



**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 ELECTRONICS &  
TELECOMMUNICATION ENGINEERING**

**FACULTY OF GRADUATE STUDIES**

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**MASTER OF SCIENCE IN ELECTRONICS &  
TELECOMMUNICATION ENGINEERING**



**General Sir John Kotelawala Defence University**





## Key Appointments



General Sir John Kotelawala  
Defence University

- 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 the  
transmission of civilization.”





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# Master of Science in Electronics & Telecommunication Engineering

## Introduction

Faculty of Graduate Studies in collaboration with the Department of Electrical, Electronics & Telecommunication Engineering offers MSc in Electronics and Telecommunication Engineering. This postgraduate programme is conducted on Saturdays and Sundays for a period of one/two years. The first year is dedicated for taught course modules and second year is for both taught modules and the research project. The programme covers advanced topics in Electronics and Telecommunication Engineering.

Programme has been designed in accordance with the Sri Lankan Qualification Framework, published by the Ministry of Higher Education and its academic standard is equivalent to Sri Lanka Qualifying Level 10. It 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 Electronics and Telecommunication Engineering Degree in two years even whilst being employed.

## Objectives

To produce high quality Electronics and Telecommunication Engineering professionals who are capable of;

- Analyzing and solving complex engineering problems through a process of creative and innovative thinking,
- Planning and utilizing resources efficiently for sustainable development,
- Developing, conducting and managing engineering projects fulfilling national, social and environmental,
- Adapting to changing environment through self-learning and research,

- Functioning as a socially responsible senior professional.

## Intended Learning Outcomes

To produce Electronics and Telecommunication Engineering professionals with the ability to,

- Investigate, analyze and solve complex problems in Electronics and Telecommunication Engineering by applying knowledge of basic science, engineering fundamentals and in-depth technical competence,
- 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,
- 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,
- 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:

- Degree of Bachelor of Science in Engineering of four-year duration of General Sir John Kotelawala Defence University (KDU) in a relevant field, or
- 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 Electronics & Telecommunication Engineering

## Do's

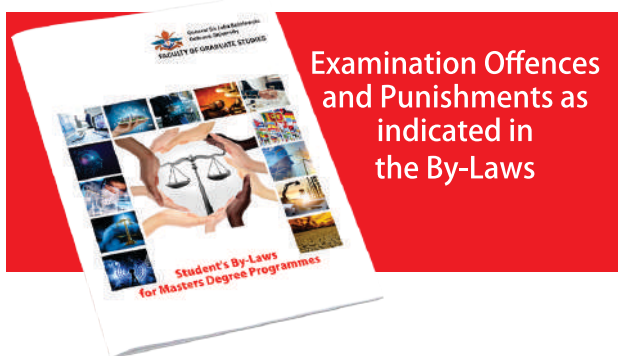


- a. Always enclose every single assignment in a separate folder.
- b. Fill in the following details on the first page of the folder.
  - ▶ Registration Number
  - ▶ Name
  - ▶ Course Code and Title
  - ▶ Semester
  - ▶ Name of the Resource Person
- c. Always submit your assignment to the Staff at the 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

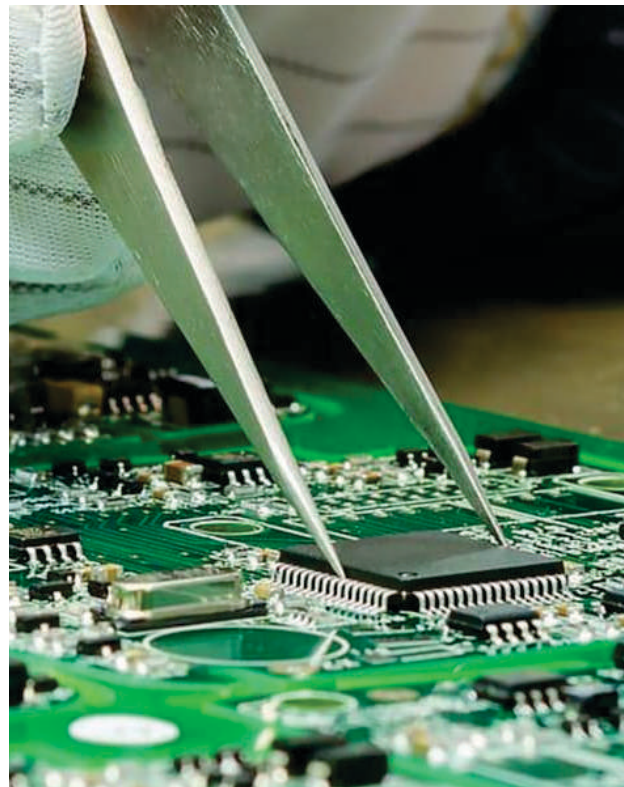


- a. Never hand over any assignment to unauthorized staff members at KDU personally known or unknown to you.
- b. Never mail assignments, unless specified.
- c. Never use one folder for more than one assignment.



## 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 11/2" 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.



“Education is  
neither eastern nor western.”

# Master of Science in Electronics & Telecommunication Engineering

## Specimen of Assignment Cover Page

### **COMMUNICATION TECHNOLOGY**

ET 9013

TOPIC OF THE ASSIGNMENT

**NAME OF THE STUDENT**

REGISTRATION NO: KDU/.....

LECTURER: .....

NAME OF THE DEGREE

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





## 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)

# Master of Science in Electronics & Telecommunication Engineering

## Course Syllabus

The programme includes eleven (11) mandatory subject modules and six (06) optional subject modules. A credit is defined as having 15 hours of interactive class room 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 6 subject modules.

## Msc in Electronics & Telecommunication Engineering Programme – Summary of the Course Delivery Plan

Code	Course Unit	Core Credits	Elective Credits	Lecture (Hrs)	Lab/Assig. (Hrs)
<b>Year 1 – Semester 1</b>					
EE 9013	Statistical & Numerical Methods	3		40	15
EE 9022	Research Methodology I	2		30	0
EE 9034	Project Management	4		50	30
ET 9013	Communication Technology	3		40	15
ET 9023	Modern Wireless Networks	3		40	15
ET 9043	VLSI Design and Nanotechnology	2		25	15
<b>Optional</b>					
ET 9053	Advanced Digital System Design		3	40	15
ET 9073	Artificial Intelligence Techniques		3	40	15
<b>Semester II</b>					
ET 9113	Communication Networks and Stochastic Simulation	3		40	15
ET 9123	Microwave, Optical & Radar Engineering	3		40	15
EE 9113	Operation Research	3		35	30
EE 9122	Research Methodology II	2		25	15
EE 9133	Power Electronic Designs	3		40	15
ET 9199	Emerging Trends in Electronic and Telecommunication Engineering	2		30	15
<b>Optional</b>					
ET 9133	Network Management & Planning		3	40	15
ET 9143	Information Security and Cryptography		3	40	15
BM 9113	Medical Electronic and Biomedical Instrumentation		3	40	15
ET 9144	Deep Learning		3	40	15
		<b>31</b>	<b>9/18</b>		
<b>ET 9999 Dissertation</b>		<b>20</b>			
<b>Total</b>		<b>62</b>			

“Knowledge is power.  
Information is liberating. Education  
is the premise of progress,  
in every society.”



# Master of Science in Electronics & Telecommunication Engineering

## Lecturer Panel

### 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)

### Dr RMKT Rathnayake

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

### Dr HH Samiru Gayan

PhD (Melbourne), MPhil (Moratuwa), BSc  
(Moratuwa)

### Dr S Thayaparan

PhD (Hong Kong), BSc Eng (Moratuwa)

### Dr WTLS Fernando

PhD (Nagaoka, Japan), MSC Eng (Nagaoka, Japan),  
BSc (Sri Jayawardenapura)

### Eng Capt (Rtd) SU Dampage

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

### Mr YL Ganearachchi

MBA (Sri Jayawardenapura), BSc Eng (Peradeniya)

### Ms Dilanka De Silva

MBA (Cardiff Metropolitan, UK), BSc Eng (Moratuwa)

### Mr MUM Imran

M. Eng (Australia), BSc Eng (Ruhuna)

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



Auditorium



Lecturer Room



Computer Lab



## Reference Reading

Subject	Recommended Readings
Deep Learning	Deep Learning – Ian Good fellow.
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.
VLSI Design	CMOS VLSI Design: A Circuits and Systems. Perspective – David Harris. Nano and Molecular Electronics Handbook – Sergrey Edward Lyshevski.
Artificial Intelligent	Artificial Intelligent: A Modern Approach – Stuart J Russel.
Microwave, Optical and Radar Engineering	Microwave transistor amplifiers: Analysis and design – Guillermo Gonzales.
Operation Research	Operation Research 7th ed – Taha Hamdy
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. Ronald L. Phillips. Mathematical Methods - S.R.K. Lyengar, R.K.Jain. Numerical Methods for Mathematics, Science and Engineering - John Mathews.
Communication Technology	RF Microelectronics (2nd edition) - Behzad Razavi. Elements of Information Theory 2nd Edition - Thomas M. Cover. Satellite Communications Systems - Gerard Maral.

## Reference Reading

Subject	Recommended Readings
Modern Wireless Networks	<p>LTE for UMTS - H. Holma and A. Toskala.</p> <p>Radio Network planning and Optimization for UMTS - J. Laiho.</p> <p>Next Generation Wireless LANs: Throughput, Robustness, and Reliability – Eldad Perahia and Robert Stacey.</p> <p>Wireless communications: Principles and practice, 2nd ed. 2001.- T. S. Rappaport.</p>
Communication Network and Stochastic Simulation	<p>Principals of communications Networks and Systems – Nevio Benvenuto and Michele Zorzi.</p> <p>Basics of Computer Networking (Springer Briefs in Electrical and Computer Engineering) - Thomas Robertazzi.</p> <p>Modelling Fundamentals: With Applications in Communication Networks - Chee-Hock Ng, Soong Boon-Hee.</p> <p>An Introduction to Network Modeling and Simulation for the practicing - Jack L. Burbank.</p>
Information Security and Cryptography	<p>Applied Cryptography - Bruce Schneier.</p> <p>Applied Information Security: A Hands-on Approach - David Basin and Patrick Schaller.</p>
Medical Electronics and Biomedical Instrumentation	<p>Medical instrumentation Application and Design - John G. Webster.</p> <p>Design and Development of Medical Electronic instrumentation: A Practical Perspective of the Design, Construction - David Prutchi and Michael Norris.</p> <p>Human Physiology - Stuart Fox.</p>





“Your library  
is your paradise.”

# Master of Science in Electronics & Telecommunication 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 1st semester examination of the 2nd 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 Electronics and Telecommunication Engineering shall make an application to 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)

#### **Eng SU Dampage**

MSc in Electronic & Telecommunication Engineering  
(Moratuwa), BSc in Engineering (KDU)

Tel : 0710219227

E-mail : dampage@kdu.ac.lk

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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.

