. The number of credits assigned to each course is in accordance with the total number of equivalent lecture hours associated with the course.

2.2. Each course shall be conducted within a single semester. However, certain courses may be allowed a longer duration by the Senate on the recommendation of the Faculty Board.

2.3. Students shall register for the courses they wish to follow in each semester from the courses offered in the relevant semester as recommended during the period announced for registration. The course selection may be changed during the add/drop period specified at the beginning of the semester. No change to course registration is allowed after the add/drop period except under special permission granted by the Dean.

2.4. A student once registered to a course in a semester will receive a grade for the course in his transcript at the end of the semester. Any registration for the same course at a later offering will be considered as repeating the course except where incomplete grade has been awarded as described in 4.1 below.

2.5. The recommended load of a student in a semester at the Faculty of Engineering is 18 credits and the maximum number of credits allowed is 24 credits in a semester.

2.6. To be considered to have satisfactorily followed a course, a student is required to have at least 80% attendance based on the total number of equivalent lecture hours of the course as specified in 2.1 above.

2.7. End of semester examinations shall be held during the second week following the end of each semester. End of Special Session examinations shall be held immediately following the end of the Special Session.

2.8. For a student to be eligible to be considered for a make-up examination for a scheduled examination in any course that he/she fails to attend for a valid reason he/she is required to submit a written request stating the reasons to the Dean as early as possible but not later than one week from the date of the examination.

2.9. Courses and course evaluations in the entire programme shall be conducted in the English medium.

2.10. A student may request with valid reasons for leave of absence from the program of study for the duration of a whole semester. The request shall be made in writing to the Dean prior to the commencement of the semester concerned.
3 Programme Contents

3.1. The General Programme in Engineering

3.1.1. The General Programme in Engineering shall comprise the mandatory courses shown in Table 3.1 with course credits as indicated therein. The courses are subject to change by the Faculty Board with the approval of the Senate. Any such change shall be announced to the students prior to the commencement of the General Programme.

Table 3.1 Courses in the General Programme

<table>
<thead>
<tr>
<th>Course</th>
<th>Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English I</td>
<td>GP 101</td>
<td>3</td>
</tr>
<tr>
<td>English II</td>
<td>GP 102</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics I</td>
<td>GP 103</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics II</td>
<td>GP 104</td>
<td>3</td>
</tr>
<tr>
<td>Computing</td>
<td>GP 106</td>
<td>3</td>
</tr>
<tr>
<td>Electricity</td>
<td>GP 108</td>
<td>3</td>
</tr>
<tr>
<td>Materials Science</td>
<td>GP 109</td>
<td>3</td>
</tr>
<tr>
<td>Engineering Mechanics</td>
<td>GP 110</td>
<td>3</td>
</tr>
<tr>
<td>Elementary Thermodynamics</td>
<td>GP 111</td>
<td>3</td>
</tr>
<tr>
<td>Engineering Measurements</td>
<td>GP 112</td>
<td>3</td>
</tr>
<tr>
<td>Fundamentals of Manufacture</td>
<td>GP 113</td>
<td>3</td>
</tr>
<tr>
<td>Engineering Drawing</td>
<td>GP 114</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>36</strong></td>
</tr>
</tbody>
</table>

Grades are awarded for all courses excluding English II (GP 102), which is offered on a pass/fail basis.

3.1.2. A student who has successfully completed the General Programme in Engineering by satisfying the requirements as given in Section 5 below or been exempted from the General Programme in Engineering shall be deemed to have earned an equivalent of 36 credits for the fulfilment of the requirements for the award of the degree of Bachelor of the Science of Engineering from the General Programme as set out in Sections 7 and 8 below.

3.1.3. Students who are eligible to follow courses offered during the Special Session are required to register to the courses during the period announced for registration at the beginning of the Special Session. No change to course registration is allowed after this period.

3.1.4. A student shall not be permitted to register or to have his/her performance evaluated in any course in the General Programme in Engineering after three academic years from the admission to the Faculty or in the event of him/her provisionally completing the General Programme in Engineering, three academic years from the commencement of the Specialization Programme in Engineering.
3.2. **The Specialization Programme in Engineering**

3.2.1. The Specialization Programme in Engineering shall comprise core, technical elective and general elective courses and a mandatory industrial training course, as prescribed and recommended by the Faculty Board and approved by the Senate. The courses are subject to variation by the Faculty Board with the approval of the Senate with at least one year’s notice to the students of any such change in the core courses before it takes into effect.

Grades are awarded for all courses excluding Industrial Training course which is offered on a pass/fail basis.

3.2.2. The credit requirements from the selected Specialization Programme are given in Table 3.2 below.

| Table 3.2 Credits requirements from core and technical elective courses and general elective courses in the Specialization Programme |
|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Credits for BSc Eng Degree      | Credits for BSc Eng Degree with Class Honours |
| Core & Technical elective courses | General elective courses | Industrial training course | Total | Core Courses & Technical elective courses | General elective courses | Industrial training course | Total |
|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| 84                              | 12                              | 6                              | 102                             | 93                              | 15                              | 6                              | 114 |

3.2.3. A student who has successfully completed the Specialization Programme in Engineering shall be deemed to have earned the required credits for the fulfilment of the requirements for the award of the degree of Bachelor of the Science of Engineering from the Specialization Programme as set out in Sections 7 and 8 below.

3.2.4. Students are required to select Technical and General Elective courses chosen from the list of courses recommended by the relevant department of study. A student is required to obtain a minimum of two credits from each subset of General Elective Courses in the following three categories prescribed and recommended by the Faculty Board and approved by the Senate:
- Management and Economics
- Arts and Humanities
- Political and Social Sciences

3.2.5 A student shall not be permitted to register or to have his/her performance evaluated in any course after the lapse of five academic years from the commencement of the Specialization Programme in Engineering.

3.2.6 Students shall apply with their preferences to register for a Specialization Programme at the end of the General Programme. When number of students applied for a field of Specialization Programme exceeds the available positions in the Specialization Programme concerned, the priority will be given to students based on the total of the Grade Points of the courses in the General Programme except English II (GP 102) obtained at his/her first attempt. When two or more students have the same total of the Grade Points, students with the most number of higher grades will be given priority.
4. Method of Assessment

4.1 Grade points shall be awarded for each course with grade points allocated on a four-point scale as shown in the table below. The table also shows the recommended conversion from percentage score to a grade where assessment for a course unit is expressed as a percentage score.

<table>
<thead>
<tr>
<th>Marks</th>
<th>Grade</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 85</td>
<td>A+</td>
<td>4.0</td>
</tr>
<tr>
<td>80 - 84</td>
<td>A</td>
<td>4.0</td>
</tr>
<tr>
<td>75 - 79</td>
<td>A-</td>
<td>3.7</td>
</tr>
<tr>
<td>70 - 74</td>
<td>B+</td>
<td>3.3</td>
</tr>
<tr>
<td>65 - 69</td>
<td>B</td>
<td>3.0</td>
</tr>
<tr>
<td>60 - 64</td>
<td>B-</td>
<td>2.7</td>
</tr>
<tr>
<td>55 - 59</td>
<td>C+</td>
<td>2.3</td>
</tr>
<tr>
<td>50 - 54</td>
<td>C</td>
<td>2.0</td>
</tr>
<tr>
<td>45 - 49</td>
<td>C-</td>
<td>1.7</td>
</tr>
<tr>
<td>40 - 44</td>
<td>D+</td>
<td>1.3</td>
</tr>
<tr>
<td>35 - 39</td>
<td>D</td>
<td>1.0</td>
</tr>
<tr>
<td>&lt; 35</td>
<td>E</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Normally, the minimum required grade to earn credit in any course unit shall be a C. The maximum grade point accruing to a student repeating a course shall correspond to a grade C. To be eligible to follow a course with prerequisites, a student should have a grade of D or above in every course that is stipulated as prerequisite.

Under exceptional circumstances, acceptable to the Faculty Board, the Dean may authorize awarding an “Incomplete” grade to a student who fails to comply with a compulsory requirement of a course based on a written submission supporting compelling reasons. An “Incomplete” grade will enable the student to complete the course concerned at a later date with the approval of the Dean.

4.2. The Grade Point Average (GPA) is the weighted average of the grade points secured by the student in the courses that are valid for calculating the GPA for the programme concerned and is calculated as follows:

\[
GPA = \frac{\sum_{i=1}^{N} C_i g_i}{\sum_{i=1}^{N} C_i}
\]

where \(C_i\) is the credit of the \(i^{th}\) course, \(g_i\) is the best grade point earned for the course and \(N\) is the total number of courses offered that are valid for the calculation of the GPA; and the GPA is rounded up to the nearest 0.05.
The English II is not considered in the calculation of the GPA in the General Programme. The General Elective courses and the Industrial Training course are not considered in the calculation of the GPA in the Specialization Programme. For a student repeating a course, the best grade earned subject to a maximum of ‘C’, should be considered for the calculation of the GPA.

5. **Requirements for Successful Completion of the General Programme in Engineering**
   A grade of “Pass” in English II (GP 102); and
   
   either: (a) a minimum GPA of 2.00 in the mandatory courses excluding English II (GP 102), with a grade of D or above in one course, and grades of C or above in the remaining courses;
   
   or: (b) a minimum GPA of 2.30 in the mandatory courses excluding English II (GP 102), with grades of D or above in two courses and grades of C or above in the remaining courses.

6. **Requirements for Provisional Completion of the General Programme in Engineering**
   A grade of “Fail” in English II (GP 102); and
   
   either: (a) a minimum GPA of 2.00 in the mandatory courses excluding English II (GP 102), with a grade of D or above in one course, and grades of C or above in the remaining courses;
   
   or: (b) a minimum GPA of 2.30 in the mandatory courses excluding English II (GP 102), with grades of D or above in two courses and grades of C or above in the remaining courses.

7. **Requirements for the Award of the Degree of Bachelor of the Science of Engineering**
   a) Successful completion of the Specialization Programme within the stipulated period with a minimum GPA of 2.00.
   
   b) Successful completion of mandatory training courses as prescribed by the Faculty Board with the approval of the Senate.
   
   c) Securing minimum total of 132 credits excluding the credits from industrial training course but including the credits that accrue to the student on the successful completion of the General Programme in Engineering.

A student who has followed the prescribed courses with a combined total of 96 credits excluding credits from industrial training course in the Specialization Programme in Engineering may be deemed to have earned minimum of 96 course credits, provided that the grade in any of the courses is not below a D and the cumulative credit deficit (CCD), defined as follows, does not exceed 12.

\[
CCD = \sum c_i d_i
\]

for all course units with grade of D, D+ or C-,

Where \( c_i \) is the number of credits associated with a course in which the student has secured a grade of D, D+ or C-, and \( d_i \) is the deficit weightage, defined as 1 for a D, 2/3 for a D+ and 1/2 for a C-.
8. Requirements for the award of the Degree of Bachelor of the Science of Engineering with Honours

a) Successful completion of the Specialization Programme within the stipulated period with a minimum GPA of 2.00.

b) Successful completion of mandatory training courses prescribed by the Faculty Board with the approval of the Senate.

c) Securing a minimum total of 144 credits excluding the credits from the industrial training course but including the credits that accrue to the student on the successful completion of the General Programme in Engineering.

A student who has followed the prescribed courses with a combined total of 108 course credits excluding the credits from the industrial training course in the Specialization Programme in Engineering may be deemed to have earned minimum 108 course credits, provided that the grade in any of the courses is not below a D and the cumulative credit deficit (CCD), defined above under Section 7, does not exceed 12.

The grade point average calculated from the courses in the Specialization Programme excluding general elective courses and the industrial training course for the award of Honours are as follows:

First Class Honours: a GPA $\geq$ 3.70;
Second Class Honours (Upper Division): $3.30 \leq$ GPA < 3.70
Second Class Honours (Lower Division): $3.00 \leq$ GPA < 3.30
Third Class Honours: $2.00 \leq$ GPA < 3.00

9. Claiming of the Degree

A student who has satisfied the requirements for the Award of the Degree of Bachelor of the Science of Engineering with or without Honours as specified in Sections 7 and 8 above shall claim the degree by submitting the duly completed degree claim form within the period announced in each academic year for claiming the degree.

A student is permitted to claim the total credits required under different categories specified in Section 3.3.2 either by claiming to the exact figure or to the nearest highest figure in a combination of courses acceptable to the Dean of the Faculty. The GPA is based on the total credit values of the courses claimed.

10. Special Considerations

Notwithstanding the above provisions, each individual case may be dealt with on the basis of its own merit by the Faculty Board, subject to approval by the Senate.

----------End (Regulations)----------
ANNEXURE II

STUDENT GUIDE TO REGISTRATION AND COURSE COMPLETION
STUDENT GUIDE TO REGISTRATION AND COURSE COMPLETION

The students should conform to the Rules and Regulations of the Undergraduate Programme of the Faculty of Engineering given in Annexure I. Any clarification on the contents therein may be sought from the Dean or Assistant Registrar of the Faculty. Following section provide answers only to frequently asked questions.

a) The course selection may be changed during ADD/DROP period, after which no changes in registration are possible. The students who were unable to drop a course during the ADD/DROP period should follow the whole course and the grade will be appeared in the Academic Transcript.

b) After the ADD/DROP period the total recommended work load from the registered courses for the Semester is 18 credits and should not exceed 24 credits. The credits from TR400: Industrial Training Course which is normally conducted during the vacation is outside this limit.

c) The students who fail to satisfactorily follow the course will get a grade F for the particular course. Note: Students who have failed to satisfy 80% attendance requirement of a course are considered to have not satisfactorily followed the course.

d) Normally a grade of C is required to earn credit in any course. If the grade is poor (less than C) the course can be repeated in a subsequent semester provided that the timetable allows to fulfil the attendance requirement. However the maximum grade awarded for a repeated course unit is a “C”.

e) Only those who have a potential to Complete or Provisionally Complete the General Programme by registering to a maximum of 3 courses and obtaining credits from them are allowed to register for the Special Session of the general programme. In order to be eligible to register to a course in Special Session of the General Programme, a student should have followed it satisfactorily in the Semester 1 or 2 of the same academic year.

f) Specified number of credits should be obtained from the general elective courses recommended by your Department. Also, a minimum of 02 credits should be earned from the courses of each of the three categories; Management & Economics, Arts & Humanities and Political & Social Sciences

g) Following a new elective course, the students have a chance of earning a grade as high as A+. Therefore repeating an elective course which gives a maximum grade of C may not be productive.
h) Students can follow more technical/general elective courses than the minimum number required for successful completion of the degree. All the credits and grades of course units including repeated courses followed by a student will be shown in the academic transcript. However, a student can select the elective course units in which he/she has obtained the best grades to satisfy the GPA and credit requirements for the degree.

i) The sum of the credits of the selected electives (both technical and general separately) may sometimes exceed the minimum requirement by 1 credit due to different credit values from 1 to 3. This is allowed.

j) The student can graduate with Class Honours if he/she completes the minimum graduation requirements within three years of entering the specialization programme in Engineering. Any student who has failed to complete the minimum graduate requirements within three years of entering the specialization programme in Engineering is not eligible to get the Class Honours unless if he/she has been granted special permission.

k) The student should apply for graduation and demonstrate the completion of all requirements for graduation by filling the Degree Claim Form (DCF).

l) If a student falls ill while in residence, he/she should immediately get in touch with the Chief Medical Officer of the University Health Centre. If the student falls ill at home or elsewhere during sessions or examination time, his/her guardian should inform the Dean of the Faculty by a letter within one week stating the nature of illness, the name of the attending doctor etc.

m) If a student fails to attend an examination of a registered course due to illness or other exceptional reason and if he/she wishes to request for a makeup examination, he/she should make a request from the Dean of the Faculty for a makeup examination by a letter by the student himself or by a third person within one week of the examination of his/her absence with the valid reason for absence for consideration.

n) To be excused for absence from examinations, coursework etc. for medical reasons, the student should submit to the Dean of the Faculty a valid Medical Certificate conforming to the format of a medical certificate issued by a Government Hospital.

o) The medical certificate should be obtained from the Chief Medical Officer of the University or a District Medical Officer or, where treatment from a specialist is necessary, from a consultant specialist in the relevant field, or the Head of a Government Base Hospital, or the Medical Superintendent of a Provincial Ayurvedic Government Hospital. Under exceptional circumstances, the University Medical Board may accept medical certificates issued by a private hospital or by a registered private medical practitioner.
p) A student seeking to get his/her registration deferred at the time of registration should inform the University, giving reasons for such deferment, and obtain permission from the University for such deferment.

q) If a registered student is compelled to discontinue his/her course of study for any reason, he/she should notify the Dean of the Faculty as soon as possible to obtain permission to be away from the University. If a registered student of the University has abandoned his/her course of study without notifying the Dean, his/her request for readmission will not be entertained.

r) A request for absence, where granted, is for a maximum of one academic year, except on approved medical grounds. A request granted on medical grounds is for a maximum of two academic years. Readmission of the student is subject to the availability of a place in the Faculty at the time of re-admission. If a student fails to have his/her registration renewed at the beginning of each academic year as required, his or her name will be deleted from the class list of the Faculty, and the student will be informed accordingly.
ANNEXURE III

FINANCIAL ASSISTANCE AND AWARDS
FINANCIAL ASSISTANCE AND AWARDS

Financial assistance is normally provided to needy Sri Lankan undergraduates in the form of Mahapola Scholarships and other awards by individuals and organizations.

1 MAHAPOLA SCHOLARSHIPS

This is a national scheme introduced by the Government of Sri Lanka to financially support deserving Sri Lankan students in institutions of higher education. The Mahapola Scholarship Trust Fund set up for this purpose offers two categories of Scholarships:

1.1 Mahapola Higher Education Merit Scholarships awarded on the basis of merit.

1.2 Mahapola Higher Education Scholarships awarded to needy students in the form of bursaries.

The general conditions on which these scholarships are awarded are:

(a) Scholarship moneys are payable for only ten-months of the academic year.

(b) A student receiving a Mahapola Scholarship cannot benefit financially from any other scholarship, but the student has the option to choose the scholarship from which he/she may receive financial support.

(c) The Board of Trustees may withdraw the scholarship awarded to a student if his/her work, conduct or attendance is reported to be unsatisfactory by the University Grants Commission or if the student fails an examination at the first attempt.

2 ENDOWED ACADEMIC AWARDS

The following awards are available to students of the Faculty of Engineering. While merit is the sole criterion for the award of Medals, Prizes and Scholarships, financial need is an important consideration in the award of Studentships. The criteria to select the best suitable student for each award and studentship are being revised to suit the course unit system and the changes in syllabi.

2.1 Medals

(a) The EOE Pereira Gold Medal endowed by friends and well-wishers of Professor EOE Pereira and awarded to the most outstanding student graduating from the Faculty.

(b) The Ceylon Electricity Board Gold Medal and Prize for Electrical and Electronic Engineering endowed by the Ceylon Electricity Board and awarded to the student with highest Grade Point Average in the branch of Electrical and Electronic Engineering at the BSc Engineering Programme.
2.2 Prizes for Overall Performance

(a) *The Ananda Amarasinghe Memorial Prize* endowed by Messrs B Amarasinghe and AJ Edwards and awarded for the student obtaining the highest GPA at the end of Second Semester.

(b) *The Sri Lanka Tyre Corporation Prizes* awarded on the performance at the First & Second year Examinations to Second and Third Year students who are children of employees of the Sri Lanka Tyre Corporation.

(c) *The Ranjan Herath Gunaratne Prize* endowed by students of the Faculty and awarded for the student who has obtained the highest GPA in the examinations held during third and fourth Semesters in the BSc Engineering Programme.

(d) *The EOE Pereira Prize* endowed by friends and well-wishers of Professor EOE Pereira and awarded for the student who has obtained the highest GPA in the examinations held during fifth and sixth Semesters in the BSc Engineering Programme.

(e) *The CA Hewavitharana Memorial Prize in Engineering* endowed by Mr WD Hewavitharana and awarded for the student obtaining the highest GPA in the examinations held during seventh and eighth Semesters in the BSc Engineering Programme.

(f) *The Ceylon Development Engineering Prize for Civil Engineering* endowed by the Ceylon Development Engineering Co. Ltd. and awarded to the student with the highest GPA obtained in the final course of BSc Engineering in the branch of Civil Engineering.

(g) *The Channa Lalith Maddumage Memorial Prize for Mechanical Engineering*, endowed by Mr DS Maddumage and awarded to the student with the highest GPA obtained in the final course of BSc Engineering in the branch of Mechanical Engineering.

(h) *The Colombo Dockyard Prize for Production Engineering*, endowed by Colombo Dockyard Ltd. and awarded to the student with the highest GPA obtained in the final course of BSc Engineering in the branch of Production Engineering.

(i) *The Bieco-Link Carbons Prize for Chemical Engineering* endowed by Bieco-Link Carbons (Pvt.) Ltd. and awarded to the student with the highest GPA obtained in the final course of BSc Engineering in the branch of Chemical and Process Engineering.

2.3 Prizes for Performance in a Subject

(a) *The EOE Pereira Prize for Structures(i)* endowed by friends and well-wishers of Professor EOE Pereira and awarded to the student with the best performance in CE208.

(b) *The EOE Pereira Prize for Structures(ii)* endowed by friends and well-wishers of Professor EOE Pereira and awarded to the student with the best performance in CE307.
(c) *The T Sivaprakasapillai Prize for Industrial Engineering* endowed to the Engineering Alumni Awards Fund by Mr JB Dissanayake and awarded to the student with the highest average GPA obtained for the two subjects PR401 and PR402.

(d) *The JB Dissanayake Prize for Industrial Training* endowed to the Engineering Alumni Awards Fund by Professor AS Balasubramaniam and awarded to the student with the highest Grade in the subject TR400.

(e) *The EF Bartholomeusz Prize for Engineering Mathematics* endowed to the Engineering Alumni Awards Fund by Mr KK Gunawardana and awarded to the student with the highest GPA in Mathematics subjects.

(f) *The HB de Silva Prize for Surveying* endowed to the Engineering Alumni Awards Fund by Dr AGKdeS Abeyesuriya and awarded for the student with the highest Grade in CE203.

(g) *The A Thurairajah Prize for Geotechnics* endowed to the Engineering Alumni Award Fund by Mr PM Gunasekara and awarded for the student with the highest Grade in CE310.

(h) *The M Amaratunga Prize for Strength of Materials* endowed to the Engineering Alumni Awards Fund by Professor MP Ranaweera and awarded for the student with the highest Grade in CE201.

(i) *The Paul Prize for Electrical Power and Machines* endowed by friends and well-wishers of Professor RH Paul and awarded for the student with the highest GPA for two subjects EE304 and EE572.

(j) *The WMG Fernando Prize for Electronic Communications* endowed to the Engineering Alumni Awards Fund by Professor FVCMendis and awarded for the student with the highest GPA for two subjects EE305 and EE512.

(k) *The JCV Chinnappa Prize for Energy Studies* endowed to the Engineering Alumni Awards Fund by Professor NE Wijeysundera and awarded for the student with the highest GPA for the subjects ME207, ME303, ME513, ME501 and ME512.

(l) The *LRL Perera* Prize for Thermodynamics endowed by Mr LRL Perera and awarded for the student with the highest GPA for two subjects ME303 and ME513.

(m) The *S Mahalingam* Prize awarded for the student with the highest GPA for the subjects ME201, ME205 and ME301.

(n) The *WP Jayasekara* Prize endowed by Mr Nihal Kularathne for the student with the highest Grade in EE549.

(o) The Sri Lanka Telecom prize endowed by Sri Lanka Telecom and awarded for the student with the highest GPA in subjects offered in Semesters 5 and 6 in the branch of Electrical and Electronic Engineering

(p) *M.P.Ranaweera* Prize for finite element methods in solid mechanics

(q) *M.P.Ranaweera* Prize for computer aided structural design

(r) *Samantha Kularatne* prize for best performance in the first semester of the General Programme in Engineering
### 2.5 Open Studentships

#### Table 2.1: Open studentships

<table>
<thead>
<tr>
<th>NAME OF THE STUDENTSHP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>9</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>11</td>
</tr>
<tr>
<td>12</td>
</tr>
<tr>
<td>13</td>
</tr>
<tr>
<td>14</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>16</td>
</tr>
<tr>
<td>17</td>
</tr>
<tr>
<td>18</td>
</tr>
<tr>
<td>19</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>21</td>
</tr>
<tr>
<td>22</td>
</tr>
<tr>
<td>23</td>
</tr>
<tr>
<td>24</td>
</tr>
<tr>
<td>25</td>
</tr>
<tr>
<td>26</td>
</tr>
<tr>
<td>27</td>
</tr>
</tbody>
</table>
ANNEXURE IV

OUTLINE OF SYLLABI
OUTLINE OF SYLLABI

Notation: L - Lectures; T - Tutorials; P - Practical classes; A - Assignments; Proj - Project and related work.

COURSES FOR THE GENERAL PROGRAMME IN ENGINEERING

GP101 English I (3 credits)
Course Content: Language development, Communication through reading, Communication through listening, Communication through writing, Communication through speech (L20, A50=45).

GP102 English II (3 credits)
Course Content: Language development, Advanced grammar, Communication through reading: The use of techniques learnt during the foundation course in analysing the written discourse. Communication through listening: The use of techniques learnt during the foundation course in analysing the spoken discourse, Communication through writing: Writing of reports, proposals and articles, Communication through speech: communicative activities/presentations/projects/debates. Effective means of communicating with audience (L20, A50=45).

GP103 Mathematics I (3 credits)
Course Content: Real number system, its properties and the real axis, Functions of a single variable, 2-D co-ordinate geometry, 3-D Euclidean geometry, 3-D Euclidean co-ordinate geometry, Complex numbers, Functions of positive integers, Recurrence relation, Infinite series, Real power series, Special functions, Integration, Functions of several variables, Introduction to differential equations, (L36, A18=45).

GP104 Mathematics II (3 credits)
Course Content: Vectors, Matrix theory, Determinants, Transformations, Solution of simultaneous equations, Vector space, Characteristic value problems, Quadratic forms (L36, A18=45).

GP106 Computing (3 credits)
Course Content: Introduction to computing, Problem solving with mathematical packages (as a calculator), The fundamentals of algorithms, Introduction to high-level programming languages, Problem solving with programs, Scientific programming with a mathematical package (L25, T10, P20=45).

GP108 Electricity (3 credits)
Course Content: Measurements, Circuits, Electrostatics, Electromagnetism (L27, T6, P24=45).

GP109 Materials Science (3 credits)
Course Content: Introduction to the structure and properties of engineering materials, Principles underlying structure-property relationships, Phase equilibrium, Structure and properties of cement and timber, Properties and applications of polymers, ceramics and glasses, Properties and applications of composites, Mechanical testing of engineering materials, Laboratory testing practices (L &T 36, P&A18=45).
**GP110 Engineering Mechanics (3 credits)**
Course Content: Force systems, Analysis of simple structures, Work and energy methods, Inertial properties of plane and three-dimensional objects, Fluid pressure, Fluid statics, Particle kinematics, Planar rigid body kinematics, Particle kinetics, Planar rigid body kinetics, Laboratory work (L28, T11, P12=45).

**GP111 Elementary Thermodynamics (3 credits)**

**GP112 Engineering Measurements (3 credits)**
Course Content: Introduction to engineering measurements, Measurement of engineering parameters, Units and standards, Presentation of engineering information, Errors in measurements and error propagation, Sensors and Transducers, Design of Experiments, Dimensional Analysis (L&T30, P&A30=45).

**GP113 Fundamentals of Manufacture (3 credits)**
Course Content: Introduction to manufacturing industry, Introduction to manufacturing processes and safety measures, Machining: Casting: Welding, Metal forming and Forging, Manufacturing systems, Automobile technology, Printed circuit board (PCB) fabrication and soldering and related technologies (L20, T7, P36 = 45).

**GP114 Engineering Drawing (3 credits)**
Course Content: Fundamentals, Orthographic and isometric views, Engineering graphics, Freehand sketching, Introduction to drawing for civil and electrical engineering applications, Other: speed tests (L18, P45, A9=45).
COURSES FOR THE SPECIALIZATION PROGRAMME IN ENGINEERING

Department of Chemical & Process Engineering

CP201 Chemical Engineering Fundamentals (3 credits)

CP302 Separation Process Principles (3 credits)
Course Content: Equilibrium between phases. Equilibrium stage concept, cascades of stages, stage efficiency, applications in separation of components by binary distillation, absorption, stripping, extraction and leaching. Mass transfer: Diffusion, Theory of interface mass transfer Mass transfer coefficients, overall coefficients, and transfer units. Applications in absorption, extraction and adsorption. Simultaneous heat and mass transfer in gas-liquid contacting, and solids drying. Concept of continuous contacting equipment, Laboratory exercises (L&T30, P&A30 =45).

CP303 Reaction Engineering (3 credits)

CP304 Process Equipment Design (3 credits) Prerequisites: CP201, CP302

CP305 Energy Systems Design (3 credits) Prerequisite: ME303
CP308 Process Engineering Project & Seminar (3 credits)
Problem identification and project formulation; Search for, and retrieval of, information required such as literature survey; Identification and optimum utilisation of available resources; Project execution; Cost analysis; Socio-economic and ethical evaluations of the project; Analysis of political and environmental consequences, and safety evaluations (when applicable); Elements of technical report writing; Communicating the results of the project study with the outside world via a report, a web-page etc. Seminars by industrialists and/or industrial visits by students or student groups in relation to the projects undertaken. (P&A90 =45).

CP406 Industrial Safety and Health (3 credits)

CP407 Independent Study (3 credits)
In-depth study of a topic not available through other course work. Carefully planned, student initiated project carried out under supervising faculty member. (Co-supervision of project by a non-faculty member is recommended. Prior approval of Head of Department is mandatory). (P&A90 =45).

CP408 Basics in Process Engineering Design Project (3 credits) Prerequisites: CP304, CP305
Statement of the design of a chemical, food or other process industry; Market survey including an investigation to determine whether the product serves its functional purpose; Review of alternative processes; Literature survey; Review of available physical and chemical data. Plant location and site selection.Creation and synthesis of the final flow sheet; Overall material balance and thermal balances. Flow sheeting; Pictorial presentations; Presentation of stream flow rates; Layout drawings.Piping and instrumentation: P&I diagrams, valve selection, pump selection, blower selection, alarm and safety trips and mechanical design of piping systems. Introduction to computer aided drawings (L&T8, P&A74 =45).

CP409 Advanced Process Engineering Design Project (3 credits) Prerequisite: CP408
Process engineering design of a chemical, food or other process industry; Mechanical engineering outline design; Optimization of process design; Outline of control system design; Operability study including start-up and shut-down; Material selection; Design codes; Determination of capital and operating costs; Study of environmental and other hazards; Process equipment selection, specification and design; Safety and loss prevention; Mechanical design of process equipment; Costing and project evaluation; Utilities; Environmental considerations (waste management; noise; visual impact; legislation; environmental auditing). Selection of auxiliary equipment: conveyors, mixers and agitators, and process vessels (L&T4, P&A82 =45).

CP502 Advanced Fluid Mechanics (3 credits) Prerequisite: CE202
CP503 Industrial Process Technology (3 credits)

CP504 Biological Process Engineering (3 credits) Prerequisite: CP303

CP505 Instrumentation and Measurement (3 credits)
Course Content: Introduction to the fundamental concepts of instrumentation and measurement. The components of instrumentation such as transducers, amplifiers and filters. Specific measurement techniques including mass spectrometry, spectroscopy, chromatography (gas, ion exchange, HPLC), electro-chemical probes (membrane electrodes), biosensors and remote sensor devices. Process Instrumentation. Data analysis and statistical treatment of data. Laboratory exercises. (L&T30, P&A30 =45).

CP506 Industrial Pollution Control System Design (3 credits)
Course Content: Air pollution control system design: Application of physical and chemical processes in the design of air pollution control systems such as mechanical collectors, filters, scrubbers, cyclone separators, explosion vents, relief valves, electrostatic precipitators, and others. Implication for design. Biological treatment processes for industrial effluent; stabilisation ponds, aerated lagoons, activated-sludge processes, trickling filters, rotating biological contactors, anaerobic reactors, facultative ponds and others. Implication for design. An overview of the physiochemical treatment methods. Design of selected pollution control equipment. (L&T30, P&A30 =45).

CP507 Process Engineering Research Project (3 credits)
The objective of the process engineering research project is to mathematically model a process, such as drying, heat exchanging or bio-digesting, and to experimentally verify the mathematical model. (A project proposal with the work plan and prior approval of the Head of the Department for the selected project proposal and the work plan is mandatory) (P&A90 =45).

CP508 Energy Technology for the Process Industry (3 credits) Prerequisite: ME303
CP509 Petroleum Engineering (3 credits)

CP511 Food Process Engineering (3 credits)

CP512 Environmental Management Systems (3 credits)
Industry environmental interactions. Industrial pollution with examples. Impact of pollution on ecosystems. The need for pollution prevention. Environmental standards for emission of pollutants. Industrial effluent pollution in major process and chemical industries with special emphasis on Sri Lankan industries. Introduction to Cleaner Production (CP) and Green Productivity (GP) concepts. CP and GP methodologies. CP and GP tools such as product modification, raw material substitution, good house keeping, process control, eco mapping, fishbone diagram and Pareto diagram. Introduction to Life Cycle Assessment (LCA) and methods. Eco design concept. Tools for eco design. ISO 14000: components of ISO 14000, Implementation aspects and procedures. (L&T37, P&A16 =45).

CP513 Industrial Fluid Mechanics (3 credits)
Department of Civil Engineering

CE201 Mechanics of Materials I (3 credits)
Course Content: Structures and components, Supports and loads, Internal forces and stresses, Displacements and strains. Material behaviour, Hooke’s law and elastic constants, Axially loaded members, Torsion of circular sections, Bending of beams, Bending moment and shear force diagrams, Normal and shear stresses in beams, Deflections in beams, 2-D Stress and strain, Work and strain energy, Buckling of struts. (L36, T9 =45).

CE202 Fluid Mechanics I (3 credits) for Civil, Chemical and Mechanical Engineering Groups
Course Content: Flow kinematics, Control volume analysis, Continuity equation, Momentum equation, Bernoulli’s equation, Flow measurements, Laminar flow and turbulent flow, Losses, Pipe flow computations, Dimensional analysis, Similitude and physical model studies; Classification of hydraulic machines, Pumps and turbines, Performance characteristics and selections. (L36, T3, A12 =45).

CE203 Surveying (3 credits)
Course content: Chain Surveying, Traversing and compass surveying, Triangulation, Levelling and tacheometry, Presentation of surveying information and GIS, Errors and adjustments, Setting out, Underground surveys, Hydrographic surveying, Spherical surveying, Photogrammetry, Remote sensing and GPS. (L28, T2, P30 =45).

CE204 Geomechanics (3 credits) Prerequisite: CE201

CE205 Engineering Hydrology (3 credits)
Course content: Hydrologic cycle, Evapotranspiration, Infiltration, Streamflow, Unit hydrograph, Hydrological measurements, Water resources in Sri Lanka, Frequency analysis, Return period, Frequency-duration curves, Extreme value distribution, Hydrologic routeing, Flood routeing, Storage and channel routeing, Subsurface flow; Steady and unsteady ground water flow; Well hydraulics. (L37, T4, A8 =45).

CE206 Civil Engineering Field Work (3 credits)
Course content: Planning and execution of an engineering survey which shall include a triangulation network, Traverse surveying, Detailed levelling of longitudinal and cross-sections, Grid levelling and tacheometry, Preparation of maps and plans, and calculation of areas and volumes for engineering purposes; Field exercises in the speciality areas of environmental engineering, Irrigation engineering, construction plant and equipment and, Engineering geology. (P11.5 days =45).

CE207 Materials Science I (3 credits) for Chemical, Mechanical and Production Engineering Groups
CE208 Structural Analysis (3 credits) Prerequisite: CE201
Course Content: Structures and idealizations, Analysis of statically determinate structures, Influence lines for structures, Deflections of structures, Principle of virtual work, Energy theorems, Analysis of statically indeterminate structures, Slope deflection method, Moment distribution method, Limit analysis of beams and frames. (L37, T8 =45).

CE209 Building Construction (3 credits)
Course Content: Features of civil engineering projects, Building planning and principles of architecture, Construction materials and techniques, Building services; water supply, waste water treatment, electricity, Building economics; Fundamentals of quantity surveying, Preparation of Bill of Quantities, Estimation and rate analysis. (L36, T3, A12 =45).

CE301 Mechanics of Materials II (3 credits) Prerequisite: CE201
Course Content: Formulation of the general elasto-static problem, Governing equations and general principles, Analysis of stress & strain in 3D, Constitutive relations, Solution of plane stress/strain problems, Torsion of non-circular sections, Work and energy methods, Finite element formulation, Yield criteria. (L42, T3 =45).

CE302 Environmental Engineering (3 credits)
Course Content: Environment impact assessment, Water demand, Water quality analysis, Principles of water treatment, Unit operations, Distribution systems; Waste water collection and treatment, Sewerage systems, Biological and industrial wastewater treatment; Solid waste and sanitary waste management, Water pollution control; Designs of a wastewater collection and a treatment system. (L30, T4, A22 =45)

CE303 Transportation Engineering (3 credits)
Course Content: Transportation systems, Transportation planning, Traffic engineering, Traffic management, Highway design, Highway construction, Highway maintenance. (L38, T3, P8 =45).

CE304 Fluid Mechanics II (3 credits)
Course Content: Potential flow; Euler equation, Irrotational motion, Superposition of plane flows, Methods of images, Circle theorem, Blasius theorem, Aerofoil theory; Hydraulic transients, Surge tanks, Water hammer; Navier-Stokes equation, Exact solutions, Laminar and turbulent boundary layers, Turbulence and diffusion processes, Convection-diffusion equation. (L39, T3, P6 =45).

CE305 Hydraulics I (3 credits)
Course Content: Ideal fluid flow, Euler equation, Irrotational motion, Superposition of plane flows, Viscous flows, Navier-Stokes Equation, Laminar and turbulent boundary layers; Hydraulic transients, Surge tanks, Water hammer; Frictionless flow in open channels, Specific energy, Hydraulic jump, Flow measurements; Resistance equations, Uniform flow, Gradually varied flow, Sediment transport. (L35, T6, A8 =45).
CE306 Design of Structures I (3 credits) Prerequisite: CE208
Course Content: Design concepts, Limit state design, Behaviour of structural elements, Modes of failure, Use of codes of practice, Element design of steel structures and connection design, Design of a steel building, Design of masonry structural elements, Connectivity, Design of a masonry building, Basics of timber design, Introduction to design software. (L29, T1, A30 =45).

CE307 Finite Element Methods in Solid Mechanics (3 credits) Prerequisite: CE201
Course Content: Formulation of the boundary value problem in solid mechanics, Governing equations and general principles, Finite element formulation, Analysis of spring systems, trusses, beams, and frames, Analysis of plane stress/strain problems, Practical considerations in modelling, Use of special purpose and general purpose finite element packages. (L36, T4, A10 =45).

CE309 Materials Science II (3 credits) Prerequisite: CE207
Course Content: Special steels, Metallurgy of cast iron, Welding metallurgy, Joint design, Non-destructive testing, Mechanisms of fracture, Linear elastic fracture mechanics, Metallurgy of metal working processes (L26, T4, P30 =45).

CE310 Geotechnical Engineering (3 credits) Prerequisite: CE 204
Course Content: Stability of slopes, Lateral pressure and retaining walls, Shallow foundations, Deep foundations, Site investigation, Geophysical exploration, General engineering geology, Engineering geological aspects of site selection, ground improvement, Temporary supports. (L31, P28 =45).

CE311 Hydraulic Engineering and Design (3 credits)
Course content: Coastal environment and near-shore process; Application of wave theory; Design of coastal structures; Coastal zone management, Water requirement and irrigation planning; Irrigation scheduling; Irrigation scheme design, Stable channel design, Reservoir design; Spillway design, Dams, Sluices, Water treatment plant and pipe network; Sewer designs (L21, T3, P42 =45).

CE312 Design of Structures II (3 credits) Prerequisite: CE 208

CE313 Marketing and Finance (3 credits)
Course Content: Basic Economics, Marketing, Accounting, Cashflow forecasting, Finance (L40, T5 =45).

CE 314: Civil Engineering Laboratory I (2 credits): Prerequisites: At least two of CE 201, CE 202, CE 204
Development of experimental skills; Use of experimental procedures in engineering practice; performance of standard tests used in civil engineering and interpretation of their results, (P60).
CE 315: Civil Engineering Laboratory II (1 credit) \textbf{Prerequisite: CE 314} 
Application of laboratory tests and experimental procedures in the solution of engineering problems, (P30) 
Laboratory classes (for both CE314 and CE315): Hydraulic machine tests, Flow in pipe systems, Aerodynamic forces on 
structures, Surges in pipes and channels, Hydrodynamics of flow around cylinder, Groundwater flow, Waste water 
analysis, jar test, Membrane filtration, Water conveyance and control systems, Permeability, Bitumen, Point load 
strength, Marshal and CBR tests, Rock identification, Geological maps, Route planning, Site investigations, Bending of 
beams, Elastic behaviour of frames, Buckling, Vibration of structures, Strain measurement, Stress analysis, analogies, 
Instrumentation in structural testing, Composite experiment on behaviour of structures, Heat treatment. (P90 =45).

CE401 Mechanics of Materials III (3 credits) \textbf{Prerequisite: CE301} 
Course Content: Beams on elastic foundations, Theory of plates and shells, Finite element analysis of plates and shells, 
Theory of plasticity, Associated flow rule and limit analysis, Slip-line field theory, Mechanics of metal forming 
processes(L41, T4 =45).

CE402 Multi-Disciplinary Design Project (3 credits) 
Course Content: Ethical, safety and sustainability considerations and regulations pertaining to construction (EIA etc.), 
Construction methods and planning, Project management, Combined design project, Group exercise in project planning 
(L16, T1, A56 =45).

CE403 Construction Management (3 credits) 
Course Content: Principles of management, Introduction to construction management, Industrial law and civil 
engineering contracts, Bidding and award of contracts, Site management (L41, T4 =45).

CE405 Civil Engineering Project I (3 credits) 
Course Content: An independent study containing elements including problem identification, literature survey and 
review, Technical feasibility, Environmental and social impact study, Safety and ethical considerations, Detailed project 
formulation, Technical report writing, Oral presentation (P90 =45).

CE406 Civil Engineering Project II (3 credits) \textbf{Prerequisite: CE 405} 
Course Content: Continuation of CE 405 (Civil Engineering Project I): Design of experimental rigs and/or development 
of analysis programme, Execution of investigation, Analysis of results, Drawing logical conclusions, Oral presentation 
and preparation of a formal report, Writing of technical papers (P90 =45).

CE511 Advanced Geomechanics (3 credits) \textbf{Prerequisite: CE204} 
Course Content: Theory of plasticity, Limit analysis, Advanced slopemstability analysis, Models of stress-strain behaviour 
of soils, Critical state models, Advanced consolidation theories, Problematic soils, Stress strain behaviour of rocks, 
Failure criteria of rocks, Analysis of geological structures, Field instrumentation and monitoring.(L35, T4, P12 =45).

CE512 Foundation Engineering (3 credits) \textbf{Prerequisite: CE310} 
Course content: Bearing capacity, Flexible design of combined footings, Deep foundations, Pile groups, Laterally loaded 
piles, Machine foundations, Foundations under difficult ground conditions, Improvement of existing foundations, 
Provisional structures, Construction techniques (L40, T5 =45).
CE513 Geotechnics Design and Construction (3 credits) **Prerequisite:** CE310
Course Content: Synthesis and idealisation of a design project, Identification of geotechnical problems, Planning and execution of site investigation programs, Material testing and determination of material parameters, Preliminary report and evaluation of alternative proposals, Detailed design of selected proposal, Construction sequence and equipment, Cost estimates, Recommendations, Final report: Presentation & Viva (L3, P80, A4 =45).

CE530 Transportation Planning and Traffic Engineering (3 credits) **Prerequisite:** CE303
Course Content: Transportation planning and policy, Rural and urban aspects of transport, Transport demand analysis, Highway capacity and level of service, Transport surveys, Operation of public transport system, Traffic flow characteristics, Traffic control devices, Traffic management, Accidents and road safety, Energy and environment.(L40, T3, P4=45).

CE531 Highway Engineering (3 credits) **Prerequisite:** CE303
Course Content: Historical development, Road classification, Planning of highways, Geometric design of roads, Road construction materials, Geotechnical properties of road subgrade, Stabilisation techniques, Pavement design, Highway construction techniques, Road maintenance. (L41, T2, P4 =45).

CE541 Hydraulic Structures (3 credits) **Prerequisite:** CE311
Course Content: Dams, Sluices, Spillways, Diversion works, Drainage works, Irrigation headworks, Canal level crossings, Aqueducts, Turnouts, River engineering, Training levees, Flood control, Coastal protection, Groynes, Breakwaters, Harbour structures. (L38, T7 =45).

CE544 Coastal Engineering and Coastal Zone Management (3 credits) **Prerequisite:** CE311
Course Content: Coastal environment, Coastal and estuarine hydraulics, Nearshore coastal processes, Coastal and harbour structures, Wave-structure interaction, Modelling of coastal and estuarine processes, Waste disposal and water quality, Coastal zone management in Sri Lanka. (L38, T7 =45).

CE552 Irrigation and Drainage Engineering (3 credits) **Prerequisite:** CE311
Course Content: Planning of irrigation development, Soil-water and plant relationships, Evapotranspiration, Water requirements, Water delivery systems, Methods of irrigation, Irrigation water management, Drainage requirements and systems, Irrigation structures.(L32, T10, P6 =45).

CE557 Hydropower Development (3 credits) **Prerequisite:** CE305
Course Content: Introduction to hydro-electric power development, Types of developments, Selection of sites, Hydrologic analysis, Determination of design parameters, Hydraulic analysis, Component designs, Selection of turbines, Synchronizing and connection to the National grid. (L32, T2, P18, A4 =45).

CE560 Integrated River Basin Management (3 credits) **Prerequisite:** CE205
Course Content: Integrated river basin management, Status and management of water resources, Decision support for planning and management, Economics of water resources, Policies and goals, Institutional arrangement, GIS in river basin management. Use of remote sensed data in river basin management, River basin models using GIS and RS data. (L32, T6, P14 =45).
CE567 Industrial Pollution Control (3 credits) **Prerequisite:** CE302
Course content: Industrial processes and wastewater characteristics, In-plant waste management, Effluent treatment unit processes, Case study evaluation, Reclamation and reuse, Regional approaches to effluent treatment, Industrial solid waste management, Waste water analysis. (L36, T2, P4, A10 =45).

CE569 Water Supply and Waste Water Engineering (3 credits) **Prerequisite:** CE302
Course Content: Water demand estimation, Quality of water, Water sources, Groundwater and wells, Distribution system, Appropriate methods in water treatment, Fire fighting with water, Water supply design, Non-revenue water, Planning and waste water collection & conveyance systems, Primary waste water treatment, Waste water treatment design. (L33, T3, P2, A16 =45).

CE 581: Advanced Mechanics of Materials (3 Credits) **Prerequisite:** CE 201
Basics of general 3-D elastostatic problem; analysis of stress and strain; constitutive relations, Solution of 2-D plane stress/ strain problems; Airy stress functions; axi-symmetric problems, Torsion of non-circular sections, Beams on elastic foundations, Theory of plates and shells, Yield criteria and associated flow rule, Limit analysis, (L39, T4, A4).

CE582 Concrete Technology (3 credits) **Prerequisite:** CE 312

CE583 Construction Planning (3 credits) **Prerequisite:** CE 403
Course Content: Advanced planning techniques and resource analysis, Material management, Optimisation techniques, Construction equipment and methods, Computer applications in project planning. (L36, T6, A6 =45).

CE584 Computer Aided Structural Design (3 credits) **Prerequisite:** CE307
Course Content: Finite element analysis of structures, Modelling considerations, Convergence and validation of results, Computer-aided structural design, Materials selection in structural design, Design of reinforced concrete and steel members and sections, Optimum structural design, Use of analysis and design packages. (L25, A40 =45).

CE585 Advanced Structural Design(3 credits) **Prerequisites:** CE306, CE312
Course Content: Configuration and behaviour of high-rise buildings, Wind effects on high-rise buildings, Behaviour under earthquakes, Design concepts, Building services, Conceptual design and use of related software packages, Design of prestressed concrete structures, Limit state analysis of prestressed concrete, Approximate formulae for preliminary design, Losses in prestressed concrete, Design of end blocks, Introduction to continuous prestressing. (L22, T8, P2, A28=45).

CE 595 Disaster Management (3 Credits)
Department of Computer Engineering

CO221 Digital Design (3 credits)
Course Content: Introduction to digital logic, Number systems and digital logic, Combinational logic circuits, Modular design of combinational circuits, Sequential logic circuits and memory elements, Design of synchronous sequential circuits, Analysis and design of asynchronous sequential circuits, Digital circuit design and implementation. (L30, P16, A14 =45).

CO222 Programming Methodology (3 credits)
Course Content: Problem solving, Storing and naming data and operators, Control flow, Using standard library functions, Structured programming, Static allocation, References (pointers), Linked structures, Memory layout, Language tool-chains, Support tools. (L24, T8, P14, A12 =45).

CO223 Computer Communication Networks I (3 credits)

CO224 Computer Architecture (3 credits) Prerequisites: CO221, CO222
Course Content: Overview, Fundamentals of computer architecture, Computer arithmetic, CPU organization, Pipelining, Memory hierarchies, Interfacing and communication, Performance issues, Multiprocessors. (L29, T4, P14, A10 =45).

CO225 Software Construction (3 credits) Prerequisite: CO222
Course Content: Introduction of features of a selected language, Data collections (containers), Input/output, error handling and parsing textual formats, Declarative programming, Classes and objects, Event-driven programming, Concurrency and network clients, Code quality. (L25, T6, P20, A8 =45).

CO226 Database Systems (3 credits) Prerequisites: CO222, EM313
Course Content: Introduction to database systems, Data modelling, RDBMS concepts, Database query languages, Database programming techniques, Introduction to indexes and query optimization, Introduction to transaction processing, Database Project. (L31, T4, P12, A8 =45).

CO227 Computer Engineering Project (3 credits) Prerequisites: CO225, CO226
Course Content: Seminar on report writing, technical presentation skills, Software project in a group. (L5, A50 =45).

CO252 Introduction to Programming and Networking for Electrical Engineering (3 credits)

**CO321 Embedded Systems (3 credits) Prerequisite: CO224**
Course Content: Introduction to microcontrollers, Memory organization of microcontrollers, Programming of flash microcontrollers, I/O port configuration and programming interfaces, A/D converters and applications, Timer systems of microcontrollers, Applications of non-volatile memory, Industrial Applications, Student Project. (L31, P20, A8 =45).

**CO322 Data Structures and Algorithms (3 credits) Prerequisite: CO225**
Course Content: Running time and time complexity, Divide and conquer, Linear abstract data types, Hashing and the set ADT, Trees, Graphs, Greedy algorithms, Dynamic programming. (L30, P18, A12 =45).

**CO323 Computer Communication Networks II (3 credits) Prerequisite: CO223**

**CO324 Network and Web Application Design (3 credits) Prerequisites: CO223, CO225**
Course Content: Review of Internet protocol stack, Network servers, Design of application protocols, I/O concurrency, Remote procedure calls, HTTP and HTML, Dynamic web content generation, Web frameworks, Browser scripting, Network application security, Deployment considerations. (L26, T4, P16, A14 =45).

**CO325 Computer and Network Security (3 credits) Prerequisite: CO223**

**CO326 Computer Systems Engineering: Industrial Networks (3 credits) Prerequisites: CO321, EE386**
Course Content: Introduction, Hardware Components for designing control systems, Designing simple digital systems using a standard PC, Designing I/O systems for standard PC, Development of control systems using microcontrollers, Communication for industrial control systems, Instrument automaton and development of test systems, PC based test, measurement and control modules and modular systems, SCADA and Industrial Automation Systems, Industrial automation project. (L34, P12, A10 =45).
**CO327 Operating Systems (3 credits)** *Prerequisite: CO224, CO322*

Course Content: Introduction, OS abstractions, Threads, Processes, Synchronization, File systems, IO subsystem, OS implementation methods, Self-study. (L31, P12, A16 =45).

**CO328 Software Engineering (3 credits)** *Prerequisites: CO226, CO322, CO324*


**CO421 Final Year Project I (3 credits)**

Course Content: Project planning, literature review, implementation, evaluation, report writing, presentation of findings, project demonstration. (A90 =45).

**CO422 Professional Practices (2 credits)**

Course Content: Professionalism, Group Dynamics and Psychology, Communication Skills. (L25, A10=30).

**CO423 Software Project Management (2 credits)**

Course Content: Introduction to the subject, Project life cycle and organization, Team structures, The role of risk in the life cycle, Project Quality management, Application quality requirements, Process improvement models, Project Management topics. (L22, P6, A10=30).

**CO424 Information Systems Management (2 credits)**

Course Content: Introduction to Information Systems, Relationship between IS and the business, IS planning and budgeting, Acquiring information technology resources and capabilities, Risk management, Case study. (L20, A20=30).

**CO425 Final Year Project II (3 credits)**

Course Content: Project planning, literature review, implementation, evaluation, report writing, presentation of findings, project demonstration. (A90 =45).

**CO502 Advanced Computer Architecture (3 credits)** *Prerequisite: CO224*

Course Content: Fundamentals of computer design, Introduction to instruction level parallelism (ILP), Pipelined processors, Exploiting ILP with software approaches, Exploiting ILP with hardware approaches, Memory hierarchy design, Hardware description languages and simulation, Computer architecture and dependability, Special purpose processors. (L25,T5, P14, A16=45).

**CO503 Advanced Embedded Systems (3 credits)** *Prerequisite: CO321*

Course Content: Introduction to embedded systems, Custom single-purpose processors, General-purpose processors: software, Embedded system modelling: state machine and concurrent process models, Design technologies of embedded systems, Hardware/software co-design of embedded systems, Operating systems for embedded systems, Design example, System on a Chip (SoC). (L&T30, P&A30=45).
CO504 Hardware Software Co-design (3 credits) **Prerequisites:** CO222, CO224  
Course Content: Introduction to hardware/software co-design, Mapping applications to architecture, System partitioning, Design space exploration, Interface synthesis, Estimation, System simulation, Execution time analysis, Performance analysis. (L29, T4, P18, A6 =45).

CO513 Advanced Computer Communication Networks (3 credits) **Prerequisite:** CO323  
Course Content: An overview of communication networks, Multimedia network applications and protocols, Quality of service, Broadcast and multicasting routing, Multi-protocol label switching (MPLS) and Generalized MPLS, Wireless and mobile networks, Network security, Network management. (L30, T2, P15, A11 =45).

CO514 Optical Communication Networks (3 credits) **Prerequisite:** CO323  

CO521 Compilers (3 credits) **Prerequisite:** CO322  
Course Content: Introduction, Programming tools: Lexical analysis, Semantic analysis, Static semantics, Code generation, Miscellaneous topics. (L&T30, P&A30=45).

CO523 Programming Languages (3 credits) **Prerequisite:** CO322  
Course Content: Introduction. Imperative languages: Object oriented languages, Functional languages, Logical languages, Concurrent languages. (L&T27, P&A36=45).

CO524 Parallel Computers and Algorithms (3 credits) **Prerequisite:** CO327  
Course Content: Parallel architecture, Interconnection networks, Designing parallel programmes, Performance modelling, Programming paradigms, Message passing interface, Multithreading, Parallelising numerical algorithms, Parallelising non-numerical algorithms, State of the art. (L30, P8, A22 =45).

CO526 Advanced Operating Systems (3 credits) **Prerequisite:** CO327  

CO527 Advanced Database Systems (3 credits) **Prerequisite:** CO226  
Course Content: Data storage and indexing structures, Query Optimization and database tuning, Transaction Processing, Database security, Distributed Databases, Object databases and Object-relational databases, other data models, Data models for advanced applications. (L32, T6, P12, A2 =45).
**CO528 Applied Software Architecture (3 credits) Prerequisite: CO328**
Course Content: Introduction to applied software architecture, Basic of software architecture, Web application architectures, Service oriented architectures, Enterprise architectures, Product architectures, Mobile application architectures, Cloud architectures. (L31, P12, A16 =45).

**CO541 Artificial Intelligence (3 credits) Prerequisite: CO222**

**CO542 Neural Networks and Fuzzy Systems (3 credits)**

**CO543 Image Processing (3 credits) Prerequisite: EE387**
Course Content: Introduction, Digital image fundamentals, Image enhancement in the spatial domain, Image enhancement in the frequency domain, Colour image processing, Image compression, Assignments. (L&T30, P&A30 =45).

**CO544 Machine Learning and Data Mining (3 credits) Prerequisite: CO322**
Course Content: Introduction, Input, Output, Basic algorithms, Evaluation and credibility, Real machine learning algorithms, Data preparation for knowledge discovery. (L&T40, P&A10 =45).

**CO551 Theory of Computation (3 credits)**
Course Content: Preliminaries, Finite automata, Regular expressions and properties of regular sets, Context-free grammars (CFG) and properties of context-free languages (CFL), Pushdown automata, Turing machines, Undecidability, Complexity theory, Intractable problems. (L&T37, P&A16 =45).

**CO552 Game Theory and Markov Decision Processes (3 credits) Prerequisite: EM202**
Department of Electrical and Electronic Engineering

EE201 Network Analysis (3 Credits)
Course Content: Review of DC circuits, First-order circuits, Second-order circuits, Sinusoidal steady state analysis, Laplace transform and network analysis, Two-port networks. (L&T43, A4 = 45).

EE251 Principle of Electrical Measurements (3 Credits)

EE252 Electronic Devices and Circuits (3 Credits)

EE253 Digital logic Design (3 Credits)
Course Content: Representation of information, Boolean algebra, Boolean function simplification, Combinational logic design, Special logic circuits, Combinational logic design with Medium Scale Integrated (MSI) circuits, Electrical considerations of logic gates, Latches and Flip-flops, Design of sequential logic circuits, Register Transfer Level (RTL) design of circuits, Programmable logic devices, Fault diagnosis and testing (L&T33, A&P 24 = 45).

EE254 Electronic Instrumentation (3 Credits)
Course Content: Operational Amplifiers, Op-Amp Applications, Basic signal conversion, Analogue to Digital Conversion techniques, Sample and Hold circuit, Digital to Analogue Conversion, Computer interfacing and Data acquisition (DAQ) systems, Software and Hardware tools for instrumentation, Advanced instruments, Digital Oscilloscope (L&T33, A&P 30 = 45).

EE255 Electric Power (2 Credits)
Course Content: Electromagnetic Energy conversion, Transformers, Electrical Installations and loads, Lighting (L&T21 A&P 18 = 30).

EE256 Power and Energy (2 Credits)

EE257 Signals and Systems (3 Credits)

EE280 Introduction to Electrical Engineering I (3 Credits)
Course Content: AC circuits, Electrical machines, Motors and control, IEE wiring regulations and building wiring systems. (L&T33, P&A24)
EE281 Introduction to Electrical Engineering II (3 Credits)
Course Content: Cathode ray oscilloscope, Two terminal semiconductor devices, Bipolar junction transistors, Logic circuits. (L&T33, P&A24)

EE282 Network Analysis for Computer Engineering (3 Credits)
Course Content: Review of DC circuits, First-order circuits, Second-order circuits, Sinusoidal steady state analysis, Laplace transform and network analysis, Two-port networks (L45=45)

EE320 Electromagnetic Theory (2 Credits)
Course Content: Review of vector calculus, Electrostatics, magnetostatics, Time varying fields, Plane waves. (L&T28, A4 = 30)

EE322 Embedded Systems Design (3 Credits); Prerequisites: EE253, CO253
Course Content: Introduction to embedded computing, Specifications, Embedded system hardware, Embedded operating systems, Middleware and scheduling, Implementing embedded systems – Hardware/software Co-design, Validation, Networks for embedded Systems, System design techniques. (L&T25, P&A40 = 45).

EE325 Digital Signal Processing (3 Credits); Prerequisites: EE257

EE326 Electrical Machines and Drives (4 Credits); Prerequisites: EE255, EE256
Course Content: Overview, DC machines (brushed), AC Machine basics, Synchronous machines, Three-phase induction machines, Single phase induction motors, Special motors. (L&T45, P&A30 = 60).

EE351 Electronic Circuits (3 Credits); Prerequisites: EE252

EE352 Automatic Control (3 Credits); Prerequisites: EE 257
Course Content: System modelling, Modelling of Practical systems, Time domain analysis, Frequency domain analysis, Controller design in continuous domain (L&T26, P&A8 = 30).

EE353 Discrete Time Control Systems; Prerequisites: EE 352, EE325, EE326

EE354 Power Engineering: Prerequisites: EE 326
Course Content: Review of Synchronous Machine, Operational Features of Synchronous Machines: Synchronous Generators, Synchronous generators in power system, Induction generators in power system, Load flow studies, Fault analysis (L&T32, P&A26 = 45)
EE355 Applied Electromagnetics (3 Credits); Prerequisites: EE320
Course Content: Transmission lines, Antennas, Wave guides, Microwave components and sources, Fiber optics (L&T40, P&A10 = 45).

EE356 Product Design and Management (3 Credits)
Course Content: Product Design and Development, Product design process, Estimating power supply requirement (Power supply sizing), Power supply protection devices, Noise consideration of a typical system, Noise in electronic circuit, Measurement of noise, Grounding, Shielding and Guarding, Signal integrity issues, PCB designing, Product testing, Enclosure sizing & supply requirements & materials for enclosure and tests carried out on enclosure, Thermal management and its types, Electronic product design mini project (L&T30, P&A30 = 45).

EE357 Communication Systems (3 Credits); Prerequisites: EE201, EE257

EE380 Electrical Power and Machines (3 Credits)
Course content: Electric power energy, Transformers, Direct current machines, Induction machines, Synchronous machines. (L&T36, P18 = 45)

EE381 Machines and Drives(3 Credits)
Course Content: Electrical machines review, Motors and control review, Direct current machine, Induction machines, Synchronous machines. (L&T36, P18 = 45)

EE382 Electronics Devices and Circuits II (3 Credits)
Course Content: Diode Logic Circuits, BJT Logic families, MOS Logic families, Storage elements, Design parameter and issues, Interfacing logic families and standard buses, Active filters, Oscillators, Large signal amplifiers, High-frequency response of amplifiers, Data conversion circuits, SPICE Circuit modeling and simulation (L 45 = 45)

EE383 Electronics Laboratory(2 Credits)
Course Content: Diode characteristics, diode applications, BJT characteristics, BJT applications, FET characteristics, OpAmp characteristics and applications, Logic circuits, Design and implementation of a suitable electronic circuits (P60 = 30)

EE384 Communication Engineering(3 Credits)
Course Content: Review of Signals and systems, Signal transmission, Linear modulation, Exponential modulation, Pulse modulation, Pulse-code modulation, Introduction to digital carrier-wave modulation (L&T36, P18 = 45)

EE385 Digital Signals and Systems(2 Credits)
Course Content: Introduction, Sampling, Time-domain analysis, Z-transforms, Difference equations, Digital filters, Frequency domain analysis, IIR and FIR filter design (L&T27, P6 = 30)
EE401/EE512 Communication Theory (3 Credits); Prerequisites: EE 357
Course content: Probability and random variables, Random process, Gaussian process, Performance of communication Systems in noise, Introduction to information theory. (L&T42, A6 = 45).

EE402/EE501 Advanced Control Systems (3 Credits); Prerequisites: EE352
Course content: Introduction to System identification, Non-parametric methods, parametric methods, Analysis of common non-linearities, Describing functions, Discrete Time Controller designs for practical systems in Electrical and Electronic Engineering, Real-time Implementation (L&T36, A&P18 = 45).

EE403/EE559 Integrated Analog Electronic Circuits (3 Credits); Prerequisites: EE252, EE351
Course Content: Analysis of two transistor differential amplifier, Analog integrated sub-circuits and biasing, Analysis of frequency response, Application specific integrated circuits, Design considerations. (L&T35, P&A20 = 45).

EE404/EE572 Electric Power Systems (3 Credits); Prerequisites: EE354
Course Content: Transmission and distribution line, Fault analysis, Transient and over voltage phenomena, Protection of transmission systems, Power system control basis, Load flow studies, Power system planning and reliability, Economic operation. (L&T36, P&A18 = 45).

EE405 Undergraduate Projects I (3 Credits)
Course content: An open-ended project under the supervison of a faculty member of the department or a supervisor approved by the Head of department. (P&A90 = 45).

EE406 Undergraduate Projects II (3 Credits)
Course content: An open-ended project under the supervision of a faculty member of the department or a supervisor approved by the head of department. (P&A90 = 45).

EE511 Antennas and Propagation (3 credits) Prerequisite: EE320, EE328
Course Content: Antenna basics, Antenna Arrays, Aperture antennas, Practical antenna design, Matching techniques, Propagation of radio waves, Noise characterization, Space wave propagation, Ionospheric and surface wave propagation. (L&T38, P14 =45).

EE512 Communication Theory (3 credits) Prerequisite: EE324
Course content: Probability and random variables, Random process, Gaussian process, Performance of communication Systems in noise, Introduction to information theory. (L&T42, A6 = 45).

EE513 Telecommunication Engineering (3 credits) Prerequisite: EE324
Course Content: Optical fiber communication, Broadband systems and xDSL, Switching and signaling, Teletraffic engineering. (L&T34 P&A22 = 45).
EE514 Data Communications (3 credits) Prerequisites: EE324, EE327
Course Content: Overview, Protocol architecture, Data transmission, Guided and wireless transmission, Signal encoding techniques, Digital data communication techniques, Data link control, Multiplexing, Circuit switching and packet switching, Routing in packet switched networks, Congestion control in switched data network. (L&T36, P18 = 45).

EE 515 Adaptive Signal Processing (3 credits) Prerequisites: EE224, EE325

EE 518 Digital Communication (3 credits) Prerequisite: EE324
Course Content: Basic band data transmission, Digital band pass modulation, Error control coding, Introduction to information theory. (L&T36, P&A18 = 45).

EE 520 Wireless Communication Systems (3 Credits) Prerequisite: EE324
Course Content: Spread spectrum systems, Generalized transmitter/receiver architectures, Principles of mobile communication systems, 1G, 2G, 2.5G & 3G Cellular mobile systems, Wireless LANs. (L&T30, P&A30 = 45).

EE 521 Computer Networks Laboratory (3 Credits)
Course Content: Introduction to networking, Local area networks, Routing fundamental, Wide area networks, Introduction to network management. (L&T28, P&A34 = 45).

EE 522 Telecommunication & Wireless Systems (3 Credits) Prerequisite: EE324
Course Content: Switching & signalling, Teletraffic engineering, Broadband communications, Principles of mobile communication systems, 1G, 2G, 2.5G & 3G Cellular mobile systems, Wireless LANs, (L&T30, P&A30 = 45).

EE534 Estimation and Identification (3 credits) Prerequisite: EE323
Course Content: Observer theory & parameter estimation, Basics of system identification. (L&T34, P&A22 = 45).

EE536 Industrial Robotics (3 credits)Prerequisite: EE323
Course Content: Introduction, Transformations, Forward kinematics, Inverse kinematics, Jacobian, System overview, Sensors, Control systems, Trajectory generation, Robot programming languages. (L&T36, P18 =45).

EE537 Industrial Automation (3 Credits)Prerequisite: EE323
Course Content: Introduction, Principles of modern automation systems, Data communication in Industrial automation, Distributed control systems (DCS), Interfaces used in DCS implementation, DCS protocols - Fieldbus systems. (L&T38, P&A21 = 45).

EE538 Electrical Machines and Drive Systems (3 Credits) Prerequisite: EE326, EE323
Course Content: Introduction to steady-state and dynamic performance of DC Motor drives, Introduction to AC drives, Introduction to vector control basics-through induction machines, Introduction to electronically commutated Motor Drives (Stepper motor drives; Brushless DC-motor-drives). (L&T39, P&A12 = 45)
EE539 Nonlinear and Multivariable Systems (3 Credits) *Prerequisite:* EE323
Course Content: Nonlinear systems, Multivariable control. (L&T34, P&A22 = 45).

EE540 Nanotechnology for Electrical and Electronic Engineering Applications (3 credits) *Prerequisites:* EE201, EE221, EE224, EE323

EE548 Undergraduate Project I (3 credits)
Course content: An open-ended project under the supervision of a faculty member of the department or a supervisor approved by the Head of department. (P&A90 = 45).

EE549 Undergraduate Project II (3 credits)
Course content: An open-ended project under the supervision of a faculty member of the department or a supervisor approved by the head of department. (P&A90 = 45).

EE551 Integrated Micro-Electronic Circuits (3 Credits) *Prerequisites:* EE222/EE321
Course Content: Analysis of two transistor differential amplifier, Analog integrated sub-circuits and biasing, Analysis of frequency response, Application specific integrated circuits, Design considerations, (L&T35, P&A20 = 45).

EE554 Microwave Techniques (3 credits) *Prerequisite:* EE320 and EE328
Course Content: Overview of microwave systems, subsystems and components, Transmission line theory, Two port parameters, Micro-strip transmission lines, Design of a micro-strip components, Microwave transistors, Active microwave components, Computer aided design (CAD) of micro-strip circuits. (L&T30, P30 = 45).

EE559 Integrated Analog Electronic Circuits (3 Credits) *Prerequisites:* EE221, EE321
Course Content: Analysis of two transistor differential amplifier, Analog integrated sub-circuits and biasing, Analysis of frequency response, Application specific integrated circuits, Design considerations. (L&T35, P&A20 = 45).

EE561 Industrial Instrumentation (3 credits) *Prerequisites:* EE222, EE205
Course content: Basics of data acquisition (DAQ), Virtual instruments, Supervisory control and data acquisition (SCADA), Sensor networks, Advance techniques used in instrumentation. (L&T30, P&A30 = 45).

EE572 Electric Power Systems (3 credits) *Prerequisites:* EE201, EE225
Course Content: Transmission and distribution line, Fault analysis, Transient and over voltage phenomena, Protection of transmission systems, Power system control basis, Load flow studies, Power system planning and reliability, Economic operation. (L&T36, P&A18 = 45).
EE573 AC Machine Analysis (3 credits) **Prerequisite:** EE326  
Course Content: Fundamentals of ac machines, Synchronous generators, Salient-pole machines, Machine modeling, Modeling of electrical machines using relevant CAD tools, Transients, Motor recovery from fault condition and starting. (L&T33, P&A24 = 45).

EE575 Power Electronic Applications and Design (3 credits) **Prerequisite:** EE321  

EE576 High Voltage Engineering (3 credits) **Prerequisite:** EE225  
Course Content: Generation high voltages, Measurements of high voltages, Breakdown phenomena, High voltage tests, Lightning phenomena, Insulation co-ordination, Labs. (L&T35, P&A20 = 45).

EE578 Modern Power Systems (3 credits) **Prerequisites:** EE225  
Course Content: Power generation and trends, HVDC transmission, Flexible ac transmission systems, Reactive power compensation, Power quality, Load management. (L&T37, P&A16 = 45).

EE580 Introduction to Biomedical Engineering (3 Credits) **Prerequisites:** EE221 or EE281 or EE284  
Course Content: Bioelectromagnetism, Modeling of cardiac system, measurements, ECG, Bioinstrumentation, Biomaterials, Biomechanics, Prosthetic devices, Mechanical and electric models for ventilation, Biomedical Imaging Systems. (L&T38, P&A14 = 45).

EE582 Computer Architecture (3 credits) **Prerequisites:** EE205, EE321  
Course Content: Introduction, Instructions, Arithmetic for computers, Assessing and understanding the Performance, The processor, Microprogramming, Pipelining, Memory hierarchy, Storage networks and other peripherals, Multiprocessors. (L&T36, P18 = 45).

EE 587 Digital Systems Design and Synthesis (3 credits) **Prerequisites:** EE205  
Course Content: Review of digital systems, Programmable logic devices and techniques, Introduction to hardware description languages (HDL), Advanced algorithms, Register transfer level design, Reconfigurable architectures. (L&T30, P&A30 = 45).

EE 592 Power system control and analysis (3 Credits) **Prerequisites:** EE572  
Course Content: Load flow analysis review, Power system stability, Transient analysis, Power system control, Power system State estimation, Power system optimisation, Computer based project on power system analysis, (L&T29, P&A32 = 45).
Department of Engineering Mathematics

**EM201 Mathematics III (3 credits)**

**EM202 Mathematics IV (3 credits)**
Course Content: Functions of several variables, Partial derivatives double and triple integration, Vector fields and operators, Orthogonal curvilinear coordinates, Integrals and integral theorems, Constrained optimisation of functions of several variables, Continuous probability distributions, Samplingdistributions, Estimation and confidence intervals, Hypothesis testing. (L36, T9 =45).

**EM 203 Numerical Methods for Chemical and Process Engineering (3 credits)**

**EM308 Complex Analysis (2 credits) Prerequisites: EM201, EM202**
Course Content: Introduction to analytic functions, Complex integration, Complex series, Theory of residues, Conformal mappings. (L26, T4 =30).

**EM309 Industrial Statistics (3 credits )Prerequisites: EM201, EM202**
Course Content: Descriptive statistics, Point estimation and interval estimation, Testing of hypotheses, Regression analysis, Analysis of variance. (L24, T21 =45).

**EM310 Operations Research 1 (3 credits )Prerequisites: EM201, EM202**
Course Content: Formulation of models, Linear programming, Network analysis, Dynamic programming, Queuing theory, Inventory models, Simulation. (L36, T9 =45).

**EM311 Mathematical Modelling (2 credits) Prerequisites: EM201, EM202**
Course Content: Introduction to models of physical systems and phenomena, Basic concepts in stochastic processes, System identification methods, Optimisation methods, Project. (L20, T10 =30).

**EM312 Fourier Analysis (3 credits) Prerequisites: EM201, EM202**
EM313 Discrete Mathematics (3 credits)
Course content: Fundamentals, Combinatorics, Graph theory, Algorithms, Prepositional calculus, Mathematical models for computing machines. (L36, T9 =45).

EM314 Numerical Methods (3 credits)

EM501 Operations Research II (2 credits) Prerequisite: EM310
Course Content: Computational difficulties, Interior point algorithms, Heuristic programming, Multiple criteria optimisation, Integer programming. (L24, T6 =30).

EM 502 Optimisation (3 credits)
Course Content: Single variable optimisation, Algorithms, Multivariable optimisation, Algorithms, Constrained optimisation algorithms, Non-conventional optimisation algorithms. (L30, T6, P18 =45).

EM503 Graph Theory (2 credits) Prerequisites: EM201, EM202
Course Content: Introduction, Trees, Graph colouring and matching, Graph algorithms, Applications. (L24, T6 =30).

EM504 Evolutionary Algorithms (2 credits) Prerequisites: EM201, EM202

EM506 Design of Algorithms (2 credits) Prerequisites: EM201, EM202
Course Content: Efficiency of algorithms, Analysis of algorithms, Data structures, Greedy algorithms, Searching and sorting algorithms, Computational complexity, Applications. (L24, T6=30).

EM507System Simulation (2 credits)

EM508 Symbolic Mathematics (2 credits)
Course Content: Introduction to computer algebra systems (MAPLE, MATHEMATICA etc.), Symbolic computation, Mathematical algorithms for symbolic computation, Examples and applications to topics in undergraduate mathematics. (L25, T5 =30).

EM509Stochastic Processes (2 credits) Prerequisites: EM201, EM202
Course Content: Basic concepts, Markov chains, Poisson processes, Renewal processes, Queuing models. (L25, T5 =30).
EM510 Decision Theory (2 credits) Prerequisities: EM201, EM202
Course Content: Development of methods for decision making, Utility theory, Decision trees, Decision models under risk and uncertainty, Forecasting and time series analysis, Reliability. (L27, T3 =30).

EM511 Regression Analysis (2 credits) Prerequisities: EM201, EM202
Course Content: Simple linear regression, Matrix approach for linear regression, Polynomial regression, Multiple linear regression, The examination of residuals, Selecting the ‘best’ regression equation, Model validation, Use of dummy variables in regression. (L24, T6 =30).

EM 512 Sampling Theory (1 credit) Prerequisities: EM201, EM202
Course Content: Simple random sampling, Ratio estimators, Stratified random sampling, Systematic sampling, Cluster sampling. (L15 =15).

EM513 Design and Analysis of Experiments (2 credits) Prerequisities: EM201, EM202
Course Content: Fully randomised design, Randomised block design, Incomplete block design, Latin squares and related designs, Introduction to factorial designs, $2^k$ and $3^k$ factorial designs. (L24, T6 =30).

EM514 Partial Differential Equations (2 credits) Prerequisities: EM201, EM202

EM515 Eigen Function Methods for Differential Equations (2 credits)
Course Content: Sets of functions, Adjoint and hermitian operators, The Sturm-Liouville equations, Legendre, Bassel, Simple harmonic, Hermite, Laguerre and the Chebyshev equations, Superposition of eigenfunctions, Green’s function, Gamma and beta functions (L25, T5 =30).

EM516 Advanced Engineering Dynamics (2 credits) Prerequisities: EM201, EM202
Course Content: Introduction, History and development of various branches of mechanics, Vibrating systems, Damped motion and small oscillations, Varying mass, Introduction to Lagrangian and Hamiltonian mechanics. (L24, T6 =30).

EM517 Nonlinear Dynamical System (2 credits) Prerequisities: EM201, EM202
Course Content: Discrete and continuous dynamical systems, Invariant sets, Stability, Chaos, Fractals. (L25, T5 =30).

EM518 Advanced Numerical Methods (2 credits) Prerequisities: EM201, EM202

EM519 Introduction to Finite Element Method (2 credits) Prerequisities: EM201, EM202
Course Content: Elements of calculus of variations, Numerical discretisation, Weighted residual approximations, Finite element concepts. (L24, T4, P4 =30).
**EM520 Solar Radiation (2 credits) Prerequisites: EM201, EM202**
Course Content: Measurement and instrumentation, Physical and statistical modelling, Distribution of solar radiation over Sri Lanka. (L15, T5, A20 =30).

**EM521 Integral Equations (2 credits) Prerequisites: EM201, EM202**
Course Content: Obtaining an integral equation from a differential equation, Types of integral equations, Operator notation and existence of solutions, Closed form solutions, Neumann series. (L15, T7, A16 =30).

**EM522 Tensors (2 credits) Prerequisites: EM201, EM202**
Course Content: Cartesian tensors of different orders, Non-Cartesian tensors, Relative tensors. (L16, T8, A12 =30).

**EM523 Calculus of Variations (2 credits) Prerequisites: EM201, EM202**
Course Content: The Euler-Lagrange equations, Constrained variations, General eigen value problem. (L15, T6, A18 =30).

**Department of Mechanical Engineering**

**ME201 Mechanics of Machines (3 credits)**
Course Content: Kinematics of simple machines, General dynamics, Machine elements, Power transmission units. (L36, T4, P10 =45).

**ME202 Mechanical Engineering for Civil Engineers (3 credits)**
Course Content: Kinematics of simple machines, General dynamics of simple mechanisms, Internal combustion engines, Air compressors. (L32, T8, P10 =45).

**ME203 Machine Drawing (3 credits)**
Course Content: Drawing conventions, Sectional views, Freehand sketching of a selection of machine components, Drawing of solid objects, Drawing of assembled objects. (L13, T5, P45, A9 =45).

**ME205 Tribology and Power Transmission Elements (3 credits)**
Course Content: Friction in machine elements; Bearings and lubrication, wear: Geometry of toothed gearing; Cams and their geometry; theories of lubrication; Contact: rolling element bearings and gears. (L36, T4, P10 =45).

**ME207 Applied Thermodynamics I (3 credits)**
Course Content: Air standard cycles: the dual combustion cycle; mean effective pressure; Combustion; Internal combustion engines; Air compressors. (L32, T8, P10 =45).

**ME210 Thermodynamics for Electrical and Electronic Engineers (2 credits)**
ME209 Machine Design I (3 credits) Prerequisites: ME201, ME203
Course Content: Principles and methodology, Assembly drawing of a simple mechanism, Velocity and acceleration diagram for a linkage mechanism, Design and different forms of stress, Design of a machine element, Design of a simple device, Design project. (L6, P60, A18 =45).

ME301 Vibration (3 credits)
Course Content: Vibration of systems with single degree of freedom, Vibration of systems with two degrees of freedom, Vibration absorbers & types of damping, Transient vibration, Experimental methods, Torsional and flexural vibration of systems with several degrees of freedom, Rotor balancing; Balancing of machines. (L33, T4, P16 =45).

ME302 Machine Design II (3 credits) Prerequisite: ME209
Course Content: Design project I: design of a simple machine or sub-assembly; Design project II: problem identification, approach to solution, ergonomic and feasibility considerations, the use of standards, codes and manuals; Optional design (group project). (L6, P36, A42 =45).

ME303 Applied Thermodynamics II (3 credits) Prerequisite: ME207
Course Content: Steam power plant performance, Refrigerators and heat pumps, Heat transfer. (L30, T6, A18 =45)

ME306 Control Systems (3 credits)
Course Content: Introduction; Modelling: purpose, formulation of differential equations, linear systems, non-linear models and linearisation; Simulation of dynamical systems; Feedback control systems; Introduction to control strategies; Stability analysis of linear systems; Frequency domain representation; Stability analysis in frequency domain; Design and compensation of feedback control systems; Implementation issues in controllers. (L32, T9, P8 =45)

ME309 Mechanical Engineering Individual Project(3 credits)
Course Content: Goal-oriented individual project: planning and preliminary report; Project work; Seminar presentation; Formal report. (A90 =45).

ME406 Mechanical Engineering Group Project I(3 credits)
Course Content: Identifying a problem, forming a project proposal, conducting a literature survey, analysis of the problem, evaluation of possible solutions with their weaknesses, technical and economic feasibility study, environmental and social impact study, safety and ethical considerations, detailed project formulation and management, Design of experimental rigs/models, oral presentation and preparation of a technical report.. (L2 A 86 =45).

ME407 Mechanical Engineering Group Project II (3 credits); Prerequisite: ME406
Course Content: Continuation of ME 406 – Fabrication of experimental rigs/models, execution of investigation; analysis of results; drawing logical conclusions; oral presentation and preparation of a technical report; writing of technical papers. (L2 A 86 =45).

ME501 Heat Transfer (2 credits) Prerequisite: ME 303
Course Content: Conduction: general equations, steady-state conduction, composite walls, electrical analogy; Convection: forced and free convection, thermal boundary layer, Reynolds analogy, boiling & condensation, dimensional analysis and applications; Radiation; Combined modes of heat transfer & heat exchangers. (L26, T4 =30).
ME502 Ergonomics (2 credits)
Course Content: Introduction: theory of ergonomics, ergonomics and safety, ergonomic methods and intervention; Productivity enhancement and ergonomics, ergonomics in design, case studies; Project. (L19, T3, A16 =30)

ME503 Composite Materials (2 credits) Prerequisite: CE309
Course Content: Classification and definitions; Fibres and matrices: types and architecture; Fibre-matrix interface; Geometric aspects: micro-mechanics and macro-mechanics of composites; Laminates; Mechanical properties of composites. (L30 =30).

ME505 Advanced Control Engineering (2 credits) Prerequisite: ME306
Course Content: Introduction to state-space: state-space representation of dynamic systems, state-transition matrix, time response, characteristic values; Transformations & canonical forms; Design of state-variable feedback systems: controllability and observability, pole placement, linear observers; Linear Quadratic Optimum Control. (L15, T8, A14 =30).

ME506 Digital Systems Engineering (2 credits) Prerequisite: ME306
Course Content: Introduction to digital control systems: z-transforms, analysis of discrete time systems, D/A and A/D circuits; Discrete systems in state-space: controllability and observability in sampled systems; stability tests for discrete-data systems; time domain and z-domain analysis; Digital simulation, design of discrete-time control systems. (L16, T5, A18 =30).

ME508 Automobile Engineering (2 credits) Prerequisite: ME202 or ME207
Course Content: Introduction: history, engine types & engine components; Gas exchange processes & in-cylinder charge motion: combustion, thermochemistry of fuel-air mixtures, engine heat transfer; Cooling systems; Engine friction & lubrication; IC engine performance; Design & operating parameters; Emissions & pollution: environmental issues; Dynamic analysis of IC engines; Advanced technology vehicles; Automatic valve timing, continuously varying transmission systems; Future vehicles, hybrid vehicles. (L26, P8 =30).

ME509 Non-linear Control Systems (2 credits) Prerequisite: ME306
Course Content: Introduction; Lie brackets and linearisation schemes; phase plane analysis; The describing function method, design of non-linear control systems, Lyapunov stability; Bang-Bang control, sliding mode control, avoidance of chattering. (L18, T8, A8 =30).

ME510 Computer Applications in Mechanical Engineering (2 credits)
Course Content: Introduction to CAD, FEM and CFD software available for mechanical engineering applications; General theory of CAD; Theoretical background to Finite Element Analysis (FEA); Theoretical background to Computational Fluid Dynamics (CFD); Analysis/simulation of simple industrial problems using FEA and CFD packages; Spreadsheets. (L14, P23, A9 =30).

ME511 Advanced Vibration Theory (2 credits) Prerequisites: ME301
Course Content: Modal analysis of vibratory response to force and displacement excitation; Energy methods; Receptance methods; Self-excited vibrations, dynamic instability; Three-dimensional motion, gyrosopes and other practical applications; (L25, T5 =30).
ME512 Energy Technology (2 credits) Prerequisite: ME303
Course Content: Non-renewable energy: fossil fuels and products and industrially manufactured gaseous fuels; Non-renewable energy, nuclear energy; Renewable energy conversion technologies; Heat transfer in heat exchangers, boilers and condensers; Waste heat recovery; Energy planning and management (L30 =30).

ME513 Applied Thermodynamics III(2 credits) Prerequisite: ME303
Course Content: Gas turbine plants; Air conditioning and psychrometry; Turbomachinery; Fundamentals of automobile engineering; Thermodynamic relations; Laboratory projects: steam power plant, IC engines (L23, T4, P&A6 =30).

ME514 Maintenance Management (2 credits)
Course Content: Introduction to maintenance & maintenance management, Concepts of planned, Maintenance planning & control, Implementation techniques & condition monitoring, Use of computer packages, Case studies. (L19, T3, A16 =30)

ME515 Mechatronics (3 credits)
Course Content: Introduction and overview: Applied Electronics; Sensors actuators and signals; Computer applications in mechatronic systems; Artificial intelligent in mechatronic systems: Design of mechatronic systems. (L35, P16, A4 =45).

ME516 Thermodynamics & Fluid Mechanics for Electrical Engineers (3 credits)

ME517 Project on Introduction to Robotics (2 credits)
Small student teams will each design, build, test and operate a robot to meet a pre defined objective. The course will provide an opportunity for the students to put into practice the theory learnt in mechanics, mathematical modelling, control, digital and analog circuits, microprocessor programming, and CAD in an actual problem solving environment. (L8, A44 =30).

ME518 Rigid Body Mechanics (3 credits)
Kinematics and Kinetics of a Particle in 3D inertial and moving frames, Kinematics and Kinetics of 3D Rigid Bodies,Parameterization of rigid body motion, Conservation Principles, Applications Kinematics and dynamic equations of robotic manipulators, and mobile robots; precession of a heavy top; behavior of the Foucault pendulum;operating principle of a classical gyroscope and its applications; and operating principle of MEMS gyroscopes. (L32, T3, A20 =45).
Department of Production Engineering

PR 202 Production Planning and Control I (3 credits); *Prerequisite:* EM201
Course Content: Introduction; Functions of production planning and control, Manufacturing systems, Production procedures, Organizational aspects, Pre-planning; Product development and design, Forecasting, Product breakdown, Process planning, Elements of plant layout and evaluation of materials & processes, Elements of production systems control; Elementary scheduling problems; Monitoring and control of production, Detailed guidelines for implementing a simple system, Elements of inventory management; Inventory classification, Importance of proper inventory management in different production environments, Simple EOQ models, Detailed guidelines for implementing a system. (L38, T3, P4, A4 =45).

PR 203 Manufacturing Technology I (3 credits)
Course Content: Material removal processes; Fundamentals of cutting, Mechanics of chip formation, Oblique & orthogonal cutting, Cutting; Cutting forces & power, Temperature in metal cutting, Tool life, Wear and failure, Surface finish & integrity, Machinability, Lathe machines; Lathe & lathe operations, Milling machines; Milling & milling operations, Gear manufacturing. (L24, T6, P24, A6 =45).

PR 302 Production Planning and Control II (3 credits); *Prerequisite:* PR 202
Course Content: Integrated manufacturing; Enterprise modelling, Hierarchical control, Decentralization, Design of production systems; Modular systems, Integrated planning & control, software, Controller design and implementation; Work cell controller, Workstation controller, Controller for flow line, Inventory management; JIT systems, Automated systems, MRP II, Simulation of manufacturing systems; Simulation methods, Performance evaluation, Design of a planning, control and analysis system. (L38, T3, P5, A3 =45).

PR 303 Machine Tool Engineering (3 credits)
Course Content: Introduction; Significance of machine tools, Historical developments, Clarification of machine tool groups, Construction of machine tools, Machine tool types; General & special purpose machine tools, Standard & auxiliary equipment for machine tools, Machine frames; Requirements, Design and analysis, Functional elements of machine tools; Guideways & bearings, Drives & controls (main/feed), Transmission & couplings, Automation of machine tools; Mechanical controls, Copying systems, Process control; Hardware programmed controls, Process computer controls, CNC; Measuring systems, Position control, operation. (L26, T6, P18, A8 =45).

PR 306 Introduction to Industrial Automation (3 credits)
Course Content: Sensors and actuators, Digital electronics fundamentals for industrial automation, Analog electronics fundamentals for industrial automation, Introduction to computer programming, Pneumatic and interfacing techniques, and Microprocessor fundamentals (L38, P12, A2 =45)
PR308 Production Engineering (3 credits)
Course Content: Introduction to production engineering; Manufacturing systems and processes, Materials and process selection, Material Properties for Manufacture Material properties: definitions, Stress-strain curves, Yield criteria, Stress and Strain hardening/strain hardening equation, Metal Forming Processes, Explanation of processes, material flow and control, Metal forming processes, sheet and bulk forming methods, Die and tool geometries and industrial significance, Process parameters and mathematical analysis of metal forming processes, Metrology; International standards, Linear and angular measurements, Measuring Instruments, gauges and comparators, Limits, fits and tolerances, Interchangability, Quality Control; Introduction to quality control, Quality control tests, control charts, Acceptance sampling, Introduction to Total Quality Management, International quality standards, Engineering design concepts, Design of products and processes, Material and process selection, Process efficiency, cost and functional factors, Environmental friendly designs concepts, Introduction to design for manufacture (L32, T6, P14 =45).

PR311 Production Engineering for Mechanical Engineers (3 credits)
Course Content: Introduction to Production Engineering and manufacturing systems, Metal forming: Forging, Rolling, Extrusion, Wire drawing, etc., Metal cutting theory: Machining processes, Tool materials, Tool life, Cost & economics, Casting; Casting in metallic and non-metallic moulds, Pressure casting, Defects, Production casting methods, Welding; Processes & specification, techniques, Metrology: International standards, Linear & angular measurement techniques, Taper & screw thread measurement, Quality control: Statistical tools, control charts, Quality assurance, Control of machine setting & checking. (L30, T7, P9, A7 =45).

PR312 Manufacturing Technology II (3 credits)

PR404 CAD/CAM (3 credits)
Course Content: Introduction, CAD/CAM; Hardware (I/O devices, integration & networking, types of systems), Software (Graphics standards, GUI, software modules, modelling & viewing), Geometry/ mathematical representation; Curves, Surfaces, Solids, Parametric representation, Manipulations & applications, Data exchange (Format: IGES, DXF, STEP, PDES, etc.), Graphics aids/manipulations; Manipulations & editing operations, Animation interactive programming, EEM/Modelling & analysis: Modelling I mesh generation, Design & applications, Part programming & manufacturing: Code generation, Tool path & verification machining. (L28, T9, P12, A4, =45).

PR406 Industrial Assignment (6 credits)
Course Content: Problem identification and project formulation of a manufacturing engineering related project; Search for and retrieval of information required such as literature survey; System identification; System design; System optimisation and optimum utilization of available resources; Project execution; Device fabrication; Testing; Analysis of performance; Political and environmental consequences; Safety aspects; Elements of technical report writing; Communicating the results of the project study with the outside world via a report, a web-page, etc. Prior approval of the Head of the Department is mandatory. (A90 =45).
PR407 Independent Research Project (3 credits)
Course Content: Problem identification; Literature survey; Problem formulation; Resource planning and Experimental design; Problem analysis; Simulation; Experiments and analysis of results; Presentation with conclusions. (A90 =45).

PR408 Industrial Engineering and Decision Sciences (3 credits)
Course Content: Introduction to Decision Sciences and Industrial Engineering, Applications of Linear Programming, Introduction to Integer and Mixed Integer Programming, Dynamic Programming models, Applications of Dynamic Programming, Decision trees – Decision theory; Decision under certainty, Decision under risk, Decision under uncertainty, Constraint analysis, Introduction to Project Management; Projects and non-projects, project life cycle concept, project manager’s role, Project planning and scheduling; Project planning and scheduling, Statement of Work (SOW), Work-Breakdown-Structure (WBS) and Responsibility matrix, Network analysis techniques: Critical Path Method (CPM), Project Evaluation and Review Technique (PERT), Gantt chart and resource mapping, Monitoring and controlling project cost, quality and time, Project risk management, Computer application for Project Management, Queuing theory and modeling; Simulation tools for decision making, Industrial applications, Non conventional optimization techniques; Evolutionary and heuristic algorithms, Industrial applications, Introduction to multi criteria decision making; Data Envelopment Analysis (DEA), Introduction to Non-linear programming; Industrial applications. (L38, T6, A2 =45).

PR409 Management Principles and Economics (3 credits)
Course Content: Overview of Management Thought; Introduction to Management, Development of Management Theories, Contemporary Management Theories, Organizational Behaviour; Introduction to Organizational Behaviour, Organizational Structure, Managing individuals for high performance, Industrial Psychology, Strategic Management Basics for Engineers; Introduction to strategy & Strategic Management, Defining strategic intent, Methods and techniques used for organizational appraisal, Environmental appraisal, Corporate level strategies, Business level strategies, Differentiation and Focus strategies, Strategic Analysis and choice, Basic of Human Resources Management (HRM) for Engineers; Introduction to key functions of HRM, Developing effectiveness in human resources, Enhancing employee-management relations, Managing human resources in a multi-cultural environment, Equal employment opportunities (EEO), Industrial law; Labor law, Commercial transactions, Occupational health and safety, Basics of Economics for Engineers; Introductions to Microeconomics and Macroeconomics, Basic concepts in Economics, Economic policies, Exchange rates and the international financial system. (L39, A12 =45).

PR501 Simulation & Performance Evaluation of Manufacturing Systems (3 credits) Prerequisites: PR302
Course Content: Measures/performance evaluation of manufacturing systems, Markov chain models of manufacturing system; Discrete-time Markov chain models, Continuous-time Markov chain models Queuing network models; Open networks, Closed networks; Jackson networks, Stochastic Petri-net models
Discrete event simulation in ARENA (L38, T3, P8 =45).

PR502 Robot Dynamics and Control (3 credits)
Course Content: Basic concepts in robotics, Classification and structure of robotics system; PTP & CP control, Cartesian, Cylindrical & spherical drives and control systems; Hydraulic & pneumatics, Servomotors, Control approaches, Dynamic response; Kinematic analysis and co-ordinate transformations, Modelling and control; Position control, Force control. (L33, T3, P12, A6 =45).
PR503 Control of Discrete Event Dynamics Systems (3 credits) Prerequisites: EM202, ME306
Course Content: Introduction of discrete event dynamic systems: Characteristics, Focus on manufacturing systems, Control of discrete event dynamic system; Assuring desired state transitions, Coordination, Notations of observability, Decentralized control, Logical DEDS models: Study of qualitative properties of DEDS, Stability, Correct use of resources, No deadlocks etc., Specifications of admissible event trajectories and modification of the set of the admissible event trajectories, Use of automata, Autonomous and synchronized Petri-nets, Non-stochastic timed models; Taking event things into account, Use of timed Petri-nets, Stochastic models; Performance related models, Simulation, Use of stochastic Petri-nets and Queuing networks, Multiple level description of systems dynamics; Aggregation, Modular/hierarchical controller decomposition, Use of coloured Petri-nets and modular synthesis of Petri-nets, PLC net: Controller Implementation. (L38, T2, P6, A4 =45).

PR506 Manufacturing Processes (3 credits)
Course Content: Physical properties of material; Metal alloys- structure and heat treatment, Structure properties, processing and applications; Steel, Non-ferrous metals and alloys, Polymers, Ceramics; Composite materials, Forming and shaping processes; Rolling, Forging, Extrusion and drawing; Sheet metal forming, Powder metallurgy; Forming and shaping of plastics and composite materials, Rapid prototyping; Forming and shaping of ceramics and glass, Surface treatment; Coating, Texturing, Competitive aspects of manufacturing; Selection of materials, Product design, Selection of manufacturing processes, Process capabilities, Manufacturing costs, Value engineering. (L33, T3, P12, A6 =45).

PR 507 Industrial/Organizational Psychology (2 credits)

PR508 Product Design for Production (2 credits) Prerequisite: CE201
Course Content: General introduction; Design cycle, Concurrent engineering, Design for production, Design for manufacture; Requirements analysis, Material selection for machined, cast, die cast, injection moulded, powder metal and sheet metal parts, Selection of manufacturing process, Prototype development, Rapid prototyping methods, Design for assembly; Manual assembly; Handling & insertion, Automatic assembly, Specialized tooling & equipment, Assembly cycle times, Rules on design for assembly, Design of quality assurance system, Design of production systems, Financial feasibility; Cost estimation, Fund for investment, Cost recovery, Markets, Industrial case studies. (L25, T2, P2, A4 =30).

PR509 Plant Layout & Plant Management (3 credits) Prerequisite: PR302
Course Content: Importance of plant layout & plant management; Overview of the plant layout problem, Effects in different manufacturing environments such as general logistic problem in other environments, Plant location, Classification of layout & location problems, Functions of plant management, Analysis techniques of layout planning; Systematic layout planning, Effects of material flow, Types of layouts; effects of materials handled, Environmental factors, Case study on plant management; Elements of plant management, Machine, man & other resources availability planning, System reliability, System upgrading (Case 1: example- Steel Corporation, Case2: example- power generation plant at Kelanitissa), Plant layout in automated systems, Computerised plant layout methods; Adjusting for qualitative specifications. (L36, T3, P8, A4 =45).
PR510 Manufacturing Technology III (3 credits)
Course Content: Computer-integrated manufacturing systems (CIMS); CAD/CAE/CAM/CAPP Computer simulation of manufacturing processes & systems, Cellular manufacturing & FMS, JIT Production, Communication network / AT, Non-traditional machining processes; ECM, EDM, Wire EDM, laser beam, plasma cutting & welding; Economics of non-traditional machining, Machining; Process monitoring dynamometry/machine tool dynamics, Design & manufacture of die moulds for plastics, Rubber & die casting, Abrasive machining & finishing operations; Grinding process; Grinding operations & machines; Design considerations; Economics (L34, T3, P12, A4 =45).

PR 511 Design for Manufacture (3 credits) Prerequisite: PR203

PR512 Principles of Artificial Intelligence (3 credits)
Course Content: Introduction to artificial intelligence, Problem solving, knowledge and reasoning, acting logically, First order Logic, planning and acting, making simple decisions and making complex decisions, exception, application of AI in robotics, software tools for AI programming language, LISP, and case study ( L30, T4, P18, A4=45).

PR513 Modeling and Control of Mechatronic Systems (3 credits); Prerequisite: PR306

PR515 Financial and Management Accounting for Engineers (3 credits)
Course Content: Introduction to Financial accounting; Purpose of Financial accounting, Key terms in Financial accounting, Trading profit and loss accounts, Trial balance; Adjustments; Stock, depreciation, taxation, accruals and prepayments, bad and doubtful debts, Balance sheet, Manufacturing accounts, Company accounts, Financial Statements and Financial Reporting; Cash flow statement, Annual reports, Ratio analysis and its importance; Profitability ratios, Liquidity and gearing ratios, Limitations of ratio analysis, Valuation of future cash flows; Time value of money; Future value and compounding, Present value and discounting, Capital Investment Decisions, Investment analysis, Financial sources, Risk and return, Break-even analysis, Introduction to Management Accounting; Types of costs and cost centers; Fixed/Variable/Marginal costs, Full/Absorption/Marginal Costing, Budgeting; Flexible, operating, objectives-based, and capital budgets, Actual versus planned variance (L40, T3, A4=45).
PR516 Sustainable Manufacturing
Course Content: Introduction to Sustainable Manufacturing, Challenges for sustainable manufacturing, Significance of sustainable product design and manufacture, Need for sustainability science and its applications to product design and manufacture, Product design for sustainability, Processes for sustainability, Selection of sustainability measures for manufacturing, Future directions of sustainable Manufacturing, Case study (L38, P3, A4=45).

GENERAL ELECTIVE COURSES (Subject to periodic revision)

CP551 Sustainable Development (3 credits)

PR507 Industrial & Organizational Psychology (2 credits) Prerequisite: PR408

EF501 The Engineer in Society (2 credits)

EF503 Critical Thinking and Writing Skills (2 credits)
**EF505 Management in Practice with Case Studies (3 credits)**

**EF507 Government and Politics of Sri Lanka (2 credits)**

**EF508 Political Issues in Sri Lanka (2 credits)**

**EF509 Engineer as an Entrepreneur (3 credits)**

**EF510 Technology and Economic Development (3 credits)**

**EF511 Social Project (2 credits)**
Course Content: The student shall work alone or in a small group on a theme selected by the student (or the group of students) under the general guidance of a supervisor (or supervisors). The theme will include a social objective, and the mode of study of the theme can be wide-ranging, such as a photographic exposition of poverty, a documentary movie on the social cost of development projects, a televised show of human right violations of people live by the dumping ground, a multimedia presentation on a selected social theme, and a report on union activities towards uplifting of a selected group of people. A project proposal, with the theme of the project clearly defined, its objective clearly stated,
and the methodology of the project carefully laid down by the student (or the group of students), must be submitted to
the supervisor (or supervisors) before the commencement of the project. (Proj60 =30).

**EF512 Rural Economic Development and Technology (2 credits)**
Course Content: Introduction to the need of rural economic development in Sri Lanka. Opportunities and limitations.
Place of technology. Need of non-obtrusive and eco-friendly technology. The role of indigenous and appropriate
technologies. Case studies, such as appropriate energy technology for rural sectors. Proposals from student groups
(preferably area-based groups) on contribution of engineers towards rural economic developments. Critical study of post-
independent rural economic development projects undertaken in Sri Lanka. Critical study of successful rural economic
development projects in Southeast Asia and other regions. Complete project proposals for rural economic development.
(L21, T4, A10 =30).

**EF513 Introduction to Music (2 credits)**
Course Content: Classical Indian and Western systems. Important musicians including great composers of both systems
and their work. Musical instruments of Western and Indian systems. Trends in Sri Lankan music. Practical in instrumental
or vocal music. (L18, P20, A4 =30).

**EF514 Cinema and Television (2 credits)**
Course Content: Introduction to cinema and television. Basics of cinema language – Single camera technology. Technical
aspects of cinema and television. Cinema and television in mass communication and advertising. Aesthetic, sociological,
and anthropological aspects of cinema and television. (L23, Proj10, A4 =30).

**EF515 Theatre and Drama (2 credits)**
Course Content: Ritualistic theatre folk drama. Greek and Roman theatre. Medieval, renaissance and Elizabethan
theatre. The realistic and naturalistic theatre of Europe. Modern experimental theatre. Oriental theatre with special

**EF516 Painting and Sculpture (2 credits)**
Course Content: Introduction to painting and sculpture. Understanding the human body, nature painting &
sculpture. Main traditions of the West and the East. Traditional Sri Lankan painting and sculpture. Aesthetic, social and

**EF517 Project in Fine Arts (1 credit)**
Course Content: A group of students will carry out a project in one of the areas of fine arts under the general guidance of
a supervisor (or supervisors). A project proposal, with the objective of the project clearly stated and the methodology of
the project carefully laid down by the group of students, must be submitted to the supervisor (or supervisors) before the
commencement of the project. (Proj30 = 15).

**EF519 Written English for Communication (1 credit)**
Course Content: Communication through writing: introduction to communication, effective communication, technical
communication and objective communication. Official correspondence: letters for job application, curriculum vitae, and
other official letters. Technical writing: research proposals, abstracts, feasibility reports, project reports etc. (L10, A10
=15).
EF520 Effective Communication in English through Speech (1 credit)
Course Content: Presentation skills: how to make a good presentation; organization of facts, structure, time management, effective contact with audience, good manners etc. Interviews: Preparation, points to note and to avoid. Effective speech: accepted ways of oral communication at formal level; meetings, telephone conversations, greeting, departing etc. Dialogue and general communication: general communication at informal level, talking on general topics, and conversation with peers. (L7, Proj13, A3 =15).

EF522 Sri Lankan Technology (3 credits)

EF524 Business Law (3 credits)

EF526 Marketing and Financial Management (3 credits)

EF528 Introduction to Digital Art (3 credits)
ANNEXURE VI

ENGINEERING EDUCATION AND UNIVERSITY OF PERADENIYA
ENGINEERING EDUCATION AND UNIVERSITY OF PERADENIYA

THE NATURE OF ENGINEERING

Engineering has been described as the art of the practical application of scientific principles to "directing the great sources of power in nature for the use and convenience of man". It involves men, money, material, machine and energy and "requires above all the creative imagination to innovate useful applications of natural phenomena". It also has the character of a never-ending search for "newer, cheaper, better means of using natural sources of energy and materials to improve man's standard of living and to diminish labour".

EVOLUTION OF ENGINEERING EDUCATION

Academic training of engineers, as we know it today, took a long time to gain recognition and acceptance due to resistance from within the profession as well as from the universities. Even in Britain, the cradle of the Industrial Revolution, the official history of the Institution of Electrical Engineers (1871 - 1971) records that "the traditional English road to a professional career [in the nineteenth century] did not lie through a university but through apprenticeship: 'learning by doing'. For the solicitor this meant an articled clerkship; for the doctor, 'walking the wards'; for the civil engineer pupillage in the drawing office and on the site; for the mechanical engineer 'going through the mill'. 'Premium apprentices' heading for a professional career, were marked off from apprentices on the way to becoming skilled tradesmen by the fees that their parents paid and by the expectation that they would study in their spare time. Engineering employers as a rule were apt to be scornful of academic achievements and young men who had them might find it politic to keep them hidden. The idea that engineers might qualify by examination was far, very far indeed, from the minds of mid-century employers although Sir John Rennie, a most eminent civil engineer, said as early as 1867, speaking of his own profession, that qualification by examination was 'the only method by which it can take rank among the learned professions'”.

In the mid-nineteenth century the proposal to teach engineering in the universities in Britain also ran into opposition from some conservative academics who felt that engineering was far too empirical to be "a proper department in which a degree should be conferred". Radical changes in thinking have taken place since then. In today's complex technological society, graduate engineers form an overwhelming majority of the membership of the professional engineering institutions all over the world. It has been predicted that before long an engineering degree will be a basic requirement for the Corporate Membership of such bodies.

ENGINEERING EDUCATION IN SRI LANKA: A BRIEF HISTORY

In the development of British colonial territories the teaching of medicine was generally given priority over other forms of tertiary education. This policy led to the establishment in 1870 of a Medical College in Colombo as an "elementary school" for training medical assistants. The College began to expand rapidly and by 1888 it was sufficiently well developed for its LMS (Licentiate of Medicine and Surgery) to be recognised by the General
Medical Council of Great Britain. Thus it had become a college for training fully qualified doctors. In 1874, a Council of Legal Education (later Law College) was created to produce lawyers. In a similar development a Technical School was founded in Colombo in 1893 to train sub-professional engineering personnel. It was renamed the Ceylon Technical College in 1933. Unfortunately the colonial authorities did not have a clear policy on technical education, and in consequence the college went through many vicissitudes being nearly downgraded to an Industrial School at one stage.

Fortunately engineering education received a welcome stimulus from an unexpected quarter. This was the Ceylon University College, which had been founded in 1921 to prepare students for the University of London’s external degrees in Arts and Science. In 1923 the college announced a scheme to award two scholarships every year to promising Science graduates to follow Engineering degree courses in Britain and practical training thereafter. This was to prove a significant step in producing engineering graduates, some of whom would, in due course, rise to the highest levels in the profession and in academia. The Government ended the Engineering Scholarship Scheme in 1932, after a total of 20 awards had been made.

In the meantime the Ceylon Technical College, where the main activity was the preparation of students for the Associate Membership Examinations of the three major professional institutions in Britain, was being developed steadily. In 1942 it was able to reach University College rank when it received provisional recognition from the University of London to prepare students for its external degree in Engineering. Owing to the prevailing wartime conditions the requirement of an inspection of the teaching facilities was waived.

On 1 July 1942 the University of Ceylon –the first university in the country– was established by the amalgamation of the Ceylon University College and the Ceylon Medical College. At the inception there were four faculties: Arts, Oriental Studies, Science and Medicine. Although the need for Engineering was recognized, planning was deferred owing to the shortage of funds in the stringent wartime economy. The availability of degree courses at the Ceylon Technical College was also another reason for lowering the priority of Engineering. However, in December 1949 a crisis erupted at the Ceylon Technical College when the University of London made known its intention of reconsidering the provisional recognition in view of some serious shortcomings in the college. This development caused great concern, as continued recognition appeared to be in doubt. The government responded to the crisis by requesting the University of Ceylon to set up a Faculty of Engineering by 1 July 1950. Ill prepared though it was, the University accepted the challenge and with this decision the degree courses at the Ceylon Technical College were wound up.

THE FACULTY OF ENGINEERING

The permanent home of the new Faculty was to be in the residential campus in Peradeniya, but until the buildings were ready it had to be located in Colombo. For the time being, therefore, it had to make use of the laboratory facilities at the Ceylon Technical College, supplementing them with its own equipment. It had three departments of study: Civil Engineering, Electrical Engineering and Mechanical Engineering.

The site for the Engineering complex was a 6-hectare block on the left bank of the Mahaweli River across which a bridge was built for access to the rest of the Campus. The entire project was planned by the staff of the Faculty and the University architects without any significant expatriate expertise. The laboratories, classrooms, library and other facilities were designed for quick and easy access, and ample provision was made for future expansion. When the project was completed in 1964 the move from Colombo took place. The facilities had a floor area of about 18,500 square metres, and 11,200 square metres have been added since then.
In 1942, when degree courses commenced at the Ceylon Technical College, the number of professional engineers in the country was estimated to be around 210, and 104 graduated in the period 1942-50 when the College had its link with the University of London. On the basis of these figures the intake of freshmen to the Faculty in 1950 was fixed at 25. This figure was steadily increased over the years, reaching 150 in 1964, the year of the move to Peradeniya. On request from the UGC the intake was raised to 250 in 1978 and is currently 415. From its inception in 1950 to 1971, when a second Faculty of Engineering was opened at Katubedde, this Faculty was the only source of supply of graduate engineers in the country. During the period 1950-53 when the Faculty undertook the task of completing the instruction of Ceylon Technical College undergraduates affected by the termination of the degree courses, 92 graduated with the University of London degree. The University of Ceylon's BScEng degree was first awarded in 1953, and in the period 1953-2007, 8956 students have obtained this degree.

Steady expansion and diversification of the Faculty have taken place since the move to Peradeniya and there are now seven departments of study: Civil Engineering, Electrical and Electronic Engineering, Mechanical Engineering, Production Engineering, Chemical and Process Engineering, Engineering Mathematics and Computer Engineering. The number of professorial chairs in the Faculty is eleven –three each in Civil Engineering, and Electrical & Electronic Engineering, two in Mechanical Engineering and one each in Engineering Mathematics, Production Engineering and Chemical Engineering.

The Faculty offers a full-time undergraduate programme leading to the degree of Bachelor of the Science of Engineering (BScEng). This is of four years duration, the first year being common to all students and the last three years devoted to specialization in one of the branches of engineering. Coursework (laboratory, design and field work), projects and industrial training form an essential part of the undergraduate course. The undergraduate programmes of the past, with an examination at the end of each academic year, have been replaced by programmes based on the Semester System with effect from 2002, with continuous assessment and examinations held every semester. There are examinations at the end of each Semester. The students seeking Honours are required to follow additional courses of study in the final year.

The Faculty offers postgraduate programmes leading to Postgraduate Diploma in specialized fields of Engineering (PGDip), degrees of Master of the Science of Engineering (MScEng), Master of Philosophy (MPhil) and Doctor of Philosophy (PhD).

In spite of having to contend with many difficulties similar to those experienced by the universities of other developing countries, the Faculty provides an academic environment of the highest quality and has maintained a gratifying record of teaching, research and public service, the traditional functions of institutions of higher education. Research done in the Faculty has been published at home and abroad, while its consultancy and laboratory services have been provided over the years to private and public sector establishments in the country.
WOMEN IN ENGINEERING

In Sri Lanka there have never been legal barriers to women aspiring to higher education, and from the very beginning they were free to seek entry to any department of study in the Medical, Law, Technical and University Colleges. But the traditional conservatism that prevailed in the early years stood in the way of professional careers, and many of them opted for courses in the Arts and the Humanities. These attitudes began to change in the post-war milieu and women began to spread out into all other fields. The Faculty of Engineering, which had been regarded as the proud preserve of men, admitted its first woman undergraduate in 1960 and she went on to specialize in Civil Engineering. Since then the pace has quickened, and the numbers have been increasing steadily, with Civil Engineering remaining the most popular. Women engineers have now become well established in the profession, and some have risen to important positions at home and abroad.

THE UNIVERSITY OF PERADENIYA

The University of Ceylon, the first university in the country, was established in 1942 under the Ceylon University Ordinance (No. 20 of 1942) as a unitary, residential and autonomous corporation. The seat of the university was to be Peradeniya, to which it moved in 1952. With the passage of time the demand for higher education kept increasing, and more universities of different characters were created. In 1967 the government decided to separate the two wings of the University of Ceylon to create two independent universities. After this bifurcation the Peradeniya wing was named University of Ceylon, Peradeniya. In 1972 there was a complete reorganization of the university system by the University of Ceylon Act No. 1 of 1972, which was passed in January 1972. All the existing universities were merged into a single monolithic University of Ceylon, administered from Colombo. The original universities became constituent campuses, and Peradeniya was given the name University of Ceylon, Peradeniya Campus. When Parliament adopted a Republican Constitution later in 1972, the country’s name was changed to Sri Lanka, and this university became known as University of Sri Lanka, Peradeniya Campus. Another reorganization of the University system took place in 1978. By the University Act No. 16 of 1978 (passed in December 1978), the pre-1972 administrative system was restored, creating separate Universities enjoying self-governing powers, under the overall direction of the University Grants Commission. This Act conferred on this university the name of University of Peradeniya. Although many changes have taken place in the administrative structure of the university, it still retains its residential character. The original planning of the campus was based on an estimated student population of 1000, but at present there are about 8000 students on roll, well in excess of the available residential capacity. An expansion of the residential facilities is now going on, and progress will depend on the availability of funds. With its eight faculties – Agriculture, Allied Health Sciences, Arts, Dental Sciences, Engineering, Medicine, Science and Veterinary Medicine & Animal Science – Peradeniya remains the largest and oldest university in the country.