



General Sir John Kotelawala  
Defence University

**FACULTY OF GRADUATE STUDIES**



General Sir John Kotelawala  
Defence University



P.O. Box 32, Ratmalana, Sri Lanka | [www.kdu.ac.lk](http://www.kdu.ac.lk)

# STUDENT'S HANDBOOK

MASTER OF SCIENCE IN ELECTRICAL ENGINEERING

**FACULTY OF GRADUATE STUDIES**

# **STUDENT'S HANDBOOK**

**MASTER OF SCIENCE IN ELECTRICAL ENGINEERING**



**General Sir John Kotelawala Defence University**





## Key Appointments

- a. Chancellor  
**General SHS Kottegoda** (Retired) WWV, RWP, RSP, VSV, USP
- b. Vice Chancellor  
**Rear Admiral HGU Dammika Kumara** VSV USP psc MMaritimePol, BSc(DS)
- c. Deputy Vice Chancellor (Defence & Administration)  
**Brigadier DCA Wickramasinghe** USP USACGSC
- d. Deputy Vice Chancellor (Academic)  
**Prof. KAS Dhammika**  
PhD (Northern University of Malaysia), M.Com (Kelaniya), PGD in Business Statistics (USJP),  
B.B.Mgt.(HR) (Kelaniya)
- e. Dean, Faculty of Graduate Studies  
**Prof. CL Goonasekara**  
Post-doctoral (Canada), PhD (Canada), BSc (Colombo)
- f. Registrar (Acting)  
**Ms SDKC Sandanayake**  
MBA in HRM (UoC), BSc (Hons) Applied Sciences (SUSL), Dep NIBM

“Education is not  
preparation for life;  
education is life itself.”



## Contents

Introduction	06
Objectives	06
Intended Learning Outcomes	06
Eligibility Criteria	07
Programme Structure	07
Continuous Assessments	07
Examination Offences and Punishments	08
Course Syllabus	14
Course Delivery Plan	14
Lecturer Panel	15
Reference Reading	16
Course Fee Structure	18
How to Apply	19
Contact Persons	19
Annexure	20



# Master of Science in Electrical Engineering

## Introduction

Faculty of Graduate Studies in collaboration with the Department of Electrical, Electronics & Telecommunication Engineering offers MSc in Electrical Engineering programme. This postgraduate programme is conducted for a period of two years. The first year is dedicated for taught course modules and second year is for both taught modules and there search project. The programme covers advanced engineering concepts and theories, enabling them to concentrate on a specific field of electrical engineering.

The programme has been designed by a panel of senior academics and professionals from reputed universities/institutions in Sri Lanka, ensuring a high academic standard to facilitate participants to complete MSc in Electrical Engineering in accordance with the Sri Lankan Qualification Framework which is published by the Ministry of Higher Education. Moreover, it should be noted that its academic standard is equivalent to Sri Lanka Qualifying level 10.

Although electrical engineers can work in many fields, an engineer with just a bachelor's degree might only have exposure to the basic fundamentals of engineering. This limited knowledge restricts the scope of positions for which they qualify. To improve prospects, engineering professionals must pursue a master's level electrical engineering program. The MSc in Electrical Engineering programme provides a lot of opportunities for graduates to find employment in the fields of Automotive, Manufacturing, Energy, Construction, Power generation, Transmission, Distribution and to create their own individual career path.

## Objectives

To produce high quality Electrical Engineering professionals who are capable of;

- a. Analyzing and solving complex engineering problems through a process of creative and innovative thinking,
- b. Planning and utilizing resources efficiently for sustainable development,
- c. Developing, conducting and managing engineering projects fulfilling national, social and environmental,
- d. Adapting to changing environments through self-learning and research, and
- e. Functioning as socially responsible senior professionals.

## Intended Learning Outcomes

To produce Electrical Engineering professionals with the ability to,

- a. Investigate, analyze and solve complex problems in Electrical Engineering by applying knowledge of basic science, engineering fundamentals and in-depth technical competence,
- b. Function effectively as a leader or manager or as an effective team member in multi-disciplinary and multi-cultural teams contributing to the community at large,
- c. Evaluate the impact of professional solutions in societal and environmental context while adhering to engineering standards, practices and ethics, recognizing the need for sustainable development in designing engineering solutions for national and international requirements, and
- d. Engage in independent and lifelong learning in the context of technological changes.



## Eligibility Criteria

Applicants satisfying ONE of the following requirements are eligible for admission:

- a. Degree of Bachelor of Science in Engineering of four-year duration of General Sir John Kotelawala Defence University (KDU) in a relevant field, or
- b. Degree of Bachelor of Science (Defence Studies) in a relevant field with a minimum of three years of appropriate experience as an Engineer as approved by the Dean, Faculty of Engineering, KDU, or
- c. A Bachelor of Science Degree (SLQF 6) in a relevant field from a recognized University; or
- d. Associate Membership or above of Institution of Engineers Sri Lanka (IESL) AND a minimum of one year of appropriate experience after obtaining such membership as approved by the Dean, Faculty of Engineering, KDU, or
- e. Associate Membership or above of a professional Engineering Institute recognized by Institution of Engineers Sri Lanka (IESL) AND a minimum of one year of appropriate experience after obtaining such membership as approved by the Dean, Faculty of Engineering, KDU.
- f. Any other Engineering Degree (SLQF 5) from a recognized university AND a minimum of one year of appropriate experience in relevant field after obtaining such a degree, as may be approved by the Senate.
- g. A Higher Diploma (SLQF 4) in a relevant field with a minimum of three years of appropriate experience in a relevant field after obtaining such a higher diploma, as may be approved by the Senate.

## Programme Structure

The programme is designed with 40 credits and additional 20 credit research project leading to MSc in second year. The classes are conducted on every other weekend of other than in public holidays from 0830 hrs to 1730 hrs and the medium of instruction is English.

## Continuous Assessments

Instructions for Submission of Continuous Assessments

- a. FGS expects the highest professional, academic and scholarly standards in student assignments. Therefore, haphazard, incomplete or hurried assignments will not qualify for marking.
- b. Marks obtained for assignments will be added to the examination marks; FGS expects the students to work hard, consider these assignments seriously and concentrate on them. Assignments are potentially powerful learning resources for communication.
- c. Assignments call for a significant degree of knowledge, analysis and critique. Therefore, the students must prepare in advance for their assignments thoroughly and well. Assignments should not be completed in a rush.
- d. Students must try out different drafts and work hard on them.
- e. There are no extensions on assignment submission dates. Students are responsible for submitting their assignments on due date.



## Master of Science in Electrical Engineering

### Do's

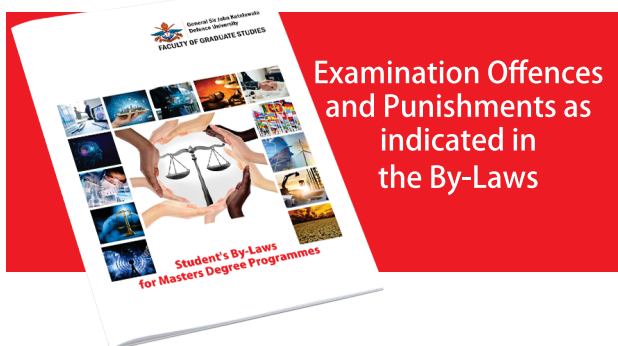


- a. Always enclose every single assignment in a separate folder.
- b. Fill in the following details on the first page of the folder.
  - ▶ Registration Number
  - ▶ Name
  - ▶ Course Code and Title
  - ▶ Semester
  - ▶ Name of the Resource Person
- c. Always submit your assignment to the Staff at the Faculty of Graduate Studies.
- d. Always submit your assignment on or before the last date of submission.
- e. You may have your assignment handed over by someone else on your behalf.

### Don'ts



- a. Never hand over any assignment to unauthorized staff members at KDU personally known or unknown to you.
- b. Never mail assignments, unless specified.
- c. Never use one folder for more than one assignment.





### Specifications for Assignments

- a. Students must always use only A4 size paper to compliance their assignments.
- b. Leave a 1" Margin on all four sides.
- c. Students must type or word process their assignment answers. If a student is unable to do so, he / she must write the answer very neatly and legibly. Assignments with illegible handwriting will not be marked.
- d. We recommend the 1 1/2" line spacing formats.
- e. Students must be creative in approaching and answering questions.
- f. If a student uses another author's idea, he / she must cite that author / publication with references.



“ The object of education  
is to prepare the young to educate  
themselves throughout their lives.”



**Specimen of Assignment Cover Page**

**STATISTICAL & NUMERICAL METHODS**

**EE 9013**

TOPIC OF THE ASSIGNMENT

**NAME OF THE STUDENT**

REGISTRATION NO: KDU/.....

LECTURER: .....

NAME OF THE DEGREE

PROGRAMME NO.... – YEAR .... – SEMESTER ....

# Master of Science in Electrical Engineering

## Declaration Form

1. I declare that this assignment is my own work.
2. I have acknowledged ideas of other authors (if any) following the standard acknowledgement practice.
3. I am aware of the consequences of cheating and malpractice.
4. I am willing to answer any query raised by any Academic Staff Member in relation to this report at any time during the course.
5. I understand that the decision relating to mark on this report is purely based on my performance and that it is first and final.

Date:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name

## Specimen Letter for handing over Assignments

\_\_\_\_\_  
(Address)

(Your Ref) \_\_\_\_\_

DEAN  
FGS  
KDU

**SUBMISSION OF** \_\_\_\_\_ (Subject Name)

1. Assignment of \_\_\_\_\_ (Module) or  
(Research) is forwarded herewith for (making / approval) please.

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Name in upper case)

\_\_\_\_\_  
(Rank)

\_\_\_\_\_  
(Registration No)

“Education is all  
a matter of building bridges.”

# Master of Science in Electrical Engineering

## Course Syllabus

The programme includes eleven (11) mandatory subject modules and five (05) optional subject modules. A credit is defined as having 15 hours of interactive classroom sessions or 30 to 45 hours of practical and other time work including assignments. A take home assignment of 3000 words on a research question from all subject modules will be given. A candidate is required to complete all 11 compulsory subject modules, the dissertation and 3 optional subject modules out of 5 subject modules.

## MSc in Electrical Engineering Programme – Summary of the Course Delivery Plan

MSc in Electrical Engineering Programme					
Code	Course Unit	Credits	Elective Credits	Lecture (Hrs)	Lab/Assig. (Hrs)
<b>Year 1 – Semester I</b>					
EE 9013	Statistical & Numerical Methods	3		40	15
EE 9022	Research Methodology I	2		30	0
EE 9034	Project Management	4		50	30
EE 9043	Advanced Power System	3		40	15
EE 9053	Controlled Drivers	3		40	15
EE 9062	Energy Efficiency, Demand Management & Conservation	2		30	0
<b>Optional</b>					
ET 9072	Artificial Intelligence Techniques		3	40	15
EE 9073	Renewable Energy Development		3	40	15
				350	120
<b>Semester II</b>					
EE 9113	Operation Research	3		40	15
EE 9122	Research Methodology II	2		30	
EE 9133	Power Electronic Designs	3		40	15
EE 9143	Smart Technologies in Power Systems	3		40	15
EE 9153	Design Aspects of Electrical Installations	3		40	15
<b>Optional</b>					
ET 9143	Information Security and Cryptography		3	40	15
EE 9163	Microcontrollers, PLCs & Embedded Systems		3	40	15
EE 9183	Energy Economics		3	40	15
		31	9/15		
<b>EE 9999 Dissertation</b>		<b>20</b>			
		<b>Total 60</b>			



## Master of Science in Electrical Engineering

### Lecturer Panel

#### Prof JP Karunadasa

PhD (Manch, UK), MSc (Manch, UK), BSc Eng (Moratuwa), CEng, MIE (Sri Lanka), MIEEE

#### Prof M Vithanage

PhD (Copenhagen, Denmark), MSc (Peradeniya), BSc Eng (Sabaragamuwa)

#### Prof WDAS Wijepala

MSc (Moratuwa), BSc (Moratuwa), FIE (Sri Lanka), CEng, Int Peng (Sri Lanka)

#### Prof KTMU Hemapala

PhD in Industrial Robotics (Geneva, Italy), BSc Eng (Moratuwa), C Eng, SMIEEE, MIE (Sri Lanka)

#### Prof B Jayasekara

PhD (Saga, Japan), MSc (Moratuwa), BSc Eng (Moratuwa)

#### Dr W D A S Rodrigo

PhD (HKUST), MSc (Moratuwa), BSc Eng (Moratuwa), SMIEEE, AMIE (Sri Lanka)

#### Dr WD Prasad

PhD (Manitoba, Canada), MPhil (Moratuwa), BSc Eng (Moratuwa), MIEEE

#### Dr Subodha Gunawardana

PhD (Waterloo, Canada), BSc Eng (Hons) (Moratuwa), M Eng (AIT, Thailand)

#### Dr RMKT Rathnayake

PhD (China), MSc (China), MSc (Sri Jayawardenapura), BSc Eng (Ruhuna)

#### Dr Janith Walpita

PhD (USA), Bsc (Sri Jayawardenapura)

#### Eng Capt (Rtd) SU Dampage

BSc (Hons) (E EEng), M Eng (E&T), C Eng, FIE

#### Dr B Hettige

MPhil (Moratuwa), BSc Eng (Sri Jayawardenapura)

#### Mr BNIFA Wickramasuriya

M Eng (AIT Thailand), BSc Eng (Moratuwa), PGD in Business Adm

#### Mr S Bogahawatta

M Eng (Moratuwa), MIESL, CEng

Note: Lecturer panel subject to change as per the University requirements.



Lecturer Room



Computer Lab



Auditorium



Examination Hall



## Reference Reading

Subject	Recommended Readings
Research Methodology	Research Methods for Business, A skill building approach – Uma Sekaran How to do research – Asoka S Karunananda Reputed journals and conference papers mainly IEEE Xplore digital Library
Artificial Intelligent	Artificial Intelligent: A Modern Approach – Stuart J Russel
Renewable Energy Development	Microwave transistor amplifiers: Analysis and design – Guillermo Gonzales Antenna Theory: Analysis and Design – John Wiley & Sons Optical Networks – Rajiv Ramaswami Introduction to Radar Systems – Merrill I Skolnik.
Operation Research	Operation Research 7th Ed – Taha Hamdy
Information Security and Cryptography	Applied Cryptography - Bruce Schneier Applied Information Security: A Hands-on Approach - David Basin and
Design Aspects of Electrical Installations	IEE regulations 16 & 17 editions ICTAD documents
Statistical & Numerical Methods	Statistical Methods - S.P. Gupta Fundamental Statistics - S. C. Gupta Essential Statistics - A.B. Rao Statistics - E . Narayanan Nadar Probability and Statistics for Engineers and Scientists - Ronald E. Walpole Mathematical Statistics with Applications - I. Miller and M. Miller Advanced Engineering Mathematics (Second Edition) - Michel D. Greenberg Mathematical Techniques for Engineering and Scientists - Larry C. Andrews, Ronald L. Phillips Mathematical Methods - S.R.K. Lyengar, R.K.Jain. Numerical Methods for Mathematics, Science and Engineering - John Mathews

“ A library is the delivery  
room for the birth of ideas,  
a place where history  
comes to life. ”

## Master of Science in Electrical Engineering

### Course Fee Structure

Item	Amount	
	Military/Police/MOD	Civil
Tuition Fee	Rs. 400,000.00	Rs. 400,000.00
Registration Fee - 3 Years (Initial Registration)	Rs. 4,000.00	Rs. 5,000.00
Library Fees	Rs. 2,000.00	Rs. 2,000.00
Refundable Library Deposit	Rs. 10,000.00	Rs. 10,000.00
Refundable Mess Deposit	Rs. 2,000.00	Rs. 2,000.00
Study Pack	Rs. 2,500.00	Rs. 2,500.00
<b>Total</b>	<b>Rs. 420,500.00</b>	<b>Rs. 421,500.00</b>

### Registration Renewal Fee

- 1<sup>st</sup> Year after initial registration - Rs. 12,500/=
- 2<sup>nd</sup> Year after initial registration period - Rs. 25,000/=
- Continuation to another additional year under any circumstances - Rs. 100,000/=

### Repeat Examination Fee

- For entire semester - Rs. 2,500/=
- For one subject - Rs. 1,000/=
- Repeat Thesis Defence
- Viva-Voce Fee - Rs. 11,500/=

Selected candidates may opt to pay programme fee in two equal instalments, first of which should be paid at the time of registration (for the 1st academic year), together with all other cost components.

2nd instalment – Before commencement 1st semester of the 2nd academic year.

Any candidate who has not settled the course fees by the beginning of the 1st semester of the 2nd academic year after the initial registration will not be allowed to proceed further.

### NOTE

1. FGS will be compelled to not permit the students who are unable to pay the course fee to sit for semester examination.
2. Course fee and other payments mentioned in above subject to change as per the University Board of Management decision.



### **How to Apply**

A person who wishes to be a candidate of the MSc in Electrical Engineering shall forward an application to the respective service commander/Inspector General of Police/Head of Department who will submit these applications to the Dean, Faculty of Graduate Studies with their recommendations. All applicants will be required to pass an aptitude test conducted by KDU.

### **Contact Persons:**

Programme Coordinator (Academic)

#### **Capt (L) KK Dadallage**

MSc in Electrical Engineering (Moratuwa), BSc in Electrical Engineering (KDU)

Tel : 0710219258

Email : dadallagek@kdu.ac.lk

---

Programme Coordinator (Admin)

#### **Lieutenant Commander (ND) JPCJ De Silva psc**

MSc (D&SS)

Tel : 0710219325

E-mail : soiifgs@kdu.ac.lk

## Annex A

### E- Library Policy

1. Only visit approved Internet sites.
2. Never give out your personal information.
3. Inform the authority if you see something uncomfortable or inappropriate.
4. Never download irrelevant anything without permission.
5. Leave your workspace as you found it.
6. Print only if you have permission.
7. Never change any settings without permission.
8. Touch the mouse and keyboard gently.
9. Do not eat or drink near devices.

