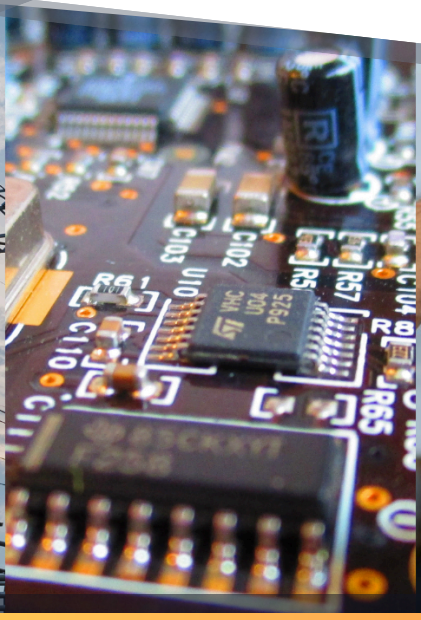
HANDBOOK

YEAR
2025



DEPARTMENT OF ELECTRICAL, ELECTRONIC & TELECOMMUNICATION ENGINEERING

FACULTY OF ENGINEERING

GENERAL SIR JOHN KOTELAWALA DEFENCE UNIVERSITY

www.foe.kdu.ac.lk

DEPARTMENT OF ELECTRICAL, ELECTRONIC AND TELECOMMUNICATION ENGINEERING

FACULTY OF ENGINEERING

GENERAL SIR JOHN KOTELAWALA DEFENCE UNIVERSITY

STUDENT HANDBOOK

2025

Handbook Committee

Capt(L) RT Hettiarachchi	: Chairman
Eng. (Mrs.) PN Karunanayake	: Member
Mr. EHADK Hewadikaram	: Member
Eng. (Ms.) K Vidanapathirana	: Member

Published by:

Department of Electrical, Electronic and telecommunication Engineering
Faculty of Engineering,
General Sir John Kotelawala Defence University,Kandawala Road,
Ratmalana 10390, Sri Lanka.
March 2025

Vision and Mission

Vision

To be an internationally recognized center of excellence in Sri Lanka for higher education, research and development activities in the broad fields of Electrical, Electronic, Telecommunication and Biomedical Engineering.

Mission

To produce highest quality graduates with learner centered educational experience, through professional and research centered degree programmes in Electrical, Electronic, Telecommunication and Biomedical Engineering.

Message from the Head of the Department

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I warmly welcome you to our Department of Electrical, Electronic, and Telecommunication Engineering.

The Department of Electrical, Electronic, and Telecommunication Engineering is dedicated to providing a comprehensive education that combines traditional and cutting-edge engineering principles. Our focus is on fostering a learner-centered environment, emphasizing professional and research-oriented degree programs. We aim to equip our students with innovative design skills, IT proficiency, humanities knowledge, and management capabilities crucial for their future careers.

This mission is upheld through the dedicated efforts of our academic, academic-support, and non-academic staff, as well as the support of our students who actively participate in both academic and extracurricular activities. Our department prides itself on a strong sense of unity and inclusivity, creating a familiar atmosphere that fosters personal and professional growth.

Upon graduation, students are prepared to pursue various paths in fields of Electrical, Electronic, Telecommunication, or Biomedical Engineering, with opportunities for postgraduate research. While our faculty provides guidance and support, it is the students' genuine efforts, commitment, and positive attitude that ultimately shape them into the engineers our society needs.

I wish all students the best on their journey within the department, confident that they will maximize the opportunities presented to them and contribute positively to both their personal growth and the development of our society.

RT Hettiarachchi, USP
Captain(L) Sri Lanka Navy
Head of the Department

CONTENTS

Chapter 1

Introduction

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1.1 Introduction to the Department

The Department of Electrical, Electronic and Telecommunication Engineering is the biggest department in the Faculty of Engineering at the KDU. The Department offers cutting-edge technology in engineering education to produce qualified engineers in Electrical, Electronic, Telecommunication and Biomedical Engineering.

The Department currently offers the following undergraduate degree programmes

1. Bachelor of the Science of Engineering Honours in Electrical and Electronic Engineering
2. Bachelor of the Science of Engineering Honours in Electronic and Telecommunication Engineering
3. Bachelor of the Science of Engineering Honours in Biomedical Engineering

The Department has well-equipped set of laboratories with updated resources to support undergraduate and postgraduate studies. The Department has a team of qualified academic staff to conduct its degree programmes. Experienced and qualified engineers from Industry also contribute in the conduct of the programmes.

The Department facilitates the Faculty of Graduate Studies (FGS) of KDU in conducting the following postgraduate degree programmes:

1. Master of Science in Electrical and Electronic Engineering
2. Maters of Science in Electronic and Telecommunication Engineering
3. Master of Science in Biomedical Engineering

In addition, the Department collaborates with the FGS in conducting research degree programmes leading to MPhil and PhD degrees.

The Department is dedicated to preparing the next generation of engineers who will shape the future. Students will have the opportunity to study diverse fields through a comprehensive curriculum of theory, laboratory experiments, hands-on projects and industrial training, spanning over four academic years.

The department regularly updates these programs to be in-line with the latest technological advancements and industrial trends. The department maintains strong collaborations with industry partners and research institutions.

1.2 Why Study in the Department of Electrical, Electronic and Telecommunication Engineering?

Electrical and Electronic Engineering primarily focuses on the broad areas of electrical power & energy, electrical construction and industrial automation. This is the vital branch of engineering that supports the country's economy, with wide scope open for further exploration and development.

Electronic and Telecommunication Engineering primarily focuses on the broad areas of modern communication & networking, Embedded Systems, artificial intelligence and electronic product design. This is a fast developing branch of engineering that shapes the entire engineering sector.

Biomedical Engineering primarily focuses on the broad areas of medical instrumentations & diagnostics systems, tissue engineering, medical imaging and medical robotics. This is a crucial branch of engineering that supports modern medical practices and rehabilitation engineering.

Graduates passing out from these programmes are highly sought after both locally and internationally.

1.3 Career Opportunities

Typical destinations for the graduates of the four degree programmes spread over diverse sectors including manufacturing industry, Construction industry, Utility industry, service sectors, Transport industry, Biomedical industry, research institutions, ICT sectors, academic establishments, banking and financial sectors, defence services, Entrepreneurial ventures, etc. The Department provides the undergraduates a broader multidisciplinary experience across the three degree programmes.

Officer cadets graduating from the Department are mainly employed as Engineering Officers of the Sri Lanka Signal regiment, Sri Lanka Electrical and Mechanical Engineering regiment of the Sri Lanka Army, Tech Signal Branch and Air Traffic Control Branch of Air Force and Electrical and Electronic Engineering branch of the Sri Lanka Navy where they engage in maintenance and

development of Ground, Naval and Air Electrical and Electronic assets of the Sri Lanka Armed Force.

1.4 History of the Department

The Department of Electrical, Electronic and Telecommunication Engineering at General Sir John Kotelawala Defence University in its present form was established in year 2012 as an upgraded department of then Electrical and Electronic engineering department. The department has continuously evolved to meet the challenges of the engineering industry and the ever-changing needs of society.

The following Heads of the Department have contributed to the development of the department over respective duration of their tenure.

LCdr (L) WMAV Fernado	15.06.1997 – 01.05.1998
LCdr (L) N Kuruparan	02.05.1998 – 06.04.2003
Cdr (L) DNA Jayamaha	07.04.2003 – 25.08.2004
Cdr (L) PDKN Peiris	26.08.2004 – 22.01.2006
Cdr (L) AMSP Alahakoon	23.01.2006 – 14.03.2006
Cdr (L) PS Athukorala	05.03.2006 – 17.12.2006
Capt (L) N Kuruparan	18.12.2006 – 31.05.2009
Capt (L) KK Bombugalage	01.06.2009 – 04.04.2012
Capt (L) SU Dampage	05.04.2012 – 01.03.2015
Capt (L) Gunathilaka	02.03.2015 - 17.01.2017
Cmde (L) JU Gunaseela	18.01.2017 – 12.07.2020
Capt (L) KK Dadallage	13.07.2020 – 20.10.2022
Capt (L) WPC Weerawardhana	21.10.2022 – 25.01.2024
Capt (L) RT Hettiarachchi	26.01.2024 – up to date

From its inception, the department has been dedicated to nurturing aspiring engineers, providing them with a solid foundation in electrical, electronic and telecommunication engineering principles and practices. Over the years, the department has grown steadily, expanding its faculty, infrastructure, and academic programs to offer a comprehensive education that encompasses theoretical knowledge and practical skills.

The department's success is also reflected in the achievements of its alumni, who have made significant contributions to various sectors and their accomplishments serve as a testament to the quality of education and training provided by the Department.

The Department is committed to continue through its exciting journey of exploration, discovery, and innovation in Electrical and Electronic Engineering, Electronic and Telecommunication Engineering and Biomedical Engineering at General Sir John Kotelewala Defence University.

Chapter 2

Department Organization and Facilities

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2.1 Department Organization

Over the years, the Department has effectively contributed to the overall academic programs of the faculty at undergraduate level through its significant input to the common core subjects. The planning and execution of activities of the Department are performed under three academic groups:

1. Electrical and Electronic Engineering
2. Electronics and Telecommunication Engineering
3. Biomedical Engineering

2.2 Department Structure

The department is headed by the Head of Department Electrical, Electronics and Telecommunication Engineering. Under him, Academic staff, Academic support staff and Non-Academic staff function with assigned responsibilities. Three programme coordinators are responsible for Electrical and Electronics, Electronics and Telecommunication and Biomedical Engineering degree programs. Each degree has four level coordinators under respective programme coordinators.

2.3 Contact Information

Address:

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Head of the Department:

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Phone: +94-71-0219258

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2.4 Staff

The academic staff of the Department consists of highly qualified individuals in a wide range of specializations. Their academic backgrounds, teaching experiences, research capabilities and industrial exposure are the main strengths that contribute to the present dynamic role played by the Department in the Faculty. Over the past decade, the Department has been successful in establishing significant contacts with local industry and international organizations through its collaborative research & development programmes, continuous professional development courses & outreach activities and consultancy services.

2.4.1 Academic Staff

Head of the Department

Capt (L) RT Hettiarachchi, USP

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Senior Professor

Eng. Prof. J Rohan Lucas

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Professor

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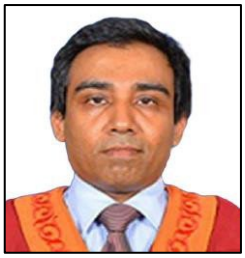

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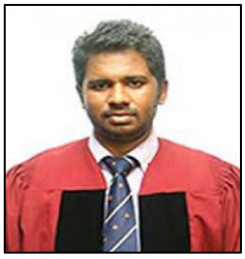

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2.4.2 Visiting Staff

EE Degree Programme

Eng. Prof JP Karunadasa PhD (Manchester), MSc (Manchester), BSc Eng (Moratuwa)

Dr. HMW Banda PhD(NTU), M.Eng.(Thailand), BSc Eng (Peradeniya)

Eng. HK Illeperuma MEng(Moratuwa), MBA (Colombo) BSc Eng (Moratuwa)

Eng. SW Kumarawadu MEng(Moratuwa), BSc Eng (Moratuwa)

Eng. HM Ravindu T Bandara BSc Eng (Moratuwa), MPhil (Reading)

Mr. AAJ Gunasekara BSc. Eng Hons (KDU), PGDip (Moratuwa), PhD (Reading)

ET Degree Programme

Dr. S Thayaparan PhD (Hong Kong), BSc (Peradeniya)

Dr. Upeka Premarathne PhD (Melbourne, Australia), M.E.Sc. (Western, Canada), BSc. Eng. (Moratuwa)

Dr. Ranga Rodrigo PhD (Western, Canada), M.E.Sc. (Western, Canada), B.Sc. Eng. Hons. (Moratuwa)

Dr. Sumudu Edirisinghe BEng (Hons) (Essex), PhD (Essex)

Dr. Sampath Perera PhD (Germany), M.E.Sc. (Western, Canada), B.Sc. Eng. Hons. (Moratuwa)

Dr. SK Wijesekara PhD (Chulalongkorn, Thailand), MSc (AIT, Thailand)

Dr. HHS Gayan PhD (Melbourne, Australia), MSc. (Moratuwa), B.Sc. Eng. Hons. (Moratuwa)

Dr. Uditha Wijewardane PhD (Finland), MSc (Thailand), BSc. Eng. (Moratuwa)

BM Degree Programme

Other Faculty Collaborations

Prof. Nishantha Kumarasinghe MBBS (SJU), PhD(Newcastle)

Dr. LS Kaththiriarachchi MD (Russia), PGCert.MedEd (PGIM, UoC), PG Dip Med Physiology (PGIM, UoC), PhD (USJ)

Mr. Isuru Abeykoon BSc (UoSJ) MPhil (UoK) (Reading)

Prof. Kalpa W. Samarakoon PhD. (Korea), M.Sc. (Colombo), B.Sc. Bio-Science (Colombo)

Dr. SHNP Gunawickrama PhD (Bergen) MSc (Colombo) BSc (Ruhuna)

Dr. AI Kuruppu PhD (Nottingham, UK) CBiol (RSB, UK)

Dr. N Rathuwadu PhD (Chem) (USA), BSc (Chem) Sp (Colombo)

External Visiting Staff

Dr. A Karunarathne. PhD (UK)

Ms. Umaya Balagalla BSc Eng Hons (KDU), M.Phil (Reading) (USJP)

Dr. AI Rajapaksha BSc (Hons) (Peradeniya), PhD (UOM, Australia)

2.4.3 Non-Academic Staff

HOD Office Staff

CPO Jayathilake
LREM AAS Amarasinghe
LEM AWGN Sandeepa

Department Clerical Staff

Mr. TSA Silva (Senior Staff Assistant)
Miss SAAL Subasinghe (Temporary Management Assistant)

Technical Officers

FCPO S Welahetti
FCPO MDES Madawala
Mr LAT Nilanjan
Ms. TWHGN Abeylath
Mr. DSRBM Rathnasiri

LAB Attendants

LEM RMSS Madushanka
LREM GMSE Gajanayake
LEM HADHM Fransisku
Mr. MSN Lakmal
Mr. AARK Krishantha
Mr. WMS Alwis
Mr. HAR Dayan

Other Staff

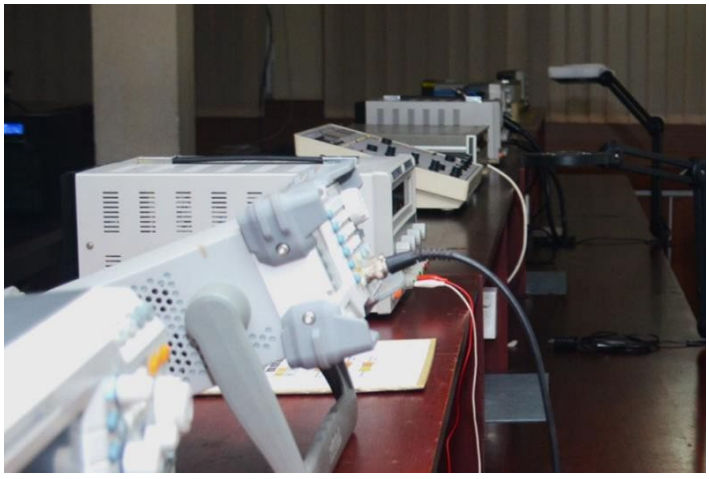
Mr. IGH Rukmal

Laboratory Facilities

2.5.1 Integrated Power Engineering Laboratory

The laboratory has been set up mainly to teach the practical aspects of electrical power systems and Electrical machines to undergraduate students. Laboratory Equipment and Workstations are Lab Volt Electrical Setup, Power Electronic Trainings Setup and DC Motor Drive Setup

Electrical Measurement and Electronic Instrumentation Laboratory



The laboratories have been set up mainly to teach the practical aspects of the principles of electricity and electrical measuring instruments to undergraduate students. This is also used for research and development activities of the department.

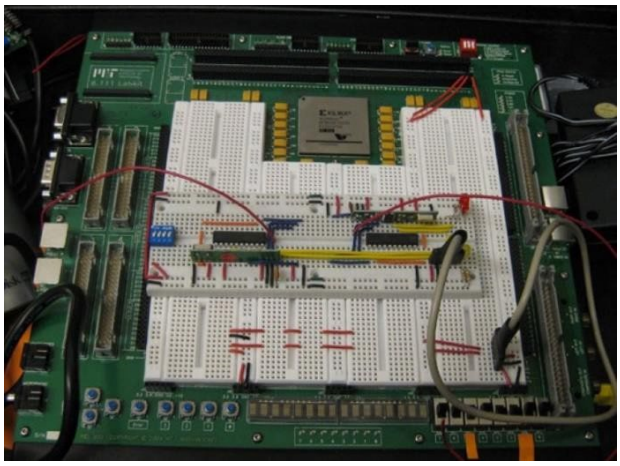
High Voltage Laboratory

The laboratory is one of few modern High Voltage Laboratories available in the island. High voltage break-down and testing are extensively carried out in the laboratory by the researchers and students Laboratory setups are DC High Voltage Breakdown Tester, High Voltage Tester and Impulse Voltage Generator.

Communication Laboratory

The laboratory facilitates sophisticated equipment for the research and development aspect as well as the practical aspects in the field of fiber optics, radar engineering, wireless communication, etc. Laboratory Equipment and Workstations are Radar setup and Microwave test bench.

Digital System Design Laboratory



The laboratory is available with plentiful equipment for students and researcher to sharpen their knowledge and experience on digital electronics and system designing. Laboratory Equipment and Workstations are FPGA Programming Setup and IOT Setup.

Robotics Laboratory

The Robotics Laboratory has been set up mainly to teach the practical aspects of the principles of Robotic Engineering to undergraduate students. This is claimed to be one of the best and modern Robotics laboratories in the country. This is also used for research and development activities of the department. Laboratory Equipment and Workstations are Robot Arm Simulator, 3D Printer and PLC Automation and Control Learning Setup.

Medical Instrumentation Laboratory

The Medical instrumentation laboratory has been set up mainly to provide practical knowledge and hands on experience on medical equipment to the biomedical engineering undergraduate students. This laboratory is used for research and development purposes, practical sessions and for lectures regarding medical instrumentation. Laboratory Testing Facilities are Hands on experience on medical equipment, ECG, EMG, EEG Signal Acquisition and Physiology Signal Analyze.

Tissue Engineering Laboratory

The Tissue engineering laboratory has been setup mainly to facilitate the research and development aspect as well as the practical aspects of the tissue engineering and biomaterials, to the undergraduate students. Laboratory Testing Facilities are Tissue Studies and Biomaterials Testing.

Biomechanics Laboratory

The Biomechanics laboratory has been setup mainly to provide the practical knowledge and to facilitate the research aspect of biomechanics and prosthetic designing areas, to the undergraduate students. Laboratory Testing Facilities are Motion Analysis, Gate Analysis and Biomechanics analysis.

The 24/7 Laboratory

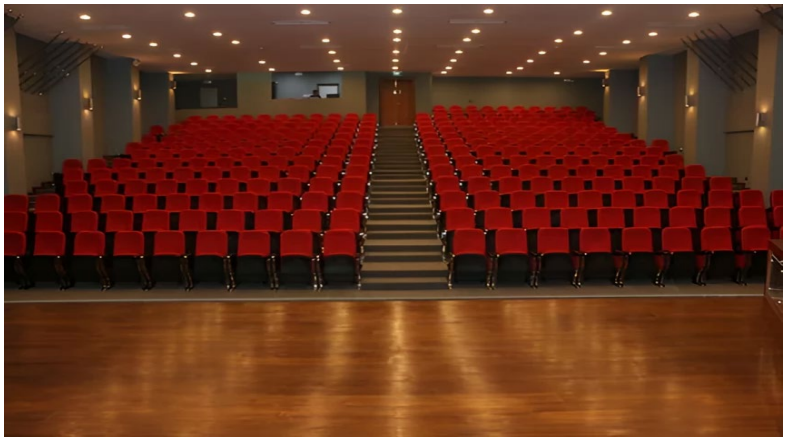
The 24/7 research laboratory has been set up mainly to cater to high-end research by postgraduate students and research fellows. This facility is also open to undergraduate students of the department. The laboratory is equipped with modern equipment and design/ simulation tools. It is built to give a rich working environment with all the necessary support facilities. The laboratory is open round the clock.

Other Facilities

Library

KDU library network consists of the Main Library, the Faculty Libraries of the Faculty of Medicine (FOM) and the Faculty of Allied Health Sciences (FAHS) and the Southern Campus Library. Further, the entire library network is Wi-Fi enabled with high-speed internet connection to allow the students to access the internet, and it provides electronic access to full text databases to facilitate research activities of the University. Also, it provides internet-accessible computers to access Electronic Library Catalogues and various web pages related to research activities. Inter library loan, document delivery service, display of new arrivals and photocopying are some of the facilities provided for its users to meet the information needs of both students and the staff.

2.7.1 Modern Auditorium



The auditorium is designed with a focus on comfort and modern technology. It has high-

definition audio-visual systems that can accommodate a variety of presentations. Additionally, it features a large digital screen, and LED lighting to create an immersive viewing experience. It also provides free wi-fi access and charging stations to help keep everyone connected. The facility also has comfortable seating.

2.7.2 Sports

KDU places a strong emphasis on student participation in sports activities, considering them an essential component of holistic development. The university provides state-of-the-art facilities and equipment for various team sports like soccer, rugby, cricket, basketball, volleyball, and hockey, as well as individual sports including squash, tennis, badminton, table tennis, and swimming. Regular matches with other universities and clubs are organized for KDU teams, fostering a competitive spirit and teamwork. Additionally, the university facilitates participation in National Tournaments at appropriate levels, promoting sportsmanship and excellence among its students.

Medical Centre

Located conveniently within the university premises, the KDU medical Centre serves as a vital resource for resident students and the wider university community, offering essential healthcare services and addressing emergency medical needs. Operating round-the-clock ambulance services and daily clinics, the medical center is staffed by a University Medical Officer (UMO) supported by dedicated nurses and attendants. The UMO, in addition to primary healthcare responsibilities, holds the authority to issue medical certificates and authenticate external medical documentation, ensuring the well-being of all members of the university community.

Chapter 3

Degree Programme

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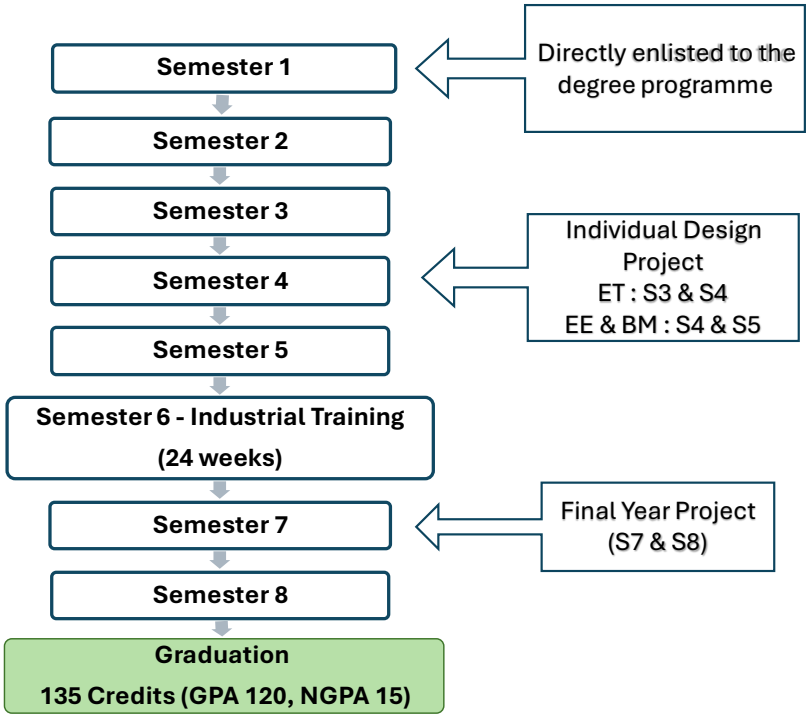
The course duration of the degree programme is 4 years (eight semesters), and an additional 6 months are allocated for military training, only for officer cadets. Presently, the department accommodates students who fall into the following categories:

- The officer cadets are permanently recruited into the armed forces.
- The commissioned officers.
- The foreign national officer cadets.
- The students who are admitted to the faculty as day scholars on a fee-levying basis.

3.1 Programme structure



All degree programs are conducted according to the "Rules for the conduct of degree programs" and "Manual of procedures for conduct of examinations" published by the examinations department KDU.

3.2 Examinations and Assessment Strategy

The performance of subject modules is evaluated by continuous assessment (CA) and end-of-semester examination (ES). The continuous assessment component of a subject module is normally carrying a weightage not less than 30% and could reach up to 100% of the total marks.

The CA of a student may be based on a specific combination including laboratory work, In-class test, quizzes, presentations, and assignments. Weightage of each of the above components used in the determination of the final grade for each course module. The eligibility of the candidates to sit for end-of-semester is based on the 80% participation of the module. At the end of semester or term, the eligible list of students of each module in that semester will be sent to the examination division by the Head of the Department. All candidates should obtain at least 35% from each of CA and WE components to pass a module. If only one of the components is passed, the student must complete only the remaining component as a repeat candidate in the next attempt to complete the module. The marks obtained for the passed component will be kept on records and taken to determine the grade at the repeat attempt. The students failing both CA and ES receive an F grade and should re-do both components to upgrade the result. The highest grade obtainable at a repeat attempt is grade "C" except when an Academic Concession has been granted.

The students have the opportunity to obtain marked answer scripts from respective lecturer. A Department level board of examination is held prior submit results to the Exam division. The results are published once the Board of Examinations chaired by the Vice Chancellor is held.

3.3 Awards

Trophy for the best graduand in Electrical and Electronics Engineering
Trophy for the best graduand in Electronics and Telecommunication Engineering
Trophy for the best graduand in Biomedical Engineering

Chapter 4

Curriculum

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4.1 Bachelor of the Science of Engineering (Hons) in Electrical and Electronic Engineering

Semester 01

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
EE1013	Fundamentals of Electrical Engineering	C	3		
ET1023	Fundamentals of Electronic Engineering	C	3		
EE1023	Mechanics and Material Properties	C	3		
EE1032	Electrical Measurements and Instrumentation	C	2		
ET1033	Fundamentals of Programming	C	3		
MA1013	Algebra and Calculus	C	3		
LE1121	English for Academic Purposes I	C		1	
MS1014	Military Studies	C			4
Subtotal Credits			17	1	4
Total credits up to Semester 1			17	1	4

Semester 02

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
EE1263	Theory of Electricity	C	3		
EE1273	Thermodynamics for Electrical Engineering	C	3		
ET1263	Digital Electronics	C	3		
ET1283	Signals and Systems	C	3		
ET1292	Data Structures and Algorithms	C	2		
MA1263	Advanced Calculus	C	3		
MH1012	Photography	HE I		2	
MH1022	Western Dancing				
LE1231	English for Academic Purposes II	C		1	
MS2024	Military Studies	C			4
Subtotal Credits			17	3	4
Total credits up to Semester 2			34	4	8

Semester 03

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
EE2013	Power Generation, Transmission and Distribution	C	3		
EE2023	Power Electronic Converters	C	3		
EE2033	Control Systems	C	3		
ET2013	Analog Electronics	C	3		
MA2013	Probability and Applied Statistics	C	3		
MH2412	Industrial Management	C	2		
MH2012	Creative Arts	HE II		2	
LE2032	Creative Writing				
LE2151	Research Writing Skills for Engineering	C		1	
MS3032	Strategic and Defence Studies	C			2
MS3044	Military Studies	C			4
Subtotal Credits			17	3	6
Total credits up to Semester 3			51	7	14

Semester 04

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
EE2263	Electrical Motors in Industry	C	3		
EE2273	Design of Electrical Installations	C	3		
EE2283	Renewable Energy Systems	C	3		
EE3043*	Individual Design Project	C	(1)*		
ET2263	Embedded Systems	C	3		
MA2263	Complex Variables and Numerical Analysis	C	3		
MH2423	Corporate Management and Entrepreneurship	C	3		
LE2261	English for Engineering Professionals	C		1	
MS4064	Military Studies	C			4
Subtotal Credits			18	1	4
Total credits up to Semester 4			69	8	18

Semester 05

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
EE3013	High Voltage Breakdown and Testing	C	3		
EE3023	Electrical Machines in Power Systems	C	3		
EE3033	Power System Protection	C	3		
EE3043*	Individual Design Project	C	3		
EE3052	Research Methods	C	2		
ET3043	Machine Learning	C	3		
ET3072	Communication Networks	C	2		
MH3412	Project Management	C	2		
Subtotal Credits			21	0	0
Total credits up to Semester 5			90	8	18

Semester 06 - Industrial Training

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
EE3261	Workplace Skills	C		1	
EE3506	Industrial Training	C		6	
Subtotal Credits			0	7	0
Total credits up to Industrial Training			90	15	18

Semester 07

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
EE4013	Power Electronic Design and Applications	C	2		
EE4023	Design of Electrical Services in Buildings	C	2		
EE4266*	Final Year Research Project	C	(2)*		
EE4033	Big Data Analytics for Smart Power Systems	TE I	3		
EE4043	Industrial Automation				
ET4023	Computer Vision				
EE4053	Power System Analysis	TE II	3		
EE4063	Building Automation Systems				
ET4033	Robotics				
MH4413	Human Resource Management and Industrial Law	C	3		
Subtotal Credits			15	0	0
Total credits up to Semester 7			105	15	18

Semester 08

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
EE4266*	Final Year Research Project	C	6		
EE4273	High Voltage Transients	TE III	3		
EE4283	Energy Systems				
ET4323	Radar Engineering				
EE4293	Electric Motor Drives	TE IV	3		
ET4273	Deep Learning				
ET4303	Autonomous Systems				
MH4423	Professional Ethics and Practices	C	3		
ET4332	Entrepreneurial Ventures and Startups	O		(2)	
ET4372	Convex Engineering Design	O		(2)	
Semester Total Credits			**15**	**0**	**0**
Total credits up to Semester 8			**120**	**15**	**18**

Semester 09 - Advanced Military Training for Cadets

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
MS 9074	Advanced Military Training	C			15
Total Credits by the end of Semester 9			**120**	**15**	**33**

FINAL CREDITS SUMMARY

TOTAL CREDITS	GPA	NGPA	MGPA
135	**120**	**15**	**33**

4.2 Bachelor of the Science of Engineering (Hons) in Electronic and Telecommunication Engineering

Semester 01

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
ET1013	Introduction to Engineering	C	3		
ET1023	Fundamentals of Electronic Engineering	C	3		
ET1033	Fundamentals of Programming	C	3		
EE1013	Fundamentals of Electrical Engineering	C	3		
EE1032	Electrical Measurements and Instrumentation	C	2		
MA1013	Algebra and Calculus	C	3		
LE1121	English for Academic Purposes I	C		1	
MS 1014	Military Studies	C			4
Semester Total Credits			**17**	**1**	**4**
Total credits up to Semester 1			**17**	**1**	**4**

Semester 02

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
ET1263	Digital Electronics	C	3		
ET1273	Fundamentals of Telecommunication Engineering	C	3		
ET1283	Signals and Systems	C	3		
ET1292	Data Structures and Algorithms	C	2		
EE1263	Theory of Electricity	C	3		
MA1263	Advanced Calculus	C	3		
ID1012	Photography	HEI		2	
ID1022	Western Dancing				
LE1231	English for Academic Purposes II	C		1	
MS 2024	Military Studies	C			4
Semester Total Credits			**17**	**3**	**4**
Total credits up to Semester 2			**34**	**4**	**8**

Semester 03

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
ET2013	Analog Electronics	C	3		
ET2023	Communication Networks	C	3		
ET2032	Random Signals and Processes	C	2		
ET2042	Properties of Material	C	2		
ET2303	Individual Design Project*	C	(1)		
EE2033	Control Systems	C	3		
MA2013	Probability and Applied Statistics	C	3		
ID2012	Creative Arts	HEII		2	
LE2032	Creative Writing				
LE2151	Research Writing skills for Engineering	C		1	
MS3032	Strategic and Defence Studies	C			2
MS 3044	Military Studies	C			4
Semester Total Credits			**16**	**3**	**6**
Total credits up to Semester 3			**50**	**7**	**14**

Semester 04

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
ET2263	Embedded Systems	C	3		
ET2273	Electronic Circuits	C	3		
ET2283	Digital Communication	C	3		
ET2292	Digital Signal Processing	C	2		
ET2303	Individual Design Project*	C	3		
MA2263	Complex Variables and Numerical Analysis	C	3		
ID2423	Corporate Management and Entrepreneurship	C	3		
LE2261	English for Engineering Professionals	C		1	
MS 4064	Military Studies	C			4
Semester Total Credits			**20**	**1**	**4**
Total credits up to Semester 4			**70**	**8**	**18**

Semester 05

	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
ET3013	Wireless Communication	C	3		
ET3023	Electromagnetics and Wave Propagation	C	3		
ET3033	Digital System Design	C	3		
ET3043	Machine Learning	C	3		
ET3053	Engineering Product Design	C	3		
ET3061	Research Methodology	C	2		
ID3433	Project Management	C	2		
Semester Total Credits			**19**	**0**	**0**
Total credits up to Semester 5			**89**	**8**	**18**

Semester 06

CODE	**MODULE**	**CATEGORY**	**CREDITS**		
			GPA	**NGPA**	**MGPA**
EE3261	Workplace Skills	C		1	
ET3506	Industrial Training	C		6	
Subtotal Credits			**0**	**7**	**18**
Total Credits up to Semester 06			**89**	**15**	**18**

Semester 07

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
ET4266	Final year Project*	C	(2)		
ET4012	Internet of Things	C	2		
ET4023	Machine Vision	TE I	3		
ET4033	Robotics				
ET4043	Digital IC Design				
ET4053	Cyber Security	TE II	3		
ET4063	Computer Systems and Architecture				
ET4073	Microwave Engineering				
ET4083	Big Data Analysis	TE III	3		
EE4043	Industrial Automation				
ET4093	Optical Communication Systems				
ID4413	Human Resource Management and Industrial Law	C	3		
ET4102	Applied Information Theory	O		(2)	
ET4112	Engineering Optimization	O		(2)	
ET4122	Semiconductor Physics	O		(2)	
Semester Total Credits			**14**	**0**	**0**
Total credits up to Semester 7			**103**	**15**	**18**

Semester 08

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
ET4266	Final Year Project*	C	6		
ET4273	Deep Learning	TE IV	3		
ET4283	Power Electronics and Applications				
ET4293	Mobile Communication				
ET4303	Autonomous Systems	TE V	3		
ET4313	Embedded Firmware Development				
ET4323	Radar Engineering				
ET4332	Entrepreneurial Ventures and Startups	C	2		
ID4423	Professional Ethics	C	3		
ET4342	Analog IC Design	O		(2)	
ET4352	Reliability Engineering	O		(2)	
ET4362	Optoelectronics	O		(2)	
ET4372	Convex Engineering Design	O		(2)	
Semester Total Credits			**17**	**0**	0
Total credits up to Semester 8			**120**	**15**	**18**

Advanced Military Training for Cadets

CODE	MODULE	CATEGORY	CREDITS		
			GPA	NGPA	MGPA
MS 9074	Advanced Military Training	C			15
Total Credits by the end of Advanced Military Training					**33**

FINAL CREDIT SUMMARY

TOTAL CREDITS	GPA	NGPA	MGPA
135	**120**	**15**	**33**

4.3 Bachelor of the Science of Engineering (Hons) in Biomedical Engineering

Semester 01

Code	Module	Category	Credits		
			GPA	NGPA	MGPA
BM1013	Physics for Biomedical Engineering	C	3		
BM1022	Biology for Biomedical Engineering	C	2		
BM1032	Biochemistry	C	2		
EE1013	Fundamentals of Electrical Engineering	C	3		
ET1023	Fundamentals of Electronic Engineering	C	3		
ET1033	Fundamentals of Programming	C	3		
MA1013	Algebra and Calculus	C	3		
LE1121	English for Academic Purposes I	C		1	
MS1014	Military Studies	C			4
Subtotal Credits			**19**	**1**	**4**
Total Credits up to Semester 1			**19**	**1**	**4**

Semester 02

Code	Module	Category	Credits		
			GPA	NGPA	MGPA
BM1263	Human Anatomy and Physiology	C	3		
BM1273	Computer Aided Design	C	3		
BM1282	Electronics Circuits	C	2		
BM1293	Immunology and Microbiology	C	3		
ET1283	Signals and Systems	C	3		
MA1263	Advanced Calculus	C	3		
MH1012	Photography	HE I		2	
MH1022	Western Dancing				

LE1231	English for Academic Purposes II	C		1	
MS2024	Military Studies	C			4
Subtotal Credits			**17**	**3**	**4**
Total Credits up to Semester 2			**36**	**4**	**8**

HE- Humanities Elective

Semester 03

Code	Module	Category	Credits		
			GPA	**NGPA**	**MGPA**
BM2013	Programming for Design	C	3		
BM2023	Medical Instrumentation I	C	3		
BM2033	Biomedical Signal Processing	C	3		
BM2042	Biophysics	C	2		
MA2013	Probability and Applied Statistics	C	3		
MH2412	Industrial Management	C	2		
MH2012	Creative Arts	HE II		2	
LE2032	Creative Writing				
LE2151	Research Writing Skills for Engineering	C		1	
MS3032	Strategic and Defence Studies	C			2
MS3044	Military Studies	C			4
Subtotal Credits			**16**	**3**	**6**
Total Credits up to Semester 3			**52**	**7**	**14**

Semester 04

Code	Module	Category	Credits		
			GPA	NGPA	MGPA
BM2263	Medical Instrumentation II	C	3		
BM2273	Image Processing	C	3		
BM2283	Physiological Control Systems	C	3		
BM3013	Engineering Product Design*	C	(1)*		
EE2263	Electrical Motors in Industry	TE I	3		
ET2263	Embedded Systems				
MA2263	Complex Variables and Numerical Analysis	C	3		
MH2423	Corporate Management and Entrepreneurship	C	3		
LE2261	English for Engineering Professionals	C		1	
MS4064	Military Studies	C			4
Subtotal Credits			**18**	**1**	**4**
Total Credits up to Semester 4			**70**	**8**	**18**

**Continued in 5th Semester*
Effective credit load – 20
TE-Technical Elective

Semester 05

Code	Module	Category	Credits		
			GPA	NGPA	MGPA
BM3013	Engineering Product Design*	C	3		
BM3023	Clinical Engineering	C	3		
BM3032	Research Methodology	C	2		
BM3043	Radiology, Radiation Safety and Protection	C	3		
BM3052	Biotelemetry	C	2		
ET3043	Machine Learning	C	3		
MH3412	Project Management	C	2		
Subtotal Credits			**18**	**0**	**0**

Total Credits up to Semester 5	**88**	**8**	**18**

**Continued from 4th Semester*
Effective credit load – 17

Semester 06

Code	Module	Category	Credits		
			GPA	NGPA	MGPA
EE3261	Workplace Skills	C		1	
BM3506	Industrial Training	C		6	
Total Credits up to Semester 6			**88**	**15**	**18**

Semester 07

Code	Module	Category	Credits		
			GPA	NGPA	MGPA
BM4013	Biomaterials for Healthcare and Biomedical Applications	C	3		
BM4023	Biomechanics	C	3		
BM4033	Medical Instrumentation III	C	3		
BM4043	Electrical Installation	TE II	3		
BM4053	Nanotechnology				
BM4063	Medical Image Processing				
ET4033	Robotics				
ET4073	Microwave Engineering				
BM4072	Neural Engineering	TE III	2		
BM4082	Finite Element Modelling				
BM4092	Bioinformatics				
BM4102	Medical Instrumentation IV				
BM4266	Final Year Research Project*	C	(2)*		
MH4413	Human Resource Management and Industrial Law	C	3		
Subtotal Credits			**17**	**0**	**0**
Total Credits up to Semester 7			**105**	**15**	**18**

**Continued to 8th Semester*
Effective credit load - 19

Semester 08

Code	Module	Category	Credits		
			GPA	NGPA	MGPA
BM4266	Final Year Research Project*	C	6		
ET4283	Power Electronics and Applications	C	3		
BM4273	Prosthetic Design	TE IV	3		
BM4283	Tissue Engineering				
BM4293	Hospital Information Systems				
ET4273	Deep Learning				
ET4323	Radar Engineering				
MH4423	Professional Ethics and Practices	C	3		
ET4332	Entrepreneurial Ventures and Startups	O		(2)	
Subtotal Credits			**15**	**0**	**0**
Total Credits up to Semester 8			**120**	**15**	**18**

**Continued from 7th Semester*
Effective credit load - 13

Advanced Military Training for Cadets

Code	Module	Category	Credits		
			GPA	NGPA	MGPA
MS9074	Advanced Military Training	C			15
Total Credits up to Advanced Military Training			**120**	**15**	**33**

FINAL CREDITS SUMMARY

TOTAL CREDITS	GPA	NGPA	MGPA
135	**120**	**15**	**33**

Chapter 5

Societies

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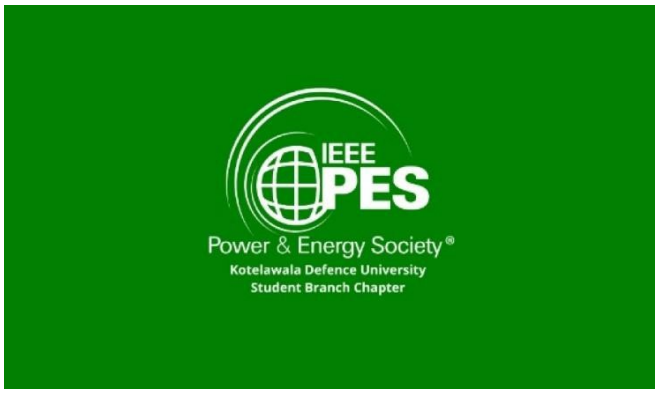
Electronic, Robotics and Innovation Club

Electronics, Robotics and Innovation Club (ERIC-KDU) of General Sir John Kotelawala Defence University is a student organization where, students, who are interested in robotics and electronics, can improve their inventive skills by learning, practicing and sharing their innovative ideas with experts of the electronics field for researching and developing new technologies. The organization is led by an executive committee, under the guidance of KDU administration.

Power and Energy Society (PES)



The Power & Energy Society (PES) provides the world`s largest forum for sharing the latest in technological developments in the electric power industry, for developing standards that guide the development and construction of equipment and systems. Our vision and mission is to enhance the knowledge of the undergraduates following an Engineering bachelor`s degree program related to electric power and energy, by providing a platform to learn new skills, engage in research, develop their professional career, share knowledge, and gather experience from the experts in the field, whilst contributing for the success of global Power & Energy Society movement of IEEE.

IEEE ComSoc KDU

IEEE ComSoc, short for IEEE Communications Society, Knowledge Development and Utilization (KDU), is an innovative platform dedicated to the advancement of

cutting-edge communication technologies. It serves as a hub for professionals, researchers, and enthusiasts, facilitating the exchange of knowledge and ideas in the field of communications. ComSoc KDU fosters collaboration through conferences, workshops, and publications, driving the evolution of telecommunications, networking, and related disciplines. By bridging academia, industry, and research, it empowers individuals to stay at the forefront of emerging trends, enabling them to shape the future of global communication systems.

IEEE ENGINEERING AND MEDICINE IN BIOLOGY SOCIETY EMBS (KDU)

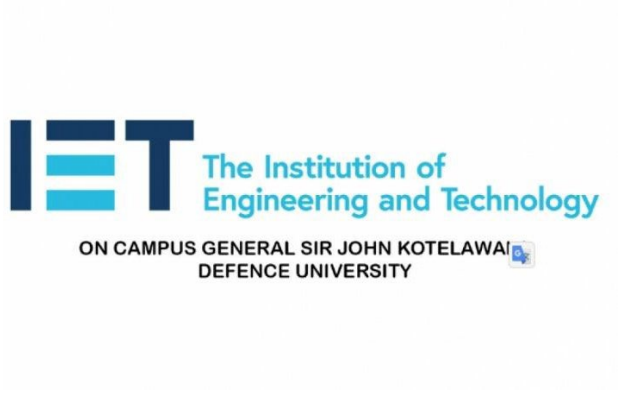
The mission of IEEE Engineering in Medicine and Biology Society (EMBS) Student Branch Chapter of KDU is to promote and strengthen the field of Biomedical Engineering. The society is led and run by students with the assistance of academic advisors. All students enrolled to undertake Biomedical Engineering degree at KDU are the members of the society.

IEEE EMBS student branch chapter of KDU actively initiates, encourages and supports various academic, research and public activity programs, develops professional, personal and academic standards among members and promotes cordial relations with the faculty, all other faculties of the university, other educational institutions and any of its community.

It also intends to provide professional exposure and experience in the field of Biomedical

Engineering to the students, enhance the managerial, communicational and social skills of the students and to promote activities that would guide students to become socially responsible Biomedical Engineers.

IET on Campus



IET On Campus KDU is the vibrant student chapter affiliated with the esteemed "Institution of Engineering Technology (IET)," a chartered professional body. This chapter operates within the campus, providing a dynamic platform for aspiring engineers to connect, learn, and innovate. Through engaging events, workshops, and networking sessions, IET On Campus KDU cultivates a community of students passionate about engineering and technology. By fostering skill development and industry exposure, it equips future engineers with the tools they need to excel in their careers while being part of a globally recognized professional network

Chapter 6

Research and Industrial Projects

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6.1 The Final Year Project Exhibition of the Faculty of Engineering - 2025

Stream	Project Name	Students	Supervisor/s
EE	Modelling and parameter tuning of the governor system at Lakvijaya Power Station for Turbine Load Control (TLC) modes of operation for enhanced stability.	BMU Harshajith MWM Shakir YMSS Punchibandara KHM Nilhara	Prof. JP Karunadasa, Mr. LSL Fernando, Eng. RRTWMRAI Madawala
	Enhancing Photovoltaic Panel Efficiency by Harnessing Heat from Rooftop Solar PV Arrays and Pre-Heat Industrial Boilers	PTS Sannasgala KNM Peiris NL Hettiarachchi NVCS Samarasinghe	Prof. JR Lucas, Mr. AAJ Gunasekara
	Use of Aged Electric Vehicle Batteries for Residential Solar PV Systems with Supercapacitor Integration.	MASM Perera WMMDD Thilakarathne PM Yakupitiyage SVF de Silva	Prof. JR Lucas, Mr. AAJ Gunasekara
	Enhance the power system stability during high renewable energy penetration through inertia providers	WMKRK Fernando ML Hewapathirana WK Sudeshna I Wijerama	Prof. JR Lucas, Mr. LSL Fernando, Eng. RRTWMRAI Madawala
	Modeling and Parameter Estimation of the AVR and the governor systems of Synchronous Generator at Sapugaskanda Power Station	WATL Kumara WHAGC Wickramasinghe IPTPDB Nikaweratiya AGANN Gunasekara LAHS Perera	Prof. JP Karunadasa, Eng. (Ms) RMDSD Ranasinghe, Eng. RRTWMRAI Madawala

	Wireless underground sensor network for precision agriculture	KTPD Samarathunga BMCD Bandara CPIN Dalpathadu DR Guruge	Eng. (Ms.) P.N. Karunanayake Prof. T.L. Weerawardane Dr.A. Könsgen
	Smart assistive wearable device for blind personnel to enhance awareness	RDLD Dissanayake DI Liyanage NPGP Pathum JALM Jayaweera	Eng. Capt (Rtd) S.U. Dampage Dr. S.H.N.P. Gunawickrama
	Real time train tracking and time prediction system for railway network in Sri Lanka	SH Wanniarachchi YPSA Ranasinghe	Eng. (Ms.) P.N. Karunanayake Capt. D.D.G.R. Karunarathne
	Bed ridden patient monitoring using a smart bed	MM Tharik HTM Madhushan HAKS Amaraweera PMW Arachchi	Maj. R.M.C.P Ranasinghe Mr. Sanjeewa De Silva
	Edge computing using FPGA with the deployment of neural networks for general	AD Sandanayake KN Perera CD Hettihewa MN Wickramasinghe	Eng. (Ms.) E.R.M.C.K. Rajapaksha

	purpose applications		
	Development of an automated driving smart wheelchair for the physically disabled people	AMKGP Abeysinghe NA Perera WGDY Rajitha HMUT Herath	Eng. (Ms.) E.R.M.C.K. Rajapaksha Eng. Sanjeewa De Silva
BM	Simulating Heart Sounds For Medical Manikin	AS Rajendran	Mr. DK Hewadikaram Dr. HMP Hearth Prof. Pandula Athauda-arachchi
	Smart Lifting Strap for Enhancing the Performance of Weightlifting	YA Welgama	Dr. PPCR Karunasekara
	Development of a Wearable Non-Invasive Continuous Glucose Level Measuring System	NMS Irugalbandara	Mr. IMCWB Kohombakad awala
	Design and Implementation of a Non-Invasive Blood Glucose & Hemoglobin Monitoring System	NK Thilakarathne	Mr. IMCWB Kohombakad awala

	Development of an Algorithm to Explore the Effect of Visual Stimuli on Emotions and on Different EEG Frequency Bands	SJL Wijewardhana	Eng. KG Samarawickra ma Prof. Ravindra Goonetilleke Prof. Jagath Samarabandu
	Identification of EEG Biomarkers for Detection of Major Depressive Disorder and Assessment of the Severity Level	KGS Perera	Dr. PPCR Karunasekara Dr.Srikanth Srinivasan
	Developing a Mathematical Model to Predict Inner Temperature Variations of the Female Breast using Surface Temperature	PLLM Alwis	Mr. Kanchana Wijesejkara
	Development of a Smart Inhaler for Asthma and Chronic Obstructive Pulmonary Disorder Patients	EASR Edirisinghe	Mr. IMCWB Kohombaka dawala

	Development of a Communication Architecture of a Wireless Sensor Network using Intra-Body Communication for Wearables	SD Kommalage	Mr. Kanchana Wijesejkara
	Algorithm Development for Prediction of Stimulation Sites in Visual Perception and Latency Period in Primary Visual Cortex	AB Sinthuja	Eng. KG Samarawickr ama Prof. Ravindra Goonetilleke Prof. Jagath Samaraband u
	Detection of Obstructive Sleep Apnea through Acoustic Analysis	KKN Sadara	Mr. IMCWB Kohombaka dawala Dr Thushara Bandara
	Development of a Wearable System for Post-Stroke Walking Rehabilitation	ID Gomes	Dr. PPCR Karunasekara Mrs. Tharanga Bandara

	Designing an Energy Harvesting System for a Wireless Wearable Device	MTS Perera	Mr. Kanchana Wijesejkara
	Brace with Temperature Regulation for Knee Arthritis Treatment	ALN Perera	Mr. Dulitha Hewadikaram
	Developing a Machine Learning Algorithm to Predict Breast Thermal Abnormalities based on Three-Dimensional Temperature Maps	MKPSSA Perera	Mr. Kanchana Wijesejkara Dr Naomal M. A. Perera Dr Angelo Karunaratne
	Implement an Algorithm to Identify Different Stages of Diabetic Retinopathy	ADP Rupasinghe	Eng. KG Samarawickr ama

	Detection of Cardiac Iron Overload in Thalassemia Patients Using Radiomics Features	KNS Silva	Mr. Dulitha K. Hewadikaram Dr. Muditha Bandara Rathnayaka, PhD
	Co-Registration of Interictal EEG Data with MRI Brain for the Presurgical Evaluation of Children with Drug Resistant Epilepsy	DMGM Dissanayake	Dr. PPCR Karunasekara Dr. Sanjaya Fernando
	Investigate the Correlation Between Cardiac Output and Radial Pulse Using Piezoelectric Sensors	PS Walawege	Mr. WLPK Wijesinghe
	Development of a PH-Indicative Nanoparticle-Based Wound Dressing for Improved Wound Healing	KMRY Samarakoon	Eng. (MR.) KG Samarawickrama Prof. CAN Fernando

	A Comparative Analysis of Machine Learning Models for Sleep Disorder Detection Using Electrocardiogram Signals	LT Rupasingha	Mr. Dulitha K. Hewadikaram Dr. Ujitha Abeywickrama
	Characterization of Arterial Spin Labelling Perfusion MRI Brain in the Presurgical Assessment of Children with Drug Resistant Epilepsy	BMAT Perera	Dr. PPCR Karunasekara Dr. Sanjaya Fernando
	Developing An Implantable Nano-Pressure Transducer for Intracranial Pressure (ICP) Monitoring	A.R. Aakeef Rahman	Mr. W.L.P.K. Wijesinghe Prof C.A.N. Fernando
	Machine Learning Model for Early-Stage Diagnosis of Diabetes Mellitus Using Image Processing	S.M.V.M Senanayake	Eng. (MR.) KG Samarawickrama

	Differential Diagnosis of Alzheimer's disease and Vascular dementia from Machine Learning based Retinal Feature Analysis	SHVK Kumaranayake	Eng. (MR.) KG Samarawickrama Prof Saroj Jayasinghe
	Implementation of a FMG Signal Acquisition System as an Alternate for sEMG Measurement to Analyze Complex Wrist Movements	B. D. I. Balasooriya	Eng. KG Samarawickrama LCdr. Nuwan Bandara
	Detection of Peripheral Arterial Diseases using Bioimpedance and Photoplethysmography	P.D. Kavindya Dewanmini	Eng Kasun Samarawikrama Prof Saroj Jayasinghe Dr Joel Arudchelvam

	Developing and Validating a Surface Electromyography (sEMG) System for Muscle Fatigue Assessment During Bicep Curls: A Pilot Study in Sri Lankan Endurance Trainees	GACS Gurugoda	Mr. W.L.P.K Wijesinghe Dr. Dilani Perera
	A Frequency Domain Analysis of EEG Signals to Distinguish Emotions in Response to Visual Stimuli : a Machine Learning Approach	RMSL Rathnayake	Eng. Kasun samarawickrama Prof. Jagath samarabandu Prof. Ravindra goonetilleke