BEng (Hons) Telecommunications Engineering with Networking (Full Time) - E432 (Under Review)

1. INTRODUCTION

With rapid development in the telecommunications field, there has been a rising demand for competent telecommunications professionals in both the public and private sectors. This undergraduate degree programme has been designed to facilitate the integration of graduates into the job market with prospects to work as telecommunications engineers, professionals, programmers, network engineers, communication application developers and project managers. Students will study a range of core topics such as programming for telecommunications systems, data communications and networking, communications protocol development, communications security and telecommunications project management. The programme aims to develop the critical understanding of the students and equip them with the skills required to design, implement, manage and maintain telecommunication systems and networks.

The challenge for an educational institution is to keep the knowledge imparted to students in the field relevant and adequate. The objective of this engineering course is to provide an up to date and a very good foundation in the various major disciplines of telecommunications engineering. The students are equipped with the theoretical, analytical, design and practical problem-solving aptitudes necessary towards engineering practice. Innovation, scientific rigour, ethical attitude and a sense of purpose for the benefit of society form the core values associated with the delivery of the programme.

The aim of the Department is to achieve academic excellence by providing education such that graduates can assume key roles in engineering practice and applied research in industry, in the private sector and in public service. The programme has been designed to meet the competency standards prescribed by engineering bodies forming part of the Washington Accord for recognition of qualifications and international mobility of engineers.

2. OBJECTIVES

The objectives are to allow students to:

- Develop a sound mastery of the fundamentals of Telecommunications Engineering;
- Acquire skills in interpreting, simulating, modelling, designing, analysing and solving Telecommunications problems;
- Understand the operation of mobile and wireless communications systems for standards such as LTE, 4G, 5G and Wifi.
- Configure routing and switching as well as security protocols in LANs and WANs.
- Develop applications for video communications and SIP based calls.
- Set up basic cloud networking systems as well as IoT systems for real-time data collection and Big data analytics with AI techniques.
- Develop an understanding of the responsibilities of engineers as professionals particularly in terms of ethics and as a contributors to the sustainable development objective;
- Develop a critical mind, independent learning ability, communication, teamwork, management and leadership skills essential in Engineering practice.

3. GENERAL ENTRY REQUIREMENTS

As per General Entry Requirements for admission to the University of Mauritius for Undergraduate Degrees.

4. PROGRAMME REQUIREMENTS

GCE 'A' Level Passes in Mathematics and Physics. Pass at 'O' Level Chemistry.

5. MINIMUM REQUIREMENTS FOR DEGREE AWARD

The award of the degree is subject to the student satisfying the following requirements:

- Successful completion of 145 UoM Credits (580 Notional Hours (NH) Credits) as per the programme structure;
- Satisfactory completion of industrial placements and workshop practice as specified in the programme
- Satisfactory performance in each of the Exit Level Outcomes (ELOs) specified against modules in the module specification sheets.

The programme has been formulated to meet the competency standards prescribed by the Washington Accord. This means that graduates from this programme would in addition to satisfying the prescribed credits per knowledge area (natural sciences, mathematics, engineering sciences, and complementary studies) would also have demonstrated satisfactory performance in the following 11 Exit Level Outcomes:

ELO1:	Problem Solving
ELO2:	Application of scientific and engineering knowledge
ELO3:	Engineering Design
ELO4:	Investigations, experiments and data analysis
ELO5:	Engineering methods, skills and tools, including Information Technology
ELO6:	Professional and technical communication
ELO7:	Sustainability and impact of Engineering activity
ELO8:	Individual, team and multidisciplinary working
ELO9:	Independent learning ability
ELO10:	Engineering Professionalism
ELO 11:	Engineering Management

6. PROGRAMME DURATION

	Normal	**Maximum**
Degree	4	7

7. CLASSIFICATION OF AWARDS

The award classification will be based on the CPA (x) at the end of the Programme of Studies as follows:

CPA	**CLASSIFICATION**	
≥ 70	1st Class	with Honours
60 ≤ x < 70	2nd Class 1st Division	
50 ≤ x < 60	2nd Class 2nd Division	
< 50	No Award	

Note: The general University Regulations pertaining to Exit Points would not be applicable to this programme.

8. PRE-REQUISITE MODULES (PR)

A student will be allowed to follow module **y** of which module **x** is a *pre-requisite* (PR) provided he/she has satisfactorily completed module **x** with at least a pass grade.

9. ASSESSMENT AND PASS REQUIREMENTS

The assessment mode for each module will be based on one or a combination of the following:

- Examination
- Continuous assessment (class tests, assignments, practicals and oral presentations)
- Mini projects
- Practical and other reports
- Presentations
- Attendance to seminars

In order to pass a module a student must obtain an examination mark of at least 40% and a final mark of at least 50%.

Calculation of the final mark: The continuous assessment must account for no less than 30% and for no more than 50% of the final mark, with the exception of modules like design and research projects. Certain modules are assessed on the basis of 100% Continuous Assessment. The specific details and/or formula for the calculation of the final mark are given in the Module Specification Sheet (MSS) of each module.

Students have to retake both continuous assessment and exams in the failed module except in case of Resit Examinations; See provisions for Resit Examinations at Section 10. Students passing failed modules will score maximum marks of 50% in these modules but will have the failed marks not counted in the computation of the CPA.

If the student's CPA is between 40 and 50, he/she fails the year. However, student will be eligible to repeat the year and will maintain credits and marks for individual modules where the mark scored is 50% or above. If the CPA is less than 40, the registration will be terminated.

Rules in Cases of Unsatisfactory Performance of ELOs

The ELOs and assessment criteria are specified against modules in the Module Specification Sheets (MSS).

A student must comply with the subminimum requirements in subdivisions of certain modules. For such modules these specific requirements are given in the MSS of the module. These sub-minima include the achievement of ELOs that are assessed in the module. A sub minimum mark of 50% is required for all assessed elements (relevant questions in an assessment, project or assignment) in which the achievement of exit level outcomes are assessed (for the particular module). The following rules will apply in cases of unsatisfactory performance of ELOs.

(i) ELOs assessed in the written examination

A student failing the assessment of an ELO in a written examination will be deemed to have failed the module. The student will have to retake the module next time it is offered. However, a Resit examination may be granted for the module only if a pass mark of at least 50% has been obtained; See the rules for Resit examinations at Section 10(iii).

(ii) ELOs assessed in coursework, e.g., mini-project work

A student not satisfying an ELO may be given an extension by the lecturer and the moderator prior to the written examination to amend and resubmit the coursework for pass mark of 50 % only. In case the student still fails to satisfy the ELO in the re-submission, he/she will be awarded Grade N in the module

and will have to do a new coursework in the next academic year, provided he/she has scored a minimum of 50 % in the overall module mark.

In case a student fails the module, that is, scored less than 50 % in the overall module mark, he/she will be awarded Grade F and has to retake the whole module the next time it is offered.

(iii) ELOs (other than ELO 6) assessed in the Final Year Project

If a candidate fails to obtain a pass mark of 50 % for any ELO (other than ELO 6) in the Final Year Project, the Board of Examiners may consider one of the following:

- For a project/dissertation with possibility of amendments, award the student Grade N in the module and grant the student an extension period of up to 3 months to amend the work related to the ELO, and resubmit for pass mark of 50 % in the ELO;
- For a project/dissertation with recommendations for a new submission, award the student Grade F in the module and student will have to undertake a new project in the following academic year.

(iv) ELO 6 assessed in the Design Project and/or Final Year Project

For a student failing to obtain the pass mark of 50 % for ELO 6 in the Design Project and/or Final Year Project, the Board of Examiners may consider awarding the student Grade N and granting the student an extension period of up to 3 months to amend the components of the work related to this ELO, and resubmit the Design Project and/or Final Year Project for a pass mark of 50 % in the ELO, provided that the student has scored a minimum of 50 % in the overall module mark.

In case a student fails the module, that is, scored less than 50 % in the overall module mark, he/she will be awarded Grade F and has to retake the Design Project and/or Final Year Project the next time it is offered.

(v) ELO 3 assessed in the Design Project

A student failing ELO 3 will be awarded Grade F in the design project and will have to retake the module the next time it is offered.

The detailed assessment mode for each module is given in the MSS.

10. RESIT EXAMINATIONS

If a student obtains a CPA of at least 50 but has not passed all the modules, a Resit examination may be granted for failed modules by the Board of Examiners provided that:

(i) A minimum of 40% has been obtained in continuous assessment.

(ii) A Final mark of at least 40% has been achieved in the failed modules which exclude assessment of ELOs;

(iii) A pass mark has been achieved but the required sub minimum for passing an Exit Level Outcome (ELO) has not been obtained.

Resit examinations do not apply to final year Project/Dissertation/Mini-Project Portfolio/Industrial Training and to modules assessed solely by continuous assessment.

11. DURATION OF EXAMINATIONS

16 NH credits modules shall have 3-hour examination papers. 12 NH credits and 8 NH credits modules shall have 2-hour examination papers.

12. TERMINATION OF REGISTRATION

Termination of registration will occur in the following circumstances:

- If the CPA is less than 25 at the end of Semester 1, Level 1.
- If the CPA is less than 40 at the end of an academic year.
- If the student fails to obtain credit in a module which he/she is repeating. This excludes Resit examinations.
- If the student does not pass all the modules for 1st, 2nd and 3rd years in a total of five years.

13. UNLESS OTHERWISE DECIDED BY FACULTY BOARD, THE FOLLOWING WILL APPLY FOR:

Progression from lower level to higher level

First Year to Second Year
A student should not have failed more than two modules to be able to register for Second Year modules. If any of the failed modules is a Pre-requisite(s) for a Second Year module, then the candidate cannot register for the PR-linked Second Year module until the Pre-requisite(s) is passed.

Second Year to Third Year
A student **must** have passed all prescribed First Year modules. In addition, the student should not have failed more than two modules of the prescribed second year modules to be able to register for Third Year modules. If any of the failed modules is a Pre-requisite(s) for a Third Year module, then the candidate cannot register for the PR-linked Third Year module until the pre-requisite is passed.

Third Year to Fourth Year
A student **must** have passed all prescribed second year modules. In addition, the student should not have failed more than two modules of the prescribed **Third Year** modules to be able to register for Fourth Year modules. If any of the failed modules is a pre-requisite for a Fourth Year module, then the candidate cannot register for the PR-linked Fourth Year module until the pre-requisite is passed.

Note: If a student is not proceeding to the next level, s/he is deemed to repeat the year, even if the CPA ≥ 50.

14. REGISTRATION FOR MODULES IN A HIGHER YEAR OF STUDY FOR REPEATING STUDENTS

If a student is repeating a year and the CPA is above 45, the student may be allowed to register for a maximum of two modules per semester from the higher year of study. The student will need to make a request to the Dean of Faculty. The student cannot register for a module of a higher year of study if a timetable clash occurs with a module of a previous year which has not yet been passed and which is prescribed for his or her field of study. Moreover, registration for modules is subject to pre-requisites being met.

15. SELF-DEVELOPMENT (SD)

This refers to directly supervised work in terms of hours/week. It includes practicals, tutorials, seminars, visits, mini-projects, oriented-discussion, coached group-work, presentations and other structured activities associated to enhancing the engineering application abilities and professional and personal attributes of the students. Such supervised work is included in the time-table.

16. BENG (HONS) TELECOMMUNICATIONS ENGINEERING WITH NETWORKING PROGRAMME STRUCTURE

YEAR 1- SEMESTER 1

Module Code	Module Name	Hours/Week (L + SD)	UoM Credits	Notional Hours Credits	Pre-requisites
MATH 1162(1)	Mathematics for Engineers 1	3L + 2SD	4	16	
PHYSI 1111(1)	Physics for Engineers 1	3L + 2SD	4	16	
ELEC 1114(1)	Programming for Telecommunications Systems 1	2L + 2SD	3	12	
ELEC 1115(1)	Fundamentals of Telecommunication Systems and Applications	2L + 2SD	3	12	
ENGG 1103(1)	Professional Communication for Engineers	2L + 2SD	3	12	
CHEM 1188(1)	General Chemistry	1.5L + 1SD	2	8	
TOTAL			**19**	**76**	

YEAR 1- SEMESTER 2

Module Code	Module Name	Hours/Week (L + SD)	UoM Credits	Notional Hours Credits	Pre-requisites
ENGG 1202(1)	Material Science and Engineering	3L + 2SD	4	16	
MATH 1262(1)	Mathematics for Engineers 2	3L + 2SD	4	16	
PHYSI 1212(2)	Physics for Engineers 2	3L + 2SD	4	16	
ELEC 1214(1)	Programming for Telecommunications Systems 2	2L + 2SD	3	12	
SOCI 1207(1)	Contemporary Society & Development	1.5L + 1SD	2	8	
ELEC 1215(1)	Communication Electronics 1	1.5L+1SD	2	8	
ELEC 1220	Vacation Training -Workshop Practice			0	
TOTAL			**19**	**76**	

YEAR 2 - SEMESTER 1

Module Code	Module Name	Hours/Week (L + SD)	UoM Credits	Notional Hours Credits	Pre-requisites
MATH 2163(3)	Mathematics for Engineers 3B	1.5L + 1SD	2	8	
ELEC 2114(3)	Electrical Circuits	3L+ 2SD	4	16	PHYSI 1212(2)
ELEC 2115(3)	Principles of Signals and Systems	1.5L + 1SD	2	8	
ELEC 2120(3)	Telecommunications Protocol Development	2L + 2SD	3	12	ELEC 1214(1)
ELEC 2117(3)	Data Communication Systems and Networking 1	3L + 2SD	4	16	ELEC 1115(1)
ECON 2180(3)	Economics & Accounting	1.5L + 1SD	2	8	
ELEC 2121(3)	Electronics for Telecommunications	2L + 2SD	3	12	ELEC 1215(1)
TOTAL			**20**	**80**	

YEAR 2 - SEMESTER 2

Module Code	Module Name	Hours/Week (L + SD)	UoM Credits	Notional Hours Credits	Pre-requisites
ELEC 2202(3)	Engineering Probability & Statistics	3L + 2SD	4	16	
ELEC 2216(3)	Telecommunications Applications Development 1	2L + 2SD	3	12	ELEC 1214(1)
ELEC 2217(3)	Data Communication Systems and Networking 2	2L + 2SD	3	12	ELEC 1115(1)
ELEC 2215(3)	Principles of Communication Systems 1	3L + 2SD	4	16	MATH 1262(1)
ELEC 2203(3)	Instrumentation & Measurement 1	1.5L + 1SD	2	8	
ELEC 2207(3)	Introduction to Engineering Design	1.5L+ 1SD	2	8	
TOTAL			**18**	**72**	

YEAR 3 - SEMESTER 1

Module Code	Module Name	Hours/Week (L + SD)	UoM Credits	Notional Hours Credits	Pre-requisites
ELEC 3109(5)	Telecommunications System Design 1	1L + 6SD	5	20	ELEC 2207(3)
ELEC 3111(5)	Telecommunications Applications Development 2	2L + 2SD	3	12	ELEC 2216(3)
ELEC 3112(5)	Multimedia Communication Systems	2L + 2SD	3	12	ELEC 2215(3)
ELEC 3113(5)	Wireless Communications 1	2L + 2SD	3	12	ELEC 2215(3)
ELEC 3118(5)	Mobile Communications 1	2L + 2SD	3	12	ELEC 2215(3)
MECH 3107(5)	Project Management	1.5L+ 1SD	2	8	
TOTAL			**19**	**76**	

YEAR 3 - SEMESTER 2

Module Code	Module Name	Hours/Week (L + SD)	UoM Credits	Notional Hours Credits	Pre-requisites
ELEC 3209(5)	Mobile Communications 2	2L + 2SD	3	12	ELEC 2215(3)
ELEC 3212(5)	Telecommunications System Design 2	1L + 6SD	5	20	ELEC 2207(3)
MATH 3281(5)	Mathematics for Engineers 4B	3L + 2SD	4	16	
CHE 3211(5)	Environmental Management	1.5L + 1SD	2	8	
ELEC 3205(5)	Principles of Communication Systems 2	3L + 2SD	4	16	ELEC 2215(3)
ELEC 3210	Industrial Placement		0	0	
TOTAL			**18**	**72**	

YEAR 4 – YEARLY MODULE

Module Code	Module Name	Hours/Week (L + SD)	UoM Credits	Notional Hours Credits	Pre-Requisite
ELEC 4100Y(5)	Degree Project		8	32	
ELEC 4212(5)	Design Project		6	24	ELEC 3109(5); ELEC 3212(5)

YEAR 4 - SEMESTER 1

Module Code	Module Name	Hours/Week (L + SD)	UoM Credits	Notional Hours Credits	Pre-requisites
ELEC 4114(5)	Radio Frequency and Microwave Engineering	2L + 2SD	3	12	ELEC 3205(5)
ELEC 4127(5)	Telecommunications Security	2L + 2SD	3	12	
ENGG 4102(5)	Sociology for Engineers	1.5L + 1SD	2	8	
	Elective 1*	1.5L+ 1SD	2	8	
TOTAL			**10**	**40**	

***Choose any ONE of the following Elective modules:**

Module Code	Module Name	Hours/Week (L + SD)	UoM Credits	Notional Hours Credits	Pre-requisites
ELEC 4118(5)	Broadcasting Systems & Technologies	1.5L+ 1SD	2	8	
ELEC 4131(5)	Wireless Communication Systems 2	1.5L + 1SD	2	8	ELEC 3113(5)
ELEC 4110(5)	Digital Signal Processing 2	1.5L+ 1SD	2	8	
ELEC 4125(5)	Satellite Communication	1.5L+ 1SD	2	8	

Note: The Department reserves the right NOT to run an Elective.

YEAR 4 - SEMESTER 2

Module Code	Module Name	Hours/Week (L + SD)	UoM Credits	Notional Hours Credits	Pre-requisites
ELEC 4216(5)	Big Data Analytics and AI	1.5L+ 1SD	2	8	ELEC 3111(5)
ELEC 4116 (5)	Optical Communication Systems And Networking	3L + 2SD	4	16	ELEC 3205(5)
MECH 4201(5)	Engineering Professionalism	1.5L+ 1SD	2	8	
TOTAL			**8**	**32**	

Total Notional hours credits = 580

Total UoM Credits = 145

This Programme has been amended as follows:
Year programme was launched: 2016
Years programme was previously revised: 2019