BS in Electrical and Computer Engineering (Under Review) – E447

1. Introduction

The University of Mauritius (UoM) and the University of Arizona (UA) have partnered to offer an Electrical and Computer Engineering programme.

This highly ranked programme from UA Engineering department tops the lists of many students looking to work on smart grids, autonomous systems, the Internet of Things, cyber-security, big data, mobile health, cloud computing and many other emerging technologies. The curriculum allows students to focus on particular interests, such as Autonomous systems and robotics, Biomedical technologies, Circuits, microelectronics and VLSI, Communications, coding and information theory, Computer architecture and cloud computing, Optics, photonics and THz devices and systems, Signal, image and video processing, Software engineering and embedded systems and wireless networking, security and system.

Though students interested in electrical engineering tend to focus on power systems, signal processing and telecommunications, computer engineering students concentrate on the design of software, computer chips and robotics, for example, the two areas are well integrated.

Career Opportunities

Students from UA who have graduated from this programme have received job offers even before they graduate at companies such as Raytheon, Intel, IBM, Qualcomm, Motorola, Microsoft, Honeywell, Texas Instruments, GM, Agilent, NASA, Boeing and Pixar.

2. Objectives

This programme has been designed to enable students to:

- Develop a sound mastery of the fundamentals of Electrical and Computer Engineering;

- Acquire skills in interpreting, simulating, modelling, designing, analysing and solving Electrical and Computer Engineering problems;

- 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 Electrical and Computer Engineering practice.

In addition the curriculum has been designed to develop educational objectives which allow students to enhance technical proficiency, professional growth and inculcate management skills. Building on fundamental knowledge, graduates should continue to develop technical skills within and across disciplines in electrical and computer engineering or in closely related fields. Graduates should develop and exercise their capabilities for lifelong learning to enhance their technical and nontechnical skills. Graduates should develop and refine their knowledge and skills for management, communication and professional ethics.

3. General Entry Requirements

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

4. Programme Entry Requirements

At least 2 GCE 'A' Level Passes including Mathematics and Physics or any other qualification acceptable to the University of Mauritius.

• GCE 'A' Level Passes in Mathematics and Physics.

• Pass at 'O' Level Chemistry.

All students will have to satisfy the UA admission merit criteria. Follow the link below:

https://admissions.arizona.edu/how-to-apply/international/country-requirements.

5. Minimum Requirements for Degree Award (Awarded by both UoM and UA)

The award of the degree is subject to the student satisfying the following requirements:
- o Successful completion of 130 Credits as per the programme structure;
- o Satisfactory completion of industrial placements as specified in the programme;
- o Satisfactory performance in each of the eleven Graduate Attributes (GAs) 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, design and synthesis, and complementary studies) would also have demonstrated satisfactory performance in the following eleven Graduates Attributes (GAs):

GA 1: Problem Solving
GA 2: Application of scientific and engineering knowledge
GA 3: Engineering Design
GA 4: Investigations, experiments and data analysis
GA 5: Engineering methods, skills and tools, including Information Technology
GA 6: Professional and technical communication
GA 7: Impact of engineering activity
GA 8: Individual, team and multidisciplinary working
GA 9: Independent learning ability
GA 10: Engineering Professionalism
GA 11: Engineering Management

6. Programme Duration

	Normal (Years)	Maximum (Years)
Degree:	4	7

7. Classification of Awards for the Programme

A. University of Arizona
The award classification will be based on the grade point system in place at the University of Arizona.

This honor, based upon graduation grade-point-average, becomes part of the official record, is

awarded upon graduation and appears on the transcript and diploma of the recipient.

- Summa Cum Laude -- is awarded to candidates whose grade-point-average is 3.900 or higher.
- Magna Cum Laude -- is awarded to candidates whose grade-point-average is 3.700-3.899.
- Cum Laude -- is awarded to candidates whose grade-point-average is 3.5000-3.699.
- Graduate -- is awarded to candidates whose grade-point-average is 2.000-3.499.

The grading system in place at Arizona University is as follows.

GRADING SCALE		DISTRIBUTION	
A	90 to 100%	900 – 1000 Points	A
B	80 to 89%	800 – 899 Points	B
C	70 to 79%	700 – 799 Points	C
D	60 to 69%	600 – 699 Points	D
E	Below 60%	0 – 599 Points	E

Grade	Point
A	4
B	3
C	2
D	1
E	0

B. University of Mauritius

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	
$60 \leq x < 70$	2nd Class 1st Division	with
$50 \leq x < 60$	2nd Class 2nd Division	Honours
< 50	No Award	

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

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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
- 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, but can repeat the year, will maintain credits and marks for individual modules where the mark is 50% or above. If the CPA is less than 40, the registration will be terminated.

Rules in Cases of Unsatisfactory Performance of Graduate Attributes (GAs)

The GAs 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 GAs that are assessed in the module. A subminimum mark of 50% is required for all assessment elements (relevant questions in an assessment, project or assignment) in which the achievement of graduates attributes are assessed (for the particular module).

The following rules will apply in cases of unsatisfactory performance of GAs.

(i) GAs assessed in the written examination.

A student failing the assessment of a GA in an examination will be deemed to have failed the module. The student will have to retake the module next time it is offered. Special retake examinations will not apply to these modules.

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

A student not satisfying a GA may be given an extension by the lecturer and moderator prior to the examination to amend and resubmit the coursework for pass mark of 50 % only. In case the student still fails to satisfy the GA 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.

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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.

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 GAs;
 (iii) A pass mark has been achieved but the required sub minimum for passing a Graduate Attribute (GA) 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

- 3 and 4 credit modules shall have 3-hour examination papers.
- Modules with less than 3 credits 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.
- If the student does not pass all the modules for 1st, 2nd and 3rd years in a total of five years.

13. Progression from lower level to higher level

First Year to Second Year
A student cannot fail 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 affected 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 cannot fail 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 affected 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 cannot fail 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 affected 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.

OR Academic Progress as per University of Arizona policy

Undergraduate students will be considered to be making normal progress toward a degree if their cumulative grade-point-average (GPA) for all work attempted at the University of Arizona is not less than 2.000.

One of the requirements for undergraduates to be eligible to continue at the University is that they earn a minimum cumulative grade-point-average (GPA) of 2.000.

Undergraduate students not meeting academic progress will be placed on academic probation. Academic probation status occurs following any semester when the student's cumulative grade-point-average (GPA) drops below 2.000. The first time that students are placed on academic probation, they should meet with their academic advisor (http://advising.arizona.edu/) to discuss the consequences, such as enrollment in a mandatory Academic Recovery Program during the following semester 1 or 2. Students on academic probation are subject to restrictions or requirements, such as certain courses/module that are determined by the faculty in which the student is enrolled. Students are removed from academic probation upon earning the minimum 2.000 cumulative GPA as required by the University. However, if student's GPA drops below 2.00 after coming out of probation, the student may be terminated from the programme of study. Students may refer to following link for further information:https://catalog.arizona.edu/policy/undergraduate-academic-eligibility-policy.

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. Programme Plan

Year 1, Semester 1

Module Code	Course Title	UoM Credits	UA Unit Conversion
ENGG 1100(1)	General Chemistry I	4	4
ENGG 1101(1)	First Year Composition	3	3
	Select Gen. Ed. Course from Options Provided (T1)	3	3
ENGG 1102(1)	Calculus I with Applications	3	3
HED 102	Succeeding as a Global Wildcat	0	0
ECE 175	Comp. Progr. for Eng. Applications I	3	3
	Semester Total	**16**	**16**

Year 1, Semester 2

Module Code	Course Title	UoM Credits	UA Unit Conversion
ENGG 1200(1)	Calculus II	3	3
ECE 275	Comp. Programming for Eng. Applications II	3	3
ENGG 1201(1)	Introductory Mechanics	4	4
ENGG 1202(1)	First Year Composition	3	3
	Select Gen. Ed. Course from Options Provided (T1)	3	3
HED 102	Succeeding as a Global Wildcat	1	1
	Semester Total	**17**	**17**

Year 2, Semester 1

Module Code	Course Title	UoM Credits	UA Unit Conversion
ECE 274A	Digital Logic	4	4
ECE 220	Basic Circuits	5	5
ENGG 2100(3)	Vector Calculus	4	4
ENGG 2102(3)	Introductory Electricity and Magnetism	4	4
HED 103	Succeeding as a Global Professional	0	0
	Semester Total	**17**	**17**

Year 2, Semester 2

Module Code	Course Title	UoM Credits	UA Unit Conversion
ECE 320A	Circuit Theory	3	3
ELEC 2218(3)	Introductory Optics and Thermodynamics	2	2
ELEC 2219(3)	Discrete Mathematics in Comp. Sci. OR Intro. To Discrete Structures	3	3
ENGG 2200(3)	Intro. to Ordinary Differential Equations	3	3
HED 103	Succeeding as a Global Professional	1	1
	Select Gen. Ed. Course from Options Provided (T1)	3	3
ELEC 2220(3)	Design of Electronic Circuits	3	3
	Semester Total	**18**	**18**

Year 3, Semester 1

Module Code	Course Title	UoM Credits	UA Unit Conversion
ELEC 3119(5)	Applications for Eng. Mathematics	4	4
ELEC 3120(5)	Engineering Ethics	1	1
ELEC 3121(5)	Electronic Circuits	4	4
ECE 381A	Introductory Electromagnetics	4	4
	Select Gen. Ed. Course from Options Provided (T2)	3	3
	Semester Total	**16**	**16**

Year 3, Semester 2

Module Code	Course Title	UoM Credits	UA Unit Conversion
ELEC 3213(5)	Device Electronics	3	3
ELEC 3214(5)	Antenna Theory and Design	3	3
	Tier I Gen. Ed.	3	3
ECE 340A	Intro. To Communications	3	3
ECE 372A	Microprocessor Organization	4	4
ELEC 3210	Industrial Placement	0	0
	Semester Total	**16**	**16**

Year 4, Semester 1

Module Code	Course Title	UoM Credits	UA Unit Conversion
ELEC 4135(5)	Cross-disciplinary Design	3	3
SIE 330R	Eng. Experiment Design	3	3
ECE 429	Digital Signal Processing	3	3
ECE 441A	Automatic Control	3	3
ELEC 4136(5)	Principles of Artificial Intelligence	3	3
	Semester Total	**15**	**15**

Year 4, Semester 2

Module Code	Course Title	UoM Credits	UA Unit Conversion
ELEC 4240	Cross-disciplinary Design	3	3
SIE 430	Eng. Statistics	3	3
ECE 435A	Digital Comm. Systems	3	3
SIE 440	Survey of Optimization	3	3
	Tier II Gen. Ed.	3	3
	Semester Total	**15**	**15**

Note:

Students reading for the programme can opt for other Tier 1 and Tier II modules or other Engineering minor courses offered by UA subject to approval by the Dean of Faculty of Engineering of UoM.

13. (i) List of CORE Modules from UoM

ENGG 1100(1)	General Chemistry I (with Lab)
ENGG 1101(1)	First Year Composition
ENGG 1102(1)	Calculus I with Applications
ENGG 1200(1)	Calculus II
ENGG 1201(1)	Introductory Mechanics
ENGG 1202(1)	First Year Composition
ENGG 2100(3)	Vector Calculus
ENGG 2102(3)	Introductory Electricity and Magnetism
ELEC 2218(3)	Introductory Optics and Thermodynamics
ELEC 2219(3)	Discrete Mathematics in Comp. Sci. OR Intro. To Discrete Structures
ENGG 2200(3)	Intro. to Ordinary Differential Equations
ELEC 2220(3)	Design of Electronic Circuits

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ELEC 3119(5)	Applications for Eng. Mathematics	
ELEC 3120(5)	Engineering Ethics	
ELEC 3121(5)	Electronic Circuits	
ELEC 3213(5)	Device Electronics	
ELEC 4135(5)	Cross-disciplinary Design	
ELEC 3214(5)	Antenna Theory and Design	
ELEC 4136(5)	Principles of Artificial Intelligence	
ELEC 4240(5)	Cross-disciplinary Design	
ELEC 3210	Industrial Placement	

(ii) List of CORE Modules from UA

ECE 175	Comp. Progr. for Eng. Applications I
ECE 275	Comp. Programming for Eng. Applications II
	General Elective
ECE 275	Comp. Programming for Eng. Applications II
	General Elective
ECE 274A	Digital Logic
ECE 220	Basic Circuits
ECE 320A	Circuit Theory
ECE 381A	Introductory Electromagnetics
ECE 340A	Intro. To Communications
ECE 372A	Microprocessor Organization
SIE 330R	Eng. Experiment Design (Tech Elec)
ECE 429	Digital Signal Processing (Tech Elec)
ECE 441A	Automatic Control (Tech Elec)
SIE 430	Eng. Statistics - Technical Elective
ECE 435A	Digital Comm. Systems - Tech. Elective
SIE 440	Survey of Optimization - Tech Elective
HED 102	Succeeding as a Global Wildcat
HED 103	Succeeding as a Global Professional

(iv) List of General Education Modules from UA

RNR 150C1	Sustainable Earth: Natural Resources and the Environment	T1 Indv
GER 150B1	Becoming Multilingual: Learning Two or More Languages	T1 Indv
MSE 170A2	Energy Systems and Sustainability	T1
ASTR 170A1	Planet Earth: Evolution of the Habitable World	T1
MUS 109	Rock and American Popular Music	T2 Arts
HIST 247	Nature and Technology in the World	T2
GEOS 210	Environmental Geology	T2

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