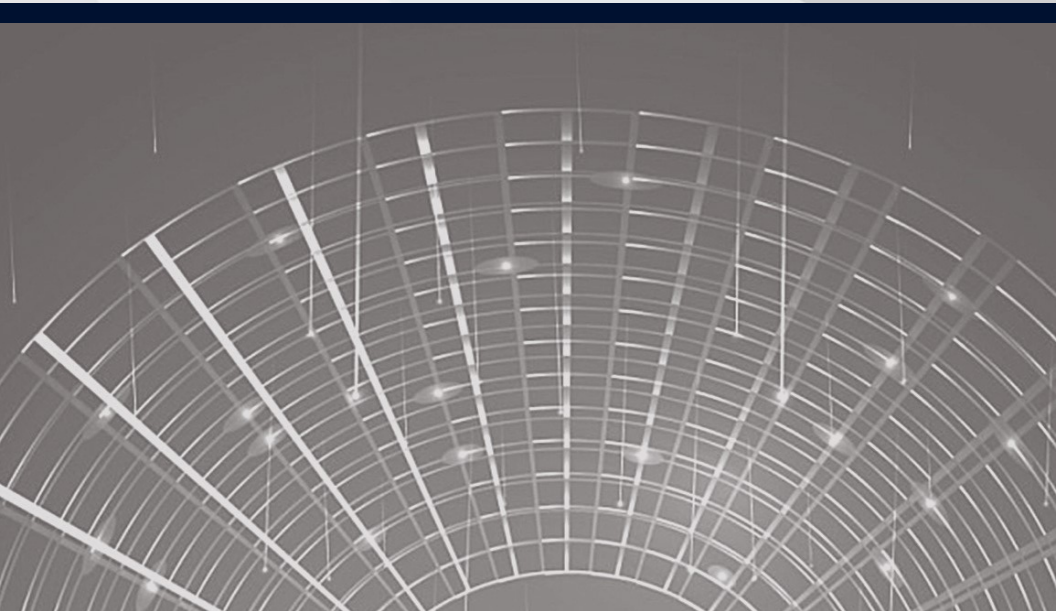
UWI
MONA CAMPUS
JAMAICA, WEST INDIES

FACULTY OF
ENGINEERING

2023-2024

UNDERGRADUATE INFORMATION HANDBOOK

Regulations & Syllabuses



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HOW TO USE THIS HANDBOOK

The Faculty handbooks (also known as Faculty Booklets) are available on the Campus website in PDF format at https://www.mona.uwi.edu/engineering/orientation. The handbook includes:

- Relevant **Faculty Regulations** – e.g. Admission Criteria, Exemptions, Progression, GPA, Leave of Absence, etc.
- Relevant **University Regulations** including the Plagiarism Regulations and Declaration Forms
- Other Information on **Co-Curricular** courses, **Language** courses and **Support for Students** with physical and other disabilities or impairments.
- **Programme Descriptions and Course Listings** which include the list of courses to be pursued in each programme (degrees, diplomas and certificates), sorted by level and semester; course credits and credits to be completed for each programme – majors, minors and specials.
- **Course Descriptions** which may include details such as prerequisites and methods of assessment.

Students should note the following disclaimer:

Progress through a programme of study at the University is governed by Faculty Regulations and University Regulations. Should there be a conflict between Faculty Regulations and University Regulations, University Regulations shall prevail. Notwithstanding the contents of the Faculty Handbook, the University reserves the right to modify, add or altogether remove from a Programme, certain aspects of any course offered by the University, as described in either the Handbooks, Course outlines or any other Course materials provided.

Though the Faculty worked assiduously to present the most updated information in the Handbook, students should communicate with their Heads

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ACADEMIC DIARY

Semester I Dates

- Semester I begins Sunday August 27, 2023
- Teaching begins Monday September 04, 2023
- Teaching ends Friday December 1, 2023
- Semester Study/Review Week Sunday November 26, 2023 - Sunday December 3, 2023
- Examinations will be in Monday December 4, 2023
- Semester I ends Friday December 22, 2023

Semester II Dates

- Semester II begins Sunday January 21, 2024
- Teaching begins Monday January 22, 2024
- Teaching ends Friday April 19, 2024
- Semester Study/Review Week Sunday April 14, 2024 - Sunday April 21, 2024
- Examinations will be in Monday April 22, 2024
- Semester II ends Friday May 10, 2024

MISSION STATEMENT

The mission of the Faculty of Engineering is to provide high quality education in engineering with emphasis on application via research and development in support of Caribbean business, industry and infrastructure, with its graduates, staff and facilities being at the forefront in propelling growth, development and innovation in the Caribbean and the world.

MESSAGE FROM THE DEAN

On behalf of all staff of the Faculty of Engineering (FOE) of The University of the West Indies, Mona Campus, I happily welcome all new and returning students for the 2023/2024 Academic Year. The UWI, Mona has been globally ranked by Times Higher Education to be in the top 1.5% of universities globally. The BSc Electronics Engineering programme is internationally accredited by the North American engineering accrediting body ABET. We are the only Faculty with an ABET accredited programme in Jamaica. All other engineering programmes within the faculty are currently being revised and will be submitted to ABET for similar accreditation.

Our focus on the continuous improvement of our programmes along with the building upon the UWI's 2022 – 2027 strategic plan, ensures that the Faculty of Engineering remains at the forefront of the UWI's continued reputation as an institution of global excellence. All indicators of success are on the rise. Our graduates who enter the workforce are among the most demanded by industries. Those who decide to further their studies have had their excellence awarded with Chevening Scholarships and being shortlisted for Rhodes Scholarships. Our Master of Philosophy (MPhil) and Doctor of Philosophy (PhD) research degree programmes commenced in 2018 and have been going well A MSc in Engineering and Management, which is a taught degree programme, which commenced in September 2021, is also offered by the Faculty.

We continue to strengthen our partnerships with local and international industries and academia. New Fortress Energy offers 10 scholarships each valued at US$5,000 per year for qualifying students. Mona-Tech Engineering Services, the commercial arm of the Faculty of Engineering, which managed the commissioning of a 7 Megawatt Combined Heat and Power (CHP) plant for the Mona campus that has dramatically reduced the campus's energy costs, continues to provide internship opportunities at this facility to our engineering students.

We encourage your participation in the activities of the student engineering clubs (MES, JIE, IEEE, I-StructE) and also your support for our team preparing for the annual international robotics competition by the Institute of Electrical

(Continued on page 4)

and Electronics Engineers (IEEE) South East USA. We have continued to excel in this competition and have won 3rd place on two occasions among 54 participating universities in South East USA. The Faculty of Engineering continues to work hard towards creating a Global hub for engineering teaching, research and practice; with strong synergies with our industrial, academic and commercial partners.
Engineering students have been and will continue to be granted internship opportunities at this facility.

We encourage your participation in the activities of the student engineering clubs (MES, JIE, IEEE, I-StructE) and also your support for our team preparing for the annual international robotics competition by the Institute of Electrical and Electronics Engineers (IEEE) South East USA. The Faculty of Engineering continues to work hard towards creating a Global hub for engineering teaching, research and practice; with strong synergies with our industrial, academic and commercial partners.

We wish you a very successful 2023/2024 academic year.

Adrian Lawrence, PhD, PE
Dean, Faculty of Engineering

STAFF LISTING

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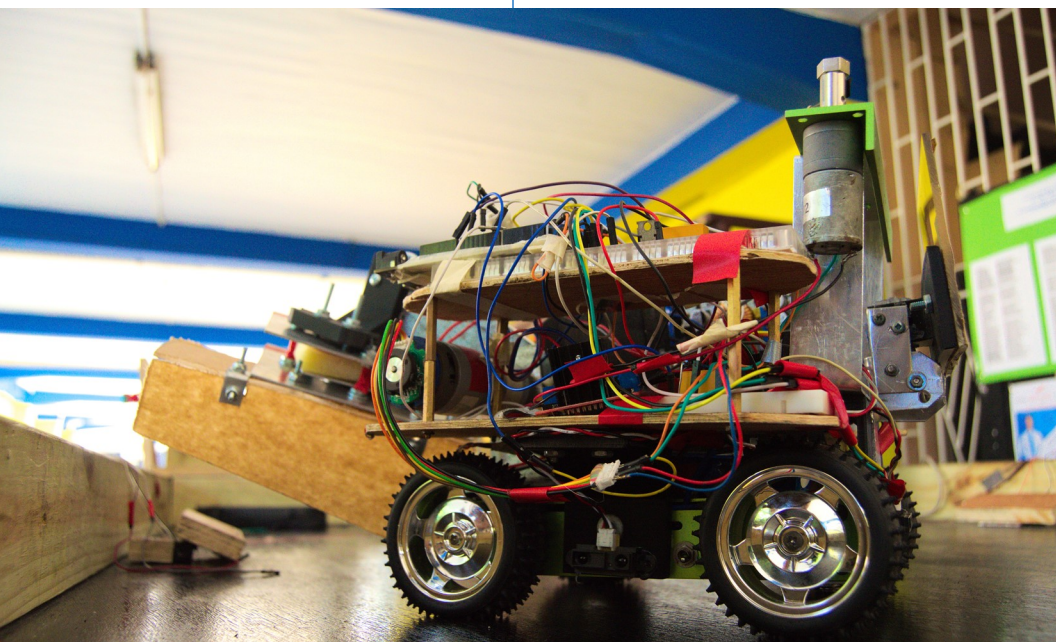

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Attorney at Law
(Business Law)

Johnson, Vance
MSc, UWI St. Augustine
Industry: Environmental Engineer, Conrad Douglas and Associates
(Geotechnical Engineering)
Ext: 2254

Lewis, Glendon
Industry
(Structural Design I)

Mills, Ainsley
Industry
(Engineering Graphics)

Young, Garfield
PhD
Geomatics Education
(Geomatics for Civil and Environmental Engineers)

ACADEMIC QUALITY ASSURANCE

Quality assurance within the Faculty of Engineering (FoE), UWI Mona, is aligned with ABET international accreditation processes. The Electronics Engineering (Bachelor of Science) program is accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org, under the General Criteria and the Program Criteria for Electrical, Computer, Communications, Telecommunication(s) and Similarly Named Engineering Programs.The lessons learned from this accreditation process, are being used to bring all other FoE programs in line with ABET standards. Each BSc Engineering program at Mona will apply for ABET accreditation.

Programme Educational Objectives (PEOs)

The overall objectives of the Engineering programs in the Faculty of Engineering are to produce graduates who within a few years after graduation:

1. Have a reputation as a source of innovative solutions to complex problems.
2. Serve the community as ethical and responsible professionals.
3. Pursue advanced study and research in engineering.
4. Have developed life-long learning skills and abilities.
5. Have developed essential (soft) skills to engage technical and non-technical audiences.
6. Guided by the principles of sustainable development and global interconnectedness, will understand how engineering projects affect society and the environment.

Programme Outcomes (aligned with ABET Student Outcome)

Graduates with a Bachelor of Science from any of the programs within the Faculty of Engineering, UWI Mona, should be able to:

1. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

2. Apply engineering design to produce solutions that meet specified needs with consideration given to public health, safety and welfare, as well as global, cultural, social, environmental and economic factors.
3. Communicate effectively with a range of audiences.
4. Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts.
5. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

6. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

7. Acquire and apply new knowledge as needed, using appropriate learning strategies.

BSc in ELECTRONICS ENGINEERING

Head of Programme: Dr. Rahkee

Accreditation

The Electronics Engineering (Bachelor of Science) program is accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org, under the General Criteria and the Program Criteria for Electrical, Computer, Communications, Telecommunication(s) and Similarly Named Engineering Programs.

Program Objectives

The Electronics Engineering program graduates are expected to attain or achieve the following Program Educational Objectives within five years after graduation:

1.Have a reputation as a source of innovative solutions to complex problems.
2.Serve the community as ethical and responsible professionals.
3.Pursue advanced study and research in engineering.
4.Have developed life-long learning skills and abilities.
5.Have developed essential (soft) skills to engage technical and non-technical audiences.
6.Guided by the principles of sustainable development and global interconnectedness, will understand how engineering projects affect society and the environment.

Student Outcomes

Graduates of the Bachelor of Science (BSc) Electronics Engineering program should have the ability to:

1.Identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics
2.Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental and economic factors
3.Communicate effectively with a range of audiences
4.Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts
5.Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives
6.Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7.Acquire and apply new knowledge as needed, using appropriate learning strategies

Data

September 2022 enrolment in the BSc Electronics Engineering program: 47
Number of 2021-22 BSc Electronics Engineering program graduates: 10

SECTION 1: GENERAL INFORMATION

PROGRAMMES OF STUDY

The Faculty of Engineering, Mona offers four (4) MPhil/PhD programmes, one (1) MSc programme and four (4) of Bachelor of Science, Engineering (BSc (Eng.)) degree programmes.

BSc Engineering (Mona) Programme Specialisations

1. Biomedical Engineering
2. Civil Engineering
3. Electrical Power Engineering
4. Electronics Engineering

The BSc Programmes are divided into Levels 1, 2 and 3 and are conducted over three (3) academic years; each year consisting of two (2) semesters. A candidate becomes eligible for the award of a BSc degree only upon satisfactory completion of one of these programmes, as determined by the prescribed regulations. Degrees may be awarded in each programme with First Class Honours, Second Class Honours (Upper or Lower Division), or Pass.

Preliminary Engineering programme

The Preliminary Engineering programme is a 1-year programme that serves as a qualifying year for students seeking to access any one of the 3-year BSc engineering programmes. The existing BSc. Engineering programmes have a minimum entry requirement of passes in CAPE mathematics and physics (or equivalent). Students who do not meet this requirement will now have the opportunity for admissions to the preliminary year. This preliminary year allows students from any country to access our engineering programmes. It creates a pathway for students from non-traditional educational backgrounds, such as City and Guilds.

SECTION 2: STUDENT PRIZES

The Faculty prides itself on its strong tradition of nurturing top class graduates who have gone on to distinguish themselves as regional and international industry professionals or in degree programmes in other universities. Student motivation plays a significant role in this regard. The faculty has an Honour Society programme which recognizes the top students in the faculty each semester and encourages a culture of excellence among students. The faculty also offers bursaries to all Jamaican residents in Jamaica who are registered in the Pre-Engineering Programme and to needy students who have maintained a GPA of 3.0 or higher.

The Faculty of Engineering thanks the following industry stakeholders and individuals who have partnered with us to recognize and reward our students/graduates who have excelled in their respective programmes during the 2021/2022 Academic Year:

- New Fortress Energy
- Gore Developments Ltd.
- UWI Class of 1967
- Elaine Bryan Foundation

SECTION 3: UNDERGRADUATE REGULATIONS

All students of the University are subject to the General Regulations for Students approved by the Senate of The UWI. Where there is conflict between the regulations of any Faculty and the University Regulations, the University Regulations shall apply.

QUALIFICATIONS FOR ADMISSION TO BSc ENGINEERING PROGRAMMES

Applicants who wish to begin an undergraduate degree programme in the Faculty of Engineering must fulfill the general University regulations concerning matriculation and the specific requirements of the Faculty.

University Requirements

Proficiency in English

3.1.(a) Persons applying to enter undergraduate degree programmes at the University of the West Indies, Mona are required to sit the English Language Proficiency Test (ELPT) set by the University. Only persons who are successful in this test or who have been granted exemption, based on distinction grades in CXC CSEC English and CAPE Communication Skills (or equivalent), will normally be considered for entry into the degree programme at Mona.

Applications Deadline

3.1.(b) Applications for all BSc Engineering programmes are usually opened in November of the previous academic year and extends up to end of August, prior to the start of the academic year for which the applications are being made. Applications must be made and submitted online through the Admissions Section at www.mona.uwi.edu/apply.

The University's Matriculation Requirements

3.1.(c) Applicants must have passes in at least five (5) subjects at CXC (CSEC) General Proficiency (Grades I or II pre-1998 and I-III from 1998) or GCE O'Levels or BGCSE (Grades A-C) or approved equivalents, which must include English Language.

Faculty Requirements

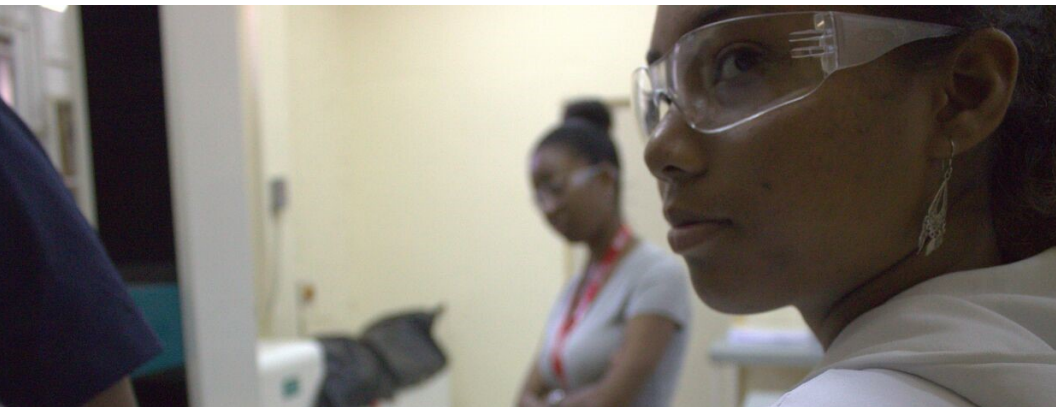
3.1.(d) The specific requirements of the Faculty vary by programme, and are set out below.

1. Preliminary Engineering Programme (1-year)

   Minimum entry requirements to the preliminary Engineering programme are:

   i. Passes in at least 5 CXC CSECs, or 5 GCE O'Levels, or 5 International Baccalaureate® (IB) all including Mathematics, English, Physics (or equivalent) and any other two subjects; or
   ii. Certificate or Diploma in City & Guilds engineering examinations; or
   iii. Relevant high school and SAT passes from international institutions, or
   iv. Relevant passes in 'Gaokao' (China's National College Entrance Examination) examination, or
   v. Passes in relevant college entry exams from other countries, or
   vi. Passes in high school Mathematics and Physics (or other sciences) and completed HEART/NTA diploma in relevant technical discipline, or has been working in relevant technical field for at least 4 years.

2. Three-year BSc Engineering Degree Programmes



Admissions for the traditional 3-year BSc engineering programmes (starts at Level 1) requires passes in at least five (5) CSECs (or equivalent) including English A, Mathematics, and Physics, along with:

i. Passes in units 1 and 2 of CAPE Mathematics and Physics; or

ii. Passes in GCE A'Levels Mathematics and Physics; or

iii. Passes in MATH0100, MATH0110, PHYS0411, PHYS0412, PHYS0421 and PHYS0422 from the Preliminary year of the Faculty of Science and Technology of The UWI; or

iv. Diploma in a relevant Engineering programme from an approved institution; or

v. Diploma in a relevant Engineering discipline in the City & Guilds examination, inclusive of a pass in the advanced Mathematics and science courses (Unit 351); or

vi. Associate degrees with Mathematics and Physics or relevant Engineering programmes from approved community colleges; or

vii. Passes in Higher International Baccalaureate (IB) in Mathematics and Physics; or

viii. Successful completion of the Preliminary Engineering Year with minimum GPA of 2.0, including passes in all pre-Engineering Mathematics and Physics courses.

3. Applicants with a Diploma in a relevant Engineering discipline

Applicants with a Diploma in a relevant Engineering discipline (or equivalent) and a minimum GPA of 2.5, may be eligible to matriculate into Level 2, **but** may be required to do prescribed Level 1 course (s).

PROGRAMMES OF STUDY

3.2. In pursuance of a BSc in an Engineering discipline, students are normally required to:

(a) Not carry a course load of more than 18 credits per semester.

(b) Pursue the approved programme curriculum and obtain, normally within a maximum of 14 semesters, the credits as prescribed in the Programme's Schedule; except as otherwise

provided in Regulations 3.3 (Exemptions) and 3.27 and 3.28 (Credit Transfers). Students who CANNOT complete their programmes of study within 14 semesters of registration would be declared as having failed the programme.

(c) Normally pass prerequisites for courses before being allowed to register for those courses.

(d) Ensure that in registering in any given semester that priority is given to all outstanding or trailing eligible lower level courses and to prerequisite requirements.

(e) Not take more than the normal number of credits as stipulated in the Schedule of Courses for the registered Programme in a particular semester unless a single course is being trailed and a minimum GPA of at least 2.7 has been achieved in the Year preceding that semester. In this case, the student shall seek approval from the Programme concerned for registering for a higher load.

(f) Attend all classes for all courses for which they are registered for examinations, including courses that are being repeated, unless they have been granted permission in accordance with Regulation 3.2(g).

(g) Request permission to register for “Examinations Only”, i.e. to not attend classes but to write course examinations, only in courses that are being repeated by the student and up to a maximum of seven (7) credits, provided they are credits needed to graduate, and provided that all coursework was previously and successfully completed.

(h) Along with Regulation 3.2(c), pass all required Level 1 courses before matriculation to Level 3 (final year).

EXEMPTION AND CREDIT

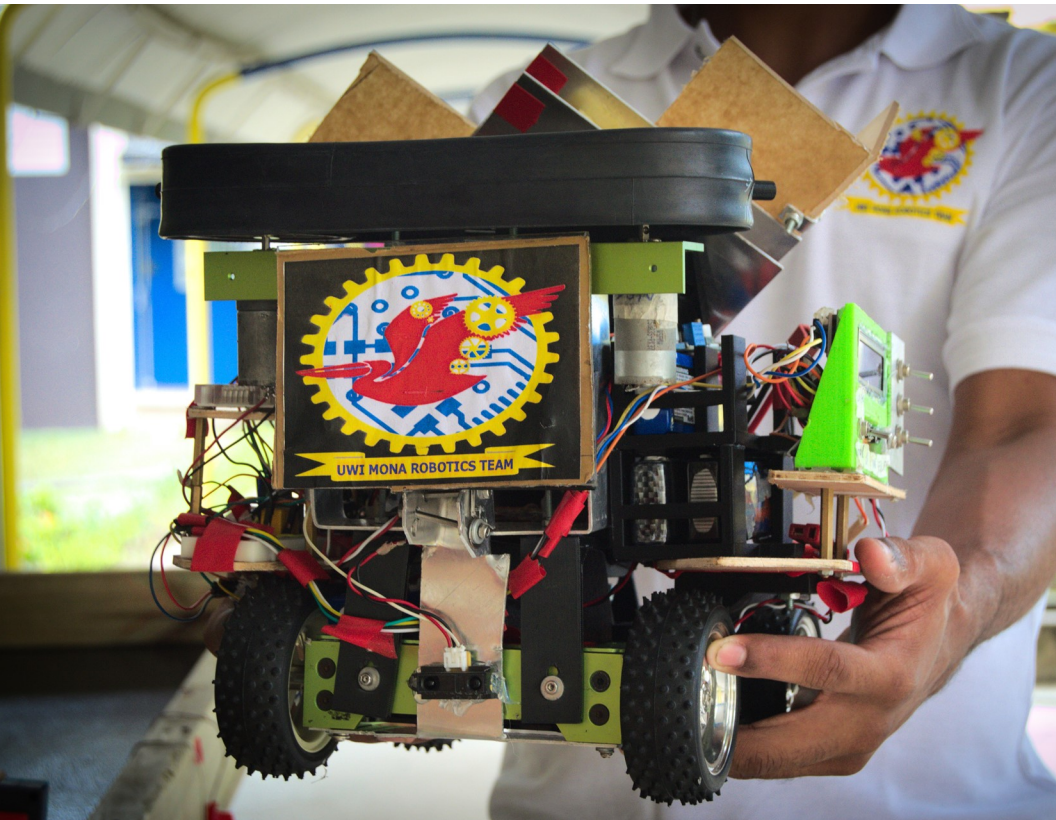
Exemption

3.3. A student who has satisfactorily completed courses outside of the Faculty may be granted exemptions up to a maximum of 36 credits towards the fulfilment of Level 1 and Level 2 requirements provided that not less than four (4) semesters of study for the degree in the Faculty are pursued.

3.4. The programme of study and courses qualifying for such exemption are subject to the approval of the Faculty Board on the recommendation of the Head of Programme.

Credit

3.5. (a) A student who voluntarily withdraws from the University and who applies for re-admission within five (5) years shall be granted exemption and credit for courses previously passed, subject to the time limit for the maintenance of credits stipulated in Regulation 3.5 and subject to the stipulation that the courses previously passed



have not substantially changed, and are not determined by the Board of the Faculty to be obsolete.

(b) Credits obtained more than five (5) years prior to an application for re-admission into a programme will not normally be applied to that programme.

(c) Where exemption and credit are granted in accordance with Regulation 3.5.(a), the grades obtained at previous attempts at such courses shall be used in the determination of the student's GPA.

SCHEME OF EXAMINATION

Examination

3.6. (a) The examination of a course shall be conducted by written papers, coursework and/or project (s). Some courses require that students pass coursework as well as the final examination before a pass can be awarded. Students are required to consult their respective Programme Coordinators on the matter.

(b) For students who entered a programme in the Faculty prior to the 2014/2015 academic year a minimum mark of 40% must be made in order to pass a course, subject to any "must-pass" course-component stipulated within the course. For students who enter a programme in the Faculty as of academic year 2014/2015 a minimum mark of 50% must be made in order to pass a course, subject to any "must-pass" course component stipulated within the course.

(c) A candidate may also be orally examined.

(d) Students who have not attended a minimum of 75% of classes may normally be treated as having failed the examination in those courses. Failure of the Faculty to enforce this rule is not to be construed as a waiver for future breach of this regulation.

(e) Candidates are not allowed to re-write an examination once they have already passed the relevant course.

3.7. (a) A candidate who fails to attend any examination and does not submit an acceptable medical certificate for his/her absence, as

prescribed in the University Examination Regulations, shall be treated as having failed that examination. If the candidate submits an acceptable medical certificate, he/she will be permitted to write the examination at a later date, without penalty.

(b) A candidate who fails the examination associated with a course may re-register for the course and be exempted from the coursework passed. If such a recommendation has been made, the candidate may apply to the Head of Programme for permission to take the examination without attending the course (Exam Only).

(c) The GPA of courses that are failed are calculated in the final degree GPA.

Coursework

3.8. Coursework shall comprise laboratory, workshop, drawing and field exercises, literature surveys, problem exercises, in-house tests, reports and presentations, or such other assignments as the Faculty Board may approve. With regard to their assessment, there are two types of coursework:

(a) Assessable coursework grades which contribute to the overall course mark attained in the course.

(b) Non-assessable Coursework which is graded on a PASS/FAIL basis only and does not contribute to the overall course mark attained in the course.

3.9. A student who is absent from part of the written assessable coursework tests for grave medical reasons, as prescribed in the University Regulations, shall be graded on the tests he/she has taken as if such tests constitute the full test requirement provided that the tests not taken constitute no more than 20% of the total mark for all the tests. If the tests not taken constitute more than 20% of the total mark for all the tests, the candidate shall have to take make-up tests at a later date.

3.10. (a) Students who fail a course may, within one (1) year of taking the course, request that marks from the passed laboratory coursework

be transferred to the next registration of the course. In this regard, requests should be directed to the Head of Programme whose decision on this matter will be final.

(b) Students are required to submit coursework by the prescribed date. Coursework will only be accepted after the deadline, in extenuating circumstances, with the specific written authority of the course lecturer and in any event, not later than the day before the start of the relevant end of semester examinations of the semester in which the particular course is being offered.

Projects

3.11. All Engineering programmes require that students pass their Capstone Project at the first attempt in order to qualify for honours. The regulation governing selection, conduct and assessment of capstone projects are outlined in the Project Manual.

SCHEDULE OF COURSES

Course Listing

3.12. The following types of courses, which may consist of both theoretical and practical parts, are offered by the University:

(a) **In-Faculty courses** which are taught by the Faculty of Engineering and include Preliminary (Level 0) and Level 1, 2 and 3 courses, with each level typically corresponding to a year of study. Courses are offered in each of two semesters in any given academic year, which typically runs from September to May. Some courses are offered during the summer period, usually on a remedial basis. The Schedule of Courses is provided in the Programme Brochure. Preliminary courses may be used to satisfy entry requirements, but do not contribute towards the credit requirements for the award of a degree.

(b) **Service courses** which provide students with basic techniques and skills needed for dealing with the academic programme.

(c) **Out-of-Faculty courses** which may contribute toward the requirements for the award of a degree.

(d) **Foundation courses** (listed at the end of these regulations) which are given throughout the University to augment the general education of students.

(e) Courses are normally taken during one semester, but in special cases may extend over two semesters.

CO-CURRICULAR CREDITS

3.13. Students are free to apply for co-curricular credits based on activities in sports, clubs, etc. Co-curricular credits will be shown on the transcript but will not count towards the BSc Engineering Degree.

NOTICE OF EXAMINATIONS

3.14. Notice of the dates of end of semester examinations shall be posted on official notice boards and/or the University website within the minimum time as prescribed by the University Regulations. Usually two drafts are posted before the final draft, allowing for student and

faculty to identify clashes and breaches and recommend corrective measures.

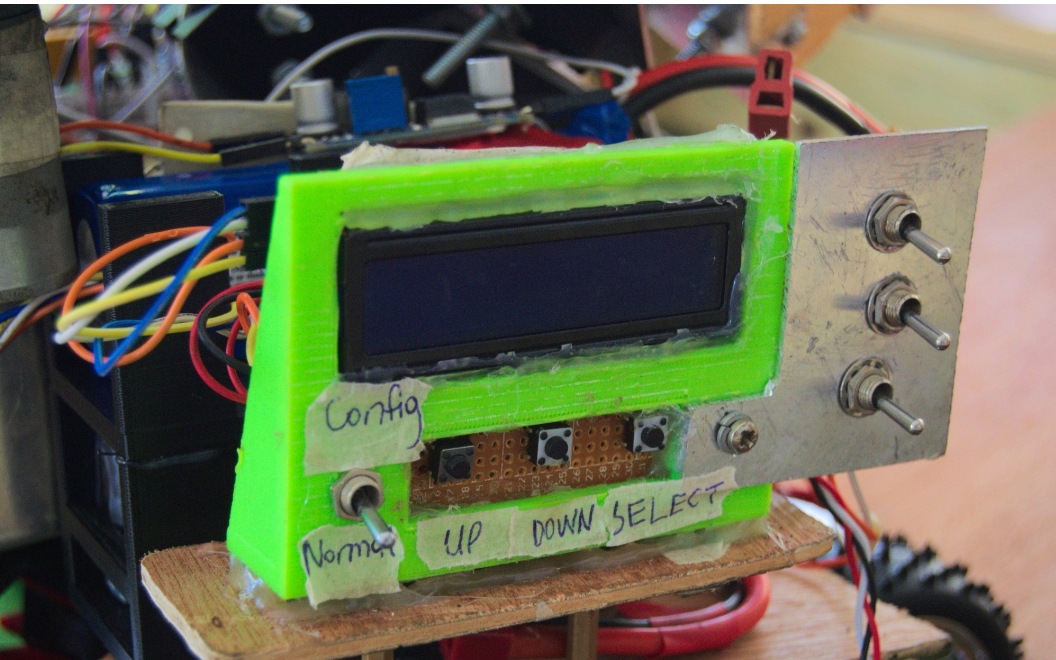
AEGROTAT DEGREE

3.15. A student who has obtained at least three-quarters of the credits required for a Bachelor's Degree but who has been unable, through illness, to complete the programme, may apply under the University Regulations for the award of an Aegrotat Degree.

3.16. An Aegrotat Degree will not be awarded unless the Board of Examiners considers that, in the courses which he/she has completed, the student has reached a standard which, if also reached in the remainder of the programme, would have qualified him/her for the award of a Degree.

3.17. An Aegrotat degree will be awarded without Class.

3.18. Holders of an Aegrotat Degree are not permitted to re-enter for the same Degree programme, but may proceed to a second or higher degree upon compliance with the Regulations for such Degrees.



CLASSIFICATION OF DEGREE

3.19.(a) For students who entered the Faculty prior to Academic Year 2014/2015, BSc Engineering degrees will be awarded in the following classes based on the overall performance of the graduating students throughout the programme:

i. First Class Honours
ii. Second Class Honours (Upper Division)
iii. Second Class Honours (Lower Division)
iv. Third Class Honours
v. Pass

(b) For students who enter the Faculty as of Academic Year 2014/2015, BSc degrees in the Faculty of Engineering will be awarded as above, except for Third Class Honours degrees.

(c) The notice of the award of the BSc degrees shall be published in a separate "Pass List" for each discipline with the ID numbers of the successful graduating students.

3.20. (a) The class of degree shall be awarded as First Class Honours, Second Class Honours (Upper Division), Second Class Honours (Lower Division), or Pass on the basis of the final Grade Point Average (GPA) as given in Regulation 3.22, subject to Regulation 3.11.

(b) Where a full-time student completes the Degree in more than eight (8) semesters, he/she shall not normally be eligible for Honours. Such a student, who would otherwise meet the requirements for the award of a degree in accordance with the Faculty's regulations, shall be awarded a Pass Degree.

CALCULATION OF GPA

3.21. (a) For purposes of these regulations, the following meanings shall apply, except where the context otherwise requires:

i. **Credits**

The contact hours for a course are expressed in terms of Credits. The credit rating for each course is outlined in its course description document and follows the guidelines below for a semester:

- 3 hours of teaching per week, constitutes 3 credits
- 3 hours of laboratory exercises per week constitutes 1 credit
- Tutorial times are assigned zero credits

The total number of credits awarded to courses, as well as for projects, laboratory sessions, foreign language classes or other approved contact hours, shall be determined by the Faculty Board and approved by the Board for Undergraduate Studies.

ii. **Credit Hours Earned**

'Credit Hours Earned' means the credits for each course that count toward the degree requirement and for which a passing grade is obtained.

iii. **Quality Hours**

'Quality Hours' mean the credits for each course that is included in the GPA calculations. Quality hours shall be assigned even when a grade of F is obtained in a course. Courses that are not used in the determination of the GPA shall be assigned zero quality hours.

iv. **Quality Points**

'Quality Points' means the numerical value assigned to the relevant letter grade earned.

(b) For the purpose of these Regulations the following meanings shall apply:

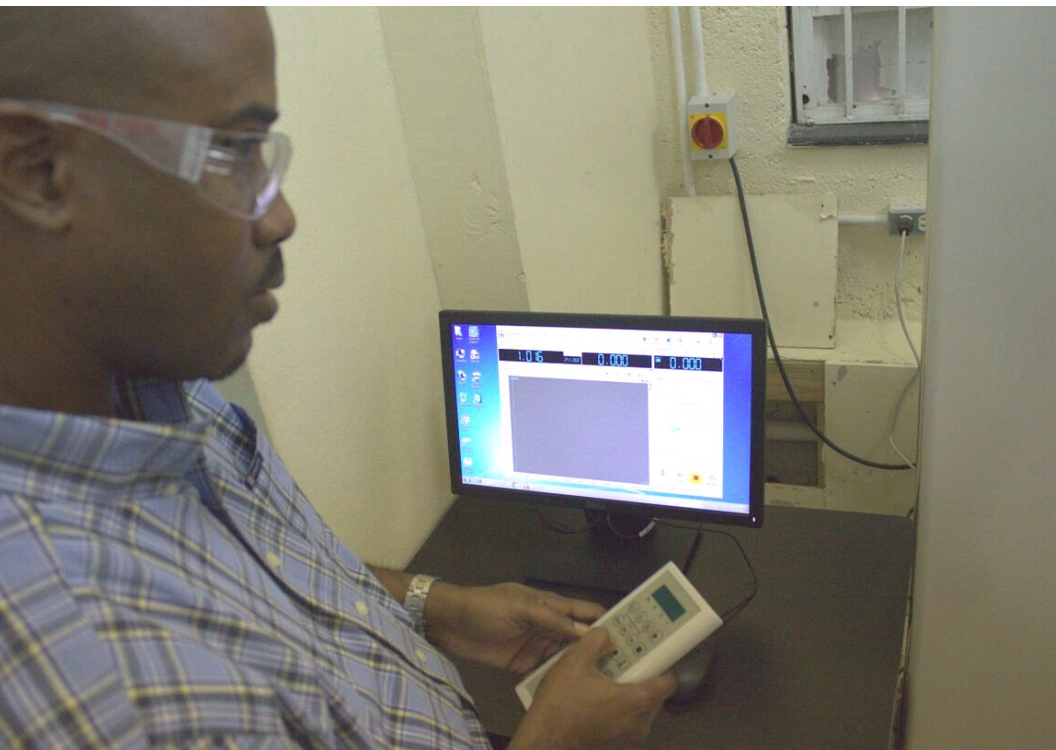
i. **Levels 1, 2 and 3 Courses**

Levels 1, 2 and 3 Courses are courses so designated by the Board for Undergraduate Studies. The numbers indicate the depth of knowledge and specialization relevant to the respective discipline. Normally, all courses at a particular Level are offered in the corresponding year of the programme, e.g. Level 1 courses at Year 1 etc.

ii. **Grade Points**

Grade points are determined by multiplying the quality hours by the quality points for a course.

iii. **Grade Point Average (GPA)**



Grade Point Average is the average obtained by dividing the total grade points earned by the total quality hours for which the student has registered, excluding courses taken on a Pass/ Fail basis and courses with designations entitled Additional Regulations.

iv. **Weighted Grade Point Average**

The Weighted Grade Point Average is the cumulative average determined by applying appropriate weights of 10%, 30% and 60% for Levels 1, 2 and 3 courses, respectively, (except for the Final Year Project), to the grade points and the quality hours used in determining grade point average. Failed courses are also included in the determination of the GPA. Prior to any attempt at the final year project, the Weighted GPA is given by

$$\text{Wgpa} = \frac{(\Sigma \text{Q}_i \text{C}_i \ + \ 3\Sigma 2 \text{Q}_i \text{C}_i \ + \ 6\Sigma 3 \text{Q}_i \text{C}_i)}{\Sigma \text{C}_i \ + \ 3\Sigma 2 \text{C}_i \ + \ 6\Sigma 3 \text{C}_i}$$

where:

$Wpga$ is the weighted GPA,

$\Sigma_j Q_i C_i$ is the summation of the product of quality points Q_i and credits C_i, for all courses taken at Level j.

In the Faculty of Engineering, the Final Year project contributes 20% to the Weighted GPA calculation used to determine the class of degree. Once the Final Year project is attempted, the weighted average is determined as follows :

$$\text{Wgpa} = 0.8 \left(\frac{\Sigma_1 \text{Q}_i \text{C}_i + 3\Sigma_2 \text{Q}_i \text{C}_i + 6\Sigma_3 \text{Q}_i \text{C}_i}{\Sigma_1 \text{C}_i + 3\Sigma_2 \text{C}_i + 6\Sigma_3 \text{C}_i} \right) + 0.2 \left(\frac{\Sigma \text{Q}_{pi} \text{C}_{pi}}{C_{pi}} \right)$$

where:

Q_{pi} is the quality points earned in each attempt at the final year project.

v. **Semester Grade Point Average**
Includes *all* approved courses for which the student is registered in a semester, whether passed or failed, will be calculated for the determination of academic standing.

vi. **A Cumulative grade point average**
Includes all courses completed excluding those taken on a Pass/Fail basis, audited courses, Preliminary courses and courses designated Intermediate or Intermediate Pass will be calculated and recorded on the student's transcript.

vii. **Programme/Degree grade point average**
Includes all Levels 1, 2 and 3 courses, whether passed or failed, will be calculated for determination of the class of the degree. All courses included in the computation of the grade point averages are weighted according to the number of credits for the course.

(c) Courses for which credit and exemption have been given on the basis of qualifications obtained outside the Faculty/University shall not be taken into account in this calculation, except where the prescribed Schedule of Courses allows for a student to take a course outside of the Faculty of Engineering for credit.

(d) Credit hours earned in courses taken on a Pass-Fail basis shall not be included in calculating grade point averages.

3.22. The class of degree shall be awarded on the basis of the Weighted GPA as set out in these Regulations.

3.23. First Degrees awarded by the University for the Bachelor of Science in the Faculty of Engineering shall be classified as follows:

3.24. For students who first entered the Faculty as of academic year 2014/2015, graduation honours will be awarded upon completion of all course requirements using the new GPA scheme as follows:

DEGREE CLASS	CUMULATIVE GPA
First	≥ 3.60
Upper Second	3.00 – 3.59
Lower Second	2.50 – 2.99
Pass	2.00 – 2.49

Students with final weighted averages below 2.00, will be recorded as having failed the programme.

3.25. In the determination of GPA, the defined grades and the matching range of marks with the corresponding quality points shall be, for students who enter the Faculty as of Academic Year 2014/2015:

GRADE GPA	QUALITY POINTS	MARKS %
A+	4.30	90-100
A	4.00	80-89
A-	3.70	75-79
B+	3.30	70-74
B	3.00	65-69
B-	2.70	60-64
C+	2.30	55-59
C	2.00	50-54
F1	1.70	40-49
F2	1.30	30-39
F3	0.00	0-29

3.26. (a) The scheme to be used for conversion of numerical marks to letter grades shall be as prescribed in Regulation 3.24.

(b) The courses to be used for the purpose of determining the Weighted GPA for the class of degree to be awarded shall be as prescribed for the programme for which the student is registered and in keeping with the course listing.

(c) For the purpose of determining the Weighted GPA, all attempts at a course, failed or passed, and the grades obtained shall be included in the GPA calculation.

TRANSFER OF CREDIT

3.27. (a) Where credit for a course taken at another institution is requested, it is the student's responsibility to provide all the information needed by the University to enable the University to assess this course.

(b) Credit hours earned from another institution at the time of admission to The University of the West Indies shall not be used in the computation of a grade point average.

3.28. The following shall apply to credits earned by a UWI undergraduate from another approved institution:

(a) A UWI student who wishes to take academic courses elsewhere and apply those credits toward the UWI degree must obtain approval in advance from the relevant Academic Board on the recommendation from the Board of the Faculty in which he/she is registered.

(b) A UWI student must have a minimum GPA of 3.00 to qualify for consideration for approval to take courses as an exchange student in another approved institution.

(c) Only the grade equivalent, as determined by the Board for Undergraduate Studies, of the results achieved and not the marks or grades so earned at another Institution shall be used in the computation of the student's GPA.

WARNINGS AND WITHDRAWALS

3.29. (a) For students who enter the Faculty as of 2014/2015 a student whose GPA for a given semester is less than 2.00 shall be deemed to be performing unsatisfactorily and shall be placed on Warning. The Semester GPA is obtained by removing the weights in the

Weighted GPA calculation and applying it only to the courses registered for in the relevant semester:

$$W_{semester} = \frac{\Sigma Q_i C_i}{\Sigma C_i}$$

where:
$W_{semester}$ is the semester GPA,
$\Sigma Q_i C_i$ the summation of the product of quality points Q_i and credits C_i, for all courses taken in the relevant semester.

(b) For students who enter the Faculty as of 2014/2015 a student on Warning whose semester GPA for the succeeding semester is less than 2.00 will be required to withdraw. This regulation will be waived for all students who require seven (7) credits or less to graduate.

(c) Summer School will NOT be counted as a semester in the determination of student status when using Regulations 3.28(a) and 3.28(b). As such Summer School will not normally be used to positively or negatively change the status of any student.

(d) A student on warning shall be counseled by the Dean or a designated Faculty advisor. Such a student may, except where otherwise prescribed in Faculty Regulations, be permitted by the Academic Board on the recommendation of Faculty Board to carry a reduced course load.

Note: **A DEAN'S HOLD will be put on the record of students who are on warning. This Hold will only be removed after counselling by the relevant representative of the Faculty to which the student belongs or the Administrative Officer.**

3.30. Readmission of persons who were Required to Withdraw:

(a) A person who was required to withdraw from the University in accordance with Regulation 3.28(b) may be re-admitted after a

minimum of one (1) year has passed since the date of withdrawal.

(b) A person who was required to withdraw from the University can only be readmitted after submission of on-line application at the same time as when applications are invited for new students and subsequent approval of the application by the Faculty.

(c) If a student has been readmitted as per Regulations 3.29(a) and 3.29(b), all grades previously obtained shall continue to apply for the purpose of determining the student's GPA, provided that these are relevant to the degree being pursued.

(d) If a student has been readmitted as per Regulations 3.29(a) and 3.29(b), all semesters in which the grades described in 3.29(c) were obtained shall be counted towards the student's degree and shall be subject to Regulation 3.2(b) (i.e., Fail Programme determination).

(e) If a student has been readmitted as per Regulations 3.29(a) and 3.29(b), work done during the period between the student being required to withdraw and being granted re-admission may be eligible for credit under Regulation 3.26.

COURSE AUDITS

3.31. Students can register for a course on audit. This allows them to attend the lectures, tutorials and laboratory sessions for a given course without the requirement of sitting the final exam.

(a) A registered student may be permitted to audit a course on the approval of the Head of Programme.

(b) Satisfactory attendance certified by the Head of Programme shall be awarded the designation V. In the absence of such certification, the designation 'NV' shall be recorded.

No academic credit shall be granted for an audited course.

CHEATING, PLAGIARISM AND COLLUSION

3.32. Cheating, Plagiarism and Collusion are serious offences under University Regulations

(a) Cheating is any attempt to benefit one's self or another by deceit or fraud.

(b) Plagiarism is the unauthorised and/or unacknowledged use of another person's intellectual efforts and creations howsoever recorded, including whether formally published or in manuscript or in typescript or other printed or electronically presented form and includes taking passages, ideas or structures from another work or author without proper and unequivocal attribution of such source(s), using the conventions for attributions or citing used in this University. Plagiarism is a form of cheating.

N.B: Please refer to Guidelines for Staff and Students on Plagiarism and The University's Regulations on Plagiarism.

(c) For the purposes of these Regulations, 'collusion' shall mean the unauthorised or unlawful collaboration or agreement between two or more students in the preparation, writing or production of a course assignment for examination and assessment, to the extent that they have produced the same or substantially the same paper, project report, as the case may be, as if it were their separate and individual efforts, in circumstances where they knew or had reason to know that the assignment or a part

thereof was not intended to be a group project, but was rather to be the product of each student's individual efforts.

PENALTIES

3.33. Cheating, plagiarism and collusion shall be reported to the Campus Committee on Examinations and the penalties would be in accordance with the University Examination Regulations.

DRESS CODE AND CONDUCT

3.34. The following regulations are included in the interest of safety and the development of a professional environment similar to what would obtain in the world of work.

(a) Students must at all times conduct and present themselves in a manner in keeping with the nature of the Engineering Profession.

(b) In consideration of Occupational Health and Safety issues in the laboratories, PRESCRIBED LABORATORY ATTIRE WILL BE ENFORCED AT ALL TIMES.

(c) Students who are not appropriately attired, SHALL NOT BE ALLOWED ENTRY in any Laboratory, Workshop, Field Trip or other locations where such attire is required in the interest of safety. Students must wear whole, closed shoes. No shorts, short skirts nor any revealing clothing will be allowed. Limit your jewelry. Tie back long hair to keep away from moving objects.

(d) Students are required to comply with all rules posted in the various laboratories and workshops. Any student who is deemed non-compliant with the rules will be expelled from the laboratory or workshop.

(e) Student ID cards MUST be clearly displayed at all times when on UWI premises. Student ID cards are also required to facilitate all transactions in the Faculty/University.

(f) Food and drink SHALL NOT be brought into classrooms or laboratories.

OTHER GUIDELINES FOR REGISTRATION

3.35. (a) Students must register for courses at the beginning of the academic year. Time limits governing changes in registration are as outlined in the student handbooks for each Campus or by the Campus Registrar.

(b) A student is deemed to be registered for a course only after his/her financial obligations to the University have been fulfilled.

(c) In selecting courses, including out of programme electives, students must ensure that time-tabling constraints do not interfere with their ability to effectively pursue the desired course or programme.

(d) A student who has passed a course will not be permitted to re-register for that course.

(e) Registration for any course (except audited courses) automatically implies entry for its associated examination. A student who fails to attend the examinations without having previously withdrawn from the course, or without having tendered evidence of illness at the time of the examinations, certified by a medical practitioner recognized by the University, will be deemed to have failed the course. Medical certificates must reach the Campus Registrar no later than seven days after the date of the examination concerned. In such cases, students are awarded Failed Medical (FM) and their GPA is not calculated (penalized).

PROGRESS THROUGH THE PROGRAMME

Credit Limits

3.36. (a) Full-time students are required to register for a minimum of **fifteen** credits per semester.

(b) Exemptions from some courses may be obtained on the basis of the regulations contained in **Exemptions and Transfers**.

(c) The maximum number of credits for which a student may register for full-time registration is normally **18** credits in any one semester, plus **one** Foundation course per year, that is **39** credits over Semesters I and II.

Graduation

3.37. (a) Students **must** graduate as soon as they have met the requirements for the degree for which they are registered.

LEAVE OF ABSENCE

3.38. (a) A student who wishes to be absent from the Faculty for a semester or more may apply for Leave of Absence (LOA), through the Dean, to the campus Academic Board, stating the reasons for the application.

(b) Leave of Absence will not be granted for more than two consecutive semesters in the first instance. However, students may apply for an extension of leave, in which case Leave of Absence will not be granted for more than an additional two consecutive semesters.

(c) Applications for Leave of Absence or extension thereof should normally be submitted by the end of the registration period in the relevant semester.

(d) A student who registers for no courses during a semester without having obtained Leave of Absence will be deemed to have withdrawn from the Faculty.

TIME LIMITS FOR COMPLETION

3.39. Students admitted to the programme under Regulation 3.1.4.2 shall normally complete the requirements for the degree in maximum of fourteen semesters of full-time study.

3.40. Students admitted to the programme under Regulation 3.1.4.1 shall normally complete the requirements for the degree in a maximum of sixteen semesters of full-time study.

3.41. Students who cannot complete the programme within the maximum periods given in Regulations 3.37 and 3.38 above, would be declared as having failed the programme and will normally be required to withdraw from the Faculty at the end of the academic year in which the maximum is reached.

3.42. For the purposes of Regulations 3.39 above, any semester for which a student has obtained Leave of Absence from the Faculty shall not be counted.

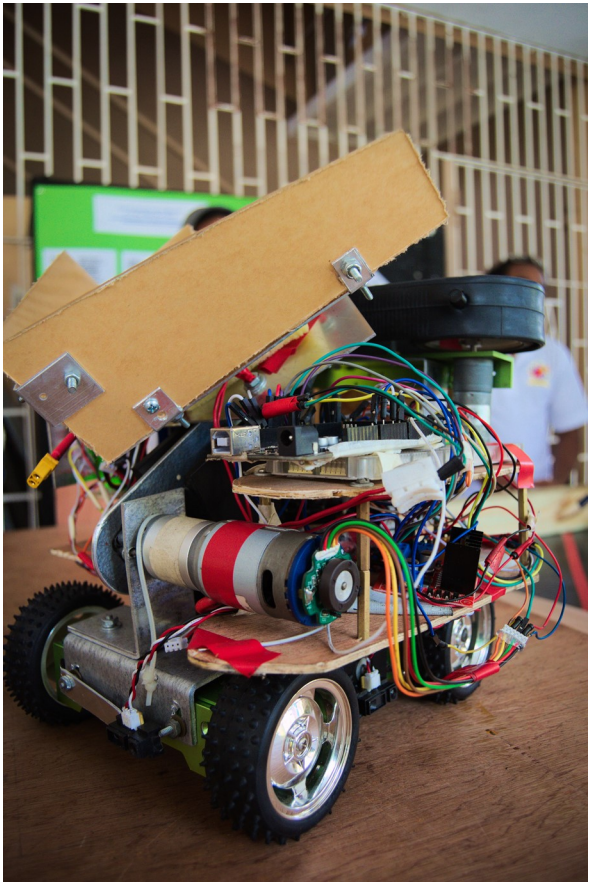
3.43. Notwithstanding Regulation 3.39 above, the Academic Board may, on the recommendation of the Faculty Board, require the student to withdraw from the Faculty at the end of any semester on grounds of persistent neglect of work and/or repeated failure in examinations.

3.44. A student required to withdraw from one Faculty:

(a) may register immediately in another, if in the opinion of the student and the Dean of the receiving Faculty this is desirable and the student satisfies that Faculty's entry requirements;

(b) will be required automatically to withdraw from the University if not granted registration in another Faculty; and

(c) may not register in the ensuing Academic Year, for any courses in the Faculty from which (s)he had been required to withdraw.



SECTION 4: POSTGRADUATE STUDIES IN THE FACULTY OF ENGINEERING

Before you select your programme of study or your courses for the year, consider whether or not you would like to proceed to the postgraduate level after graduation. Even in today's Engineering job market, a Bachelor's degree is only the first step in the learning process that you should continue throughout your professional career.

However, your choices at the undergraduate level can affect your postgraduate options. This brief guide provides you with basic information on the Faculty's current graduate programmes, our research areas and any undergraduate requirements or prerequisites.

4.1 ABOUT POSTGRADUATE STUDY

The Faculty of Engineering at the University of the West Indies, Mona Campus offers 4 MPhil programmes and 4 PhD programmes in the following areas:

1. Biomedical Engineering
2. Civil Engineering
3. Electrical Power Engineering
4. Electronics and Computer Systems Engineering

Our research programmes (MPhil and PhD) allow students to follow their passion and provide the opportunity, resources and support for them to develop their own innovative products or processes.

The Faculty also offers a MSc in Engineering and Management.

4.2 DEFINITIONS AND ADMISSION REQUIREMENTS

Master of Science

The Master of Science degree is a taught degree in the field of science.

Admission requirements for the MSc programme are as follows:

- BSc degree in biomedical, civil, computer, industrial, mechanical, electronics or electrical engineering or equivalent, with a minimum GPA of 2.5 from a recognized university, or
- BSc degree in biomedical, civil, computer, industrial, mechanical, electronics or electrical engineering or equivalent, with a Pass degree (GPA 2.0-2.49) from a recognized university, and at least two years working experience in a relevant industry, or
- BSc degree in physics, mathematics or computing, with a minimum GPA of 2.5 from a recognized university. Candidate may be required to do selected undergraduate courses to qualify.

Master of Philosophy

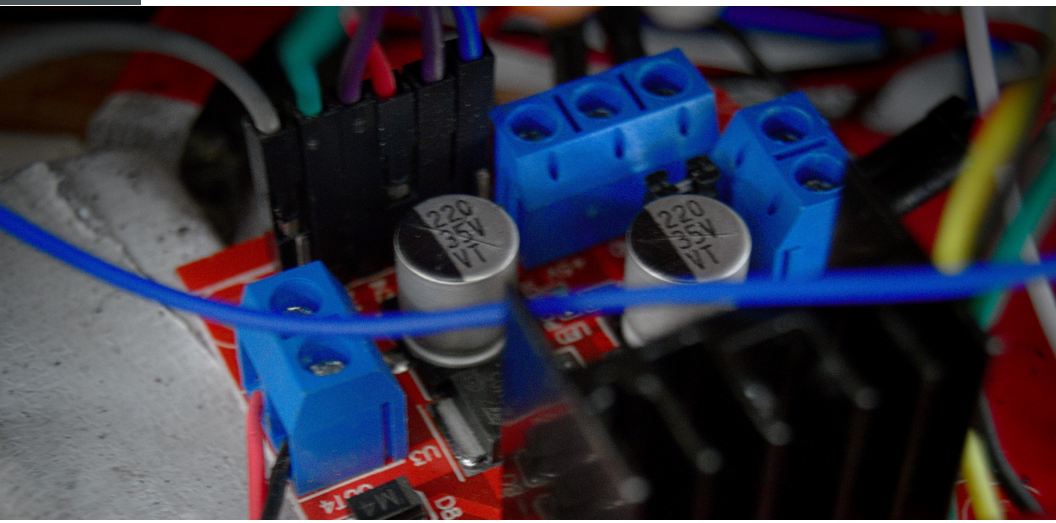
Master of Philosophy (MPhil) degrees are research degrees and are awarded on the basis of an examination by thesis.

Admission requirements for the MPhil programme are as follows:

- First degree in engineering, physics or another related natural sciences
- First degree in any discipline plus relevant experience working in a related field.
- A minimum GPA of 3.0, or an Upper Second Class Honours degree or its equivalent, unless the Campus Committee in any particular case otherwise decides.
- All students who seek entry without an engineering degree in the relevant discipline may be required to pursue qualifying courses and undertake examinations in these courses. The qualifying courses will be determined by the Head of Department and will normally not exceed twelve (12) credits.

Doctor of Philosophy

PhD degrees are research degrees and are awarded on the basis of an examination by thesis.



Admission requirements for the PhD programme are as follows:

- Approved graduate degrees awarded primarily for research
- Taught Master's degree from the UWI or another approved University, provided that the Masters programme included a research component of at least 25% of the total credit rating and the applicant achieved at least a B+ average or its equivalent
- Approval of upgrade application
- Such other qualifications and experience as the Board for Graduate Studies and Research may approve

Students wishing to pursue one of the Engineering degrees would apply through the potential supervisor which is the closest match to the proposal submitted. As with other graduate applications the school will decide on acceptance. The school will give administrative support as well as to provide laboratory and research space to students. Students will be encouraged to apply for research grants both internally and externally where specialised equipment is required that is not already available within the school. Library resources by way of texts and access to journals are sufficient to support the programmes.

NOTE: RESEARCH DEGREES ARE NOT NORMALLY CONSIDERED TO BE QUALIFICATIONS FOR PROFESSIONAL PRACTICE IN THE BROADER SENSE, AS THEY MAY NOT NECESSARILY ALLOW FOR REGISTRATION AS A PROFESSIONAL ENGINEER.

4.3 RESEARCH INTERESTS

Do you have a curious mind? A passion for knowledge? The need to blaze a trail? Do you think you can make it bigger, better, faster, stronger? Then, whether you decide to pursue full research degree or follow a taught programme, it's never too early to start thinking about the kind of research you would like to do as part of your degree. The following topics currently form part of the research agenda in the Faculty of Engineering at Mona:

Engineering Education

- Quality Assurance in Engineering Education through Accreditation

Civil Engineering

- The effects of climate change on drainage standards for urban roadways
- Feasibility of wave power generation offshore Palisadoes/Bull Bay areas
- Design of hybrid coastal protection structures
- Preservation and life-cycle cost models for transportation infrastructure
- Highway traffic flow prediction models
- Risk models for transportation management systems
- Alternative transportation systems
- 'Kinetic' architecture and structures for a subtropical resilient and adaptable city
- Designing a 'subtropical' zero smart building.
- Reducing the 'death toll' of collapsing high rise building structures during major earthquakes
- The effects of rising sea levels on coastline subtropical cities
- Total Quality Management in Construction Projects

- Sustainable Construction in Developing Countries
- Critical Success Factors in Construction Projects
- Safety Culture in Construction Projects
- Organisational Culture in Construction Industry
- Leadership Development in Construction Industry
- Construction Contract Management
- Alternative Dispute Resolution in Construction Projects
- Building Information Modelling
- Augmented reality in construction
- Non-destructive testing of concrete
- Coconut fibre reinforced concrete
- Finite element analysis of structures

Electronics and Computer Systems Engineering

- Instrumentation and Control Systems
- Optimal Power Flow
- Robust Control
- Robotics
- Analog and RF Circuits and Systems
- Artificial Intelligence
- Virtual and Online Experimentation

- Computational Intelligence and its applications
- Automatic Speech Recognition
- Modeling Hearing Impairment using Computers
- Machine learning and Embedded Systems
- Robotics, Internet of Things and Voice over IP
- Development of machine learning algorithms to translate sign (Jamaican Sign Language, JSL) to speech (Jamaican English)
- Development of machine learning algorithms to translate speech (Jamaican English) to JSL via a signing avatar
- Novel technique to improve beam steering and radiation from microwave patch antennas and it application to twisted beam technology
- Using cell phone (and cell tower) radiation to measure atmospheric parameters, such as rainfall
- RF triangular techniques and position sensing/locator
- Electronic navigation device for the visually impaired
- Solar Panel Tester
- Determination of the observable characteristics of Photovoltaic module/array defects using UAV sensor based systems.
- Using AxticOne to perform geo-location based network optimisation for GSM, UMTS and LTE networks
- Planning and optimising using Cellwize SON Studio for all technologies and cross technologies
- PSO for the automatic placement of multiple indoor antennas
- Robustness for Uncertain Multivariable Feedback Control Systems and Computer Control Systems
- Communications and Information Theory and Computer Networks, Compression Technologies for Packet and Wireless Networks
- Asynchronous Learning Networks and Information Technology-Enhanced Learning
- Fabrication and characterization of Nano Field Effect Transistors (FETs)
- Novel micro electrical mechanical systems (MEMS) devices
- Paper substrate and piezo electric materials
- Fabricated SiC metal insulator semiconductor (MIS) devices

- Superconductive boron doped diamond for device applications
- Characterized samples with tools such as scanning electron and atomic force microscopes (SEM and AFM), Raman, SIMMS
- Lab on a chip using diamond sensors and detectors
- Cryogenic superconductive FET using superconductive boron doped diamond, which is currently has the interest of NASA GSFC
- The influence of chemical and contact doping and external driving forces on the optoelectronic and magnetic properties of 2-D van der Waals materials and heterostructures

Biomedical Engineering

- Bio-instrumentation
- Biosensors
- Natural product extraction, phytochemical screening, individual and synergistic cell culture analysis using prostate cancer cell lines
- Drug delivery system analysis-Particle size analysis using Zetasizer.
- Evaporation of liquids from a fluidized bed
- Acoustically active polymer particles capable of delivering drug & genetic materials in vitro and in vivo
- Molecular imaging nano-particle capable of multi-modal imaging using a biodegradable polymer
- Vascular access device that will reduce the need for re-intervention surgery
- Detection instrument for Cadium Sulphide in soils

Electrical Power Engineering

- Renewable Energy
- Sustainability
- Data driven policy making for sustainable energy production and consumption
- Incentive-based programmes for energy behaviour change
- Smart grid paradigm and the role of technology in sustainable development
- Green buildings for the green economy Data driven policy making for sustainable energy production and consumption Material growth, characterization, and device fabrication

SECTION 5: ADDITIONAL REGULATIONS

GRADE CODE LISTING

AB:	Absent – when a student is absent from an examination for acceptable reasons other than a medical problem
AM:	Absent Medical
CR:	Credit
DIS:	Disqualified
E:	Exemption
EC:	Exemption with credit
EI:	Irregularity — Candidate disqualified from examination on account of breach of the Regulations
EQ:	Examination Query
FA:	When a student is absent from an examination without a valid reason
FC:	Failed Coursework – indicates that a candidate has failed to satisfy the Examiner in the coursework component of the course.
FE:	Failed Examination – when a candidate has successfully completed the coursework requirement but has failed to satisfy the Examiners in the examination component of the course
FM:	Failed Medical – when a student is absent from an examination for medical reasons or where failure in an examination is attributed to medical reasons as supported by a certificate from an authorized medical practitioner
FNP:	Failed – No Penalty
FO:	Failed Oral (where an oral examination forms part of the assessment of the course)
FP:	Failed Practical
FPR:	Failed Programme
FT:	Failed Theory
FWS:	Fail/Supplemental Examination granted

I:	Incomplete — indicates that the student has made progress in a course but at the end of the semester has not finished the work required to receive a letter grade. An **I** designation is not counted in credit hours earned, or quality hours until a letter grade is reported. If neither a letter grade nor notification of an extension of time is received by the Registry from the Office of the Dean, the 'I' designation is replaced by an 'F' grade at the end of the first six (6) weeks into the next semester. An extension of time may be granted but shall not normally extend beyond the end of the semester in which the extension is granted. Any remaining 'I' symbol at the end of the period of extension will be deemed an 'F'
IM:	Incomplete Medical
IP:	In Progress — when a dissertation, thesis, project, student teaching, practicum, internship, proficiency requirement, or other course intended to last more than one semester is not completed during the semester in which the student is registered. The 'IP' designation must be replaced with an appropriate grade on completion of the course
NFC:	Not for credit
NP:	Not Passed – when a student has failed a course taken on a Pass/Fail basis
NR:	Grade not yet available
NV:	When a student has been permitted to audit a course but has not done so satisfactorily
P:	Pass – a pass obtained in a course taken on a Pass/Fail basis
PC:	Preliminary Credits – used for matriculation purposes or the satisfying of prerequisites only
R1:	Required to Withdraw
V:	Audited - when the course has been taken in accordance with Regulation 22
W1:	Warning
W2:	Required to Withdraw – Waived by Dean
XM:	Medical Accepted

SUPPORT SERVICES FOR STUDENTS

Office of Student Services and Development

The Office is the first and most important stop for high quality academic support for the diverse populations of students throughout The University including full-time, part-time, evening and mature students; international and

regional students; student athletes, and students with special needs (disabilities).

The units within the office include:

- Halls of Residence including Postgraduate Housing
- Sports
- Placement and Career Services
- The Lodgings Office
- Office of Special Students Services & Development (Students with disabilities)
- Facilities Management Unit (FMU)

Office of Special Student Services

Students with special needs should make contact with the Office of Special Student Services before or during registration. Every effort will be made to facilitate your on-campus requirements in terms of mobility, accommodation, coursework, examinations, and other areas. No student of The UWI will be discriminated against on the basis of having special needs. Sharing your needs

before registration will enable us to serve you better as a part of the Campus community.

Support Services for STUDENTS WITH SPECIAL NEEDS (Temporary and Permanent) includes:

- Provision of Aids and Devices such as laptops, USB drives, tape recorders and special software.
- Special Accommodations for Examinations
- Classroom Accommodations
- Liaison with Faculties and Departments

University Health Centre

The University Health Centre (UHC) at the University of the West Indies, Mona Campus, provides a wide range of primary and secondary health care services to members of the university community including full time and part time students. Their fully licensed medical and counselling practitioners are particularly sensitive to the needs, stress and rigour of student life.

All visits to the University Health Centre are treated confidentially. The UHC will not disclose any aspect of your visit to the Centre with any third party. Only disclosures explicitly required to conform to public health reporting requirements will be made.

University Counselling Service

Counselling and Psychological Services are offered through the University Health Centre Counselling Unit. Counselling is provided for several issues, including the following:

- Self Esteem
- Academic Performance
- Depression
- Abuse/trauma
- Adjustment to university life
- Marital issues

The clinic offers individual and group counselling, and other educational programmes which address topics listed above.

GUIDELINES FOR STAFF AND STUDENTS ON PLAGIARISM

Plagiarism is frowned upon in the University and as such penalties will be applied to any person found guilty of plagiarism. The following is an extract from The University of the West Indies Policy on Graduate Student Plagiarism approved by the Board for Graduate Studies and Research at its meeting in October 2010:

Definition of Plagiarism:

Plagiarism is defined as the unacknowledged use of the words, ideas or creations of another. The principal categories of unacknowledged use are unacknowledged quotation, which is failure to credit quotations of another person's spoken or written words; and unattributed borrowing, which is failure to credit another person's ideas, opinions, theories, graphs or diagrams.

Unattributed borrowing also includes the failure to credit another person's work when paraphrasing from that work.

Cosmetic paraphrasing is also plagiarism. This occurs when, even with acknowledgment, the words are so close to the original that what is deemed to have been paraphrased is, in fact a modified quote, but is not presented as such. A more technical form of plagiarism is wrongly attributed borrowing, where one does not acknowledge the work from which one obtained an idea, but quotes, instead, the original source without having read it. This may well convey a broader research effort than that actually expended and may perpetuate misinterpretation.

It is now a requirement for all students to pass their written assignments, be it coursework, theses, research papers, project reports, through plagiarism detection software. In the case of theses, research papers and project reports, SUPERVISORS ARE REQUIRED TO SIT WITH THEIR STUDENTS AND RUN THE THESIS, RESEARCH PAPER OR PROJECT REPORT THROUGH TURNITIN in order to provide guidance on any revisions that may be required as a result of this process. SUPERVISORS MUST THEN SIGN THE RELEVANT FORMS indicating that the student has indeed run their work through a plagiarism detection software.

Post Graduate Students submitting theses, research papers or project reports for examination **must submit an electronic copy of the Turnitin report to the Office of Graduate Studies and Research**. The similarity index in the Turnitin report should **NOT BE HIGHER THAN 9%.**

Please note that if it exceeds 9%, the thesis, project report, or research paper will not be accepted for examination by the Office of Graduate Studies and Research.

The University has created an account to allow you to check your papers for plagiarism.

Here are some instructions for **creating a new student account:**

1: Please visit Turnitin's website at **www.turnitin.com** then click on create account.

2: Under ***New Students Start Here*** click on Create a User Profile.

3: Below ***Have you Ever Used Turnitin?*** Scroll down until you see ***Create A New Account*** click on ***Student***

(Please note the credentials will not work in any other instance).

4: Under ***Create A New Student Account***, please insert the credentials (i.e. Class ID and enrolment password), complete the rest of the form and follow the instructions.

In order to obtain the credentials necessary to create your new student account please visit the Office of Graduate Studies and Research to pick up your UWI GRIP Card.

Useful Turnitin Links

Getting Started:

http://www.turnitin.com/en_us/training/getting-started

For further assistance with Turnitin please visit **www.turnitin.com/help** and submit an e-mail.

UNIVERSITY REGULATIONS ON PLAGIARISM

Application of these Regulations

1. These Regulations apply to the presentation of work by a student for evaluation, whether or not for credit, but do not apply to invigilated written examinations.

Definition of plagiarism

2. In these Regulations, "plagiarism" means the unacknowledged and unjustified use of the words, ideas or creations of another, including unjustified unacknowledged quotation and unjustified unattributed borrowing;

   - *"Level 1 plagiarism"* means plagiarism which does not meet the definition of Level 2 plagiarism;
   - *"Level 2 plagiarism"* means plagiarism undertaken with the intention of passing off as original work by the plagiariser work done by another person or persons.

3. What may otherwise meet the definition of plagiarism may be justified for the purposes of Regulation 2 where the particular unacknowledged use of the words, ideas and creations of another is by the standards of the relevant academic discipline a function of part or all of the object of the work for evaluation whether or not for credit, for example:
   (a) The unacknowledged use is required for conformity with presentation standards;
   (b) The task set or undertaken is one of translation of the work of another into a different language or format;
   (c) The task set or undertaken requires producing a result by teamwork for joint credit regardless of the level of individual contribution;
   (d) The task set or undertaken requires extensive adaptation of models within a time period of such brevity as to exclude extensive attribution;
   (e) The task set or undertaken requires the use of an artificial language, such as is the case with computer programming, where the use of unoriginal verbal formulae is essential.

4. It is not a justification under Regulations 2 and 3 for the unacknowledged use of the words, ideas and creations of another that the user enjoys the right of use of those words, ideas and creations as a matter of intellectual property.

Other definitions

5. In these Regulations, *"Chairman"* means the Chairman of the relevant Campus Committee on Examinations; *"Examination Regulations"* means the Examination and other forms of Assessment Regulations for First Degrees Associate Degrees Diplomas and Certificates of the University; "*set of facts"* means a fact or combination of facts.

Evidence of plagiarism

6. In order to constitute evidence of plagiarism under these Regulations, there shall be identified as a minimum the passage or passages in the student's work which are considered to have been plagiarised and the passage or passages from which the passages in the student's work are considered to have been taken.

Student Statement on Plagiarism

7. When a student submits for examination work under Regulation 1, the student shall sign a statement, in such form as the Campus Registrar may prescribe, that as far as possible the work submitted is free of plagiarism including unattributed quotation or paraphrase of the work of another except where justified under Regulation 3.

8. Quotation or paraphrase is attributed for the purpose of Regulation 7 if the writer has indicated using conventions appropriate to the discipline that the work is not the writer's own.

9. The University is not prohibited from proceeding with a charge of plagiarism where there is no statement as prescribed under Regulation 7.

Electronic vetting for plagiarism

10. The results of any electronic vetting although capable, where the requirements of Regulation 7 are satisfied, of constituting evidence under these Regulations, are not thereby conclusive of any question as to whether or not plagiarism exists.

Level 1 plagiarism

11. In work submitted for examination where the Examiner is satisfied that Level 1 plagiarism has been committed, he/she shall penalise the student by reducing the mark which would have otherwise been awarded taking into account any relevant Faculty regulations.

Level 2 plagiarism

12. Where an examiner has evidence of Level 2 plagiarism in the material being examined, that examiner shall report it to the Head of Department or the Dean and may at any time provide the Registrar with a copy of that report. In cases where the examiner and the Dean are one and the same, the report shall be referred to the Head of the Department and also to the Campus Registrar.

13. Where any other person who in the course of duty sees material being examined which he or she believes is evidence of Level 2 plagiarism that other person may report it to the Head of Department or the Dean and may at any time report it to the Campus Registrar who shall take such action as may be appropriate.

14. Where a Dean or Head of Department receives a report either under Regulation 12 or 13, the Dean or Head of Department, as the case may be, shall:

    (a) where in concurrence with the report's identification of evidence of Level 2 plagiarism, report the matter to the Campus Registrar; or

(b) where not concurring in the identification of evidence of plagiarism, reply to the examiner declining to proceed further on the report; or

(c) where concluding that there is evidence of Level 1 plagiarism, reply to the examiner indicating that conclusion and the Examiner shall proceed as under Regulation 11.

15. Where a report is made to the Campus Registrar under Regulation 14a or 16, the Campus Registrar shall lay a charge and refer the matter to the Campus Committee on Examinations.

16. Where the Campus Registrar receives a report alleging Level 2 plagiarism from the Examiner or any other person except the Dean or Head of Department, the Campus Registrar shall refer the matter to a senior academic to determine whether there is sufficient evidence to ground a charge of plagiarism and where such evidence is found, the Campus Registrar shall proceed as under Regulation 15.

17. Where the matter has been referred to the Campus Committee on Examinations pursuant to Regulation 15, the proceedings under these Regulations prevail, over any other disciplinary proceedings within the University initiated against the student based on the same facts and, without prejudice to Regulation 21, any other such disciplinary proceedings shall be stayed, subject to being reopened.

18. If the Campus Committee on Examinations is satisfied, after holding a hearing, that the student has committed Level 2 plagiarism, it shall in making a determination on the severity of the penalty take into consideration:

(a) the circumstances of the particular case;

(b) the seniority of the student; and

(c) whether this is the first or a repeated incidence of Level 2 plagiarism.

19. Where the Campus Committee is of the view that the appropriate penalty for an offence of Level 2 plagiarism is for the student to be:

(a) awarded a fail mark;

(b) excluded from some or all further examinations of the University for such period as it may determine;

(c) be dismissed from the University, it shall make such recommendation to the Academic Board.

Clearance on a charge of Level 2 plagiarism

20. A determination of the Campus Committee on Examinations that Level 2 plagiarism has not been found will be reported to the Campus Registrar who shall refer it to the Examiner and notify the student. Where the Committee has not identified Level 2 but has identified Level 1, it shall be reported to the Campus Registrar who shall refer it to the examiner.

Level 2 plagiarism: Appeal to the Senate

21. A student may appeal to the Senate from any decision against him or her on a charge of plagiarism made by Academic Board.

Delegation by Dean or Head of Department

22. The Dean or Head of Department, as the case may be, may generally or in a particular instance delegate that officer's functions under these Regulations.

Conflict of interest disqualification

23. Any person who has at any time been an examiner of work or been involved in procedures for laying charges in relation to which an issue of plagiarism is being considered under these Regulations shall withdraw from performing any functions under these Regulations other than those of supervisor and examiner.

PLAGIARISM DECLARATION FORMS

PLEASE SEE NEXT PAGE

THE UNIVERSITY OF THE WEST INDIES

The Office of the Board for Undergraduate Studies

INDIVIDUAL PLAGIARISM DECLARATION

STUDENT ID:
COURSE TITLE:
COURSE CODE:
TITLE OF ASSIGNMENT:

This declaration is being made in accordance with the **University Regulations on Plagiarism (First Degrees, Diplomas and Certificates**) and must be attached to all work, submitted by a student to be assessed in partial or complete fulfilment of the course requirement(s), other than work submitted in an invigilated examination.

STATEMENT

1. I have read the Plagiarism Regulations as set out in the Faculty or Open Campus Student Handbook and on University websites related to the submission of coursework for assessment.
2. I declare that I understand that plagiarism is a serious academic offence for which the University may impose severe penalties.
3. I declare that the submitted work indicated above is my own work, except where duly acknowledged and referenced and does not contain any plagiarized material.
4. I also declare that this work has not been previously submitted for credit either in its entirety or in part within the UWI or elsewhere. Where work was previously submitted, permission has been granted by my Supervisor/Lecturer/Instructor as reflected by the attached Accountability Statement.
5. I understand that I may be required to submit the work In electronic form and accept that the University may subject the work to a computer-based similarity detention service.

NAME
_____

SIGNATURE _____

GROUP PLAGIARISM DECLARATION

COURSE TITLE:

COURSE CODE:

TITLE OF ASSIGNMENT:

When submitting a group assignment for assessment each member of the group will be required to sign the following declaration of ownership which will appear on the coursework submission sheet.

We the undersigned declare that:

1. We have read the Plagiarism Regulations as set out in the Faculty or Open Campus Student Handbook and on University websites related to the submission of coursework for assessment.
2. We declare that I understand that plagiarism is a serious academic offence for which the University may impose severe penalties.
3. The submitted work indicated above is our own work, except where duly acknowledged and referenced.
4. This work has not been previously submitted for credit either in its entirety or in part within the UWI or elsewhere. Where work was previously submitted, permission has been granted by our Supervisor/ Lecturer/Instructor as reflected by the attached Accountability Statement.
5. We understand that we may be required to submit the work In electronic form and accept that the University may check the originality of the work using a computer-based similarity detention service.

NAME _____

SIGNATURE _____

NAME _____

SIGNATURE _____

NAME _____

SIGNATURE _____

SECTION 6: UNDERGRADUATE PROGRAMME DESCRIPTIONS

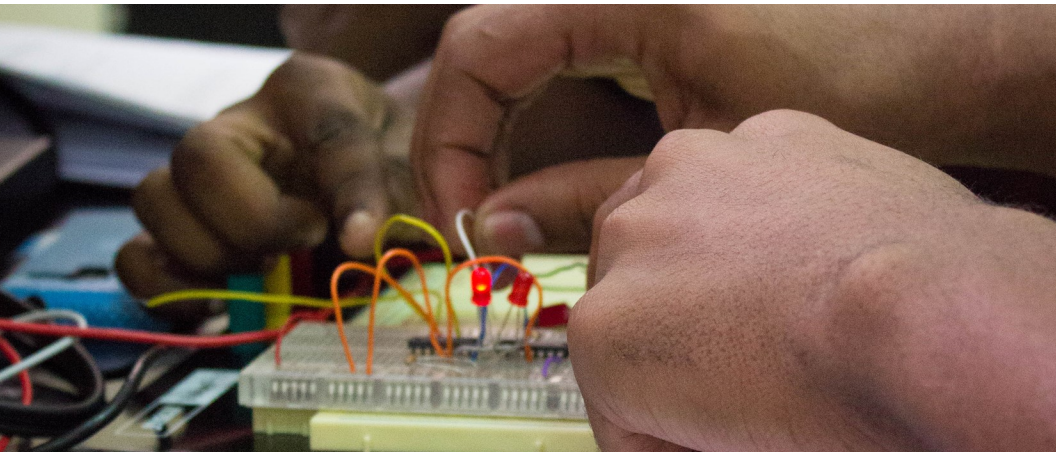
Definition Course Codes:

BMNG	Biomedical Engineering
CENG	Civil Engineering
CVNG	Civil Engineering
ECNG	Electrical and Computer Engineering
ECSE	Electronics Engineering
ELET	Electronics
ELNG	Electronics Engineering
ENGM	Electronics Engineering
ENGR0	Preliminary Engineering Courses
ENGR	Faculty of Engineering
EPNG	Electrical Power Engineering
FOUN	Foundation Courses
GEOM	Geomatics and Geoinformatics
MGMT	Management Studies
MATH	Mathematics
PHYS	Physics

Note: The letter 'E' or 'C' preceding the credit allocation indicates Examination by Written Papers or by Course Work, respectively.

PRELIMINARY ENGINEERING (1 year qualifying programme)

Head of Programme: Dr. Roxann Stennett-Brown



The overall aims of this preliminary engineering programme are to:

- provide a programme structure that allows students to qualify for transition into any of the BSc Engineering programmes within The UWI, Mona;
- provide the requisite foundation in mathematics, sciences, laboratory techniques and communication skills that are required for a beginner engineering student; and
- facilitate increased enrolment in engineering to meet the future needs of our industries.

Students are required to register for 30 credits of courses across two semesters. These courses will facilitate the development of competencies in mathematics, sciences, laboratory skills, technical writing, along with exposure to softer skills via electives from social sciences and humanities. The credits for these courses **will not** be added to any of the BSc Engineering programmes in The UWI and will only serve to qualify students for access to the BSc Engineering programmes .

PROGRAMME STRUCTURE AND CONTENT

Note: E = Examination, C = Coursework, and the numeral after E or C = Number of Credits

ONE YEAR (all courses are compulsory)

Semester 1: 16 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ENGR0110	Pre-Engineering Physics I	E3
ENGR0120	Pre-Engineering Mathematics I	E4
ENGR0130	Chemistry for Engineers	E3
ENGR0230	Biology for Engineers	E3
ELECTIVE 1	Humanities/Social Sciences course	E3

Semester 2: 15 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ENGR0210	Pre-Engineering Physics II	E3
ENGR0250	Pre-Engineering Physics III	E3
ENGR0220	Pre-Engineering Mathematics II	E4
ENGR0240	Computer Applications for Beginning Engineers	C2
FOUN1014	Critical Reading & Writing in the Sciences	E3
ELECTIVE 1	Humanities/Social Sciences course	E3

Note: Students with CAPE passes (or equivalent) in mathematics or sciences may be eligible for respective exemptions.

BSc in BIOMEDICAL ENGINEERING

Head of Programme: Ms. Sasha-Gay Wright

Students are required to complete a minimum of 97 credits for the award of the BSc in Biomedical Engineering.

PROGRAMME STRUCTURE AND CONTENT

Note: E = Examination, C = Coursework, and the numeral after E or C = Number of Credits

LEVEL 1 (all courses are compulsory)

Semester 1: 16 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ECSE1102	Engineering Circuit Analysis & Devices	E3
ECSE1109	Programming for Engineers I	C3
ECSE1104	Digital Circuits and Systems	E3
ENGR1100	The Engineering Profession	C3
ENGR1105	Engineering Laboratory and Designs I	C1
ENGM1180	Mathematics for Engineers I	E3

Semester 2: 18 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
BMNG1210	Introduction to Biomedical Engineering	E3
ECSE1209	Programming for Engineers II	E3
ELNG1101	Physics for Engineers	E3
ENGM1280	Mathematics for Engineers 2	E3
ENGR1200	Engineering Tools and Practice	C3
ENGR1205	Engineering Laboratory and Designs II	C1
FOUN1014	Critical Reading & Writing in the Sciences	E3

LEVEL 2 (all courses are compulsory)

Semester 1: 21 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
BMNG2130	Biomaterials	C3
ECSE2104	Microprocessors and Embedded Systems	E3
ECSE2106	Signals and Linear Systems	E3
BMNG2120	Biomedical Integrated Circuits and Systems	E3
ENGM2180	Mathematics for Engineers 3	E3
ENGR2120	Technical Communications I	E3
ENGR2105	Engineering Laboratory and Design III	E3

Semester 2: 20 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
BMNG2210	Biomedical Instrumentation I	E3
ENGR2205	Engineering Laboratory and Design IV	C3
ECSE2202	Analogue Circuits and Instrumentation	E3
ECSE2209	Control System Engineering	E3
BMNG2230	Biomechanics	E3
ENGM2280	Probability and Statistical Systems	E2
FOUN1301	Law, Governance and Society	E3

LEVEL 3

YEAR-LONG (compulsory): 6 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ECNG3020	Special Project	C6

Semester 1: 15 Credits

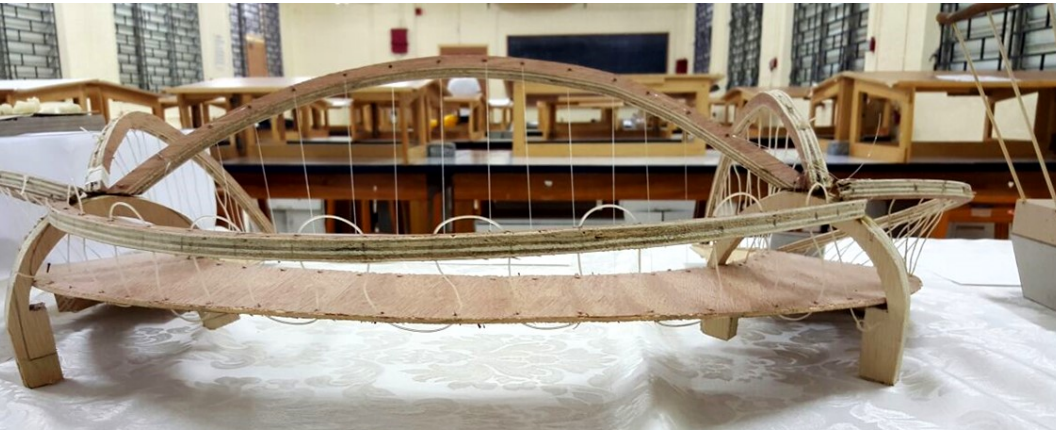
COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
BMNG3110	Biomedical Instrumentation II	E3
BMNG3112	Human Physiology for Engineers	C3
BMNG3240	Rehabilitation Engineering and Design	E3
ECNG3021	Introduction to Engineering Management and Accounting System	E4
LANG3003	Technical Writing	C2

Semester 2: 18 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
BMNG3230	Clinical Engineering	E3
BMNG3202	Tissue Engineering	C3
BMNG3207	Cell and Tissue Mechanics	E3
ELET3405	Practical Analysis of Advanced Electronic Circuit and Systems	E3
ELECTIVES — 6 Credits		
ECSE3208	Engineering Internet of Things Systems	E3
ELET3440	Introduction to Robotics	E3

BSc in CIVIL ENGINEERING

Head of Programme: Dr. Nicolas McMorris



Students are required to complete a minimum of 105 credits for the award of the BSc in Civil Engineering.

PROGRAMME STRUCTURE AND CONTENT

Note: E = Examination, C = Coursework, and the numeral after E or C = Number of Credits

LEVEL 1 (all courses are compulsory)

Semester 1: 17 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
CENG1101	Civil Engineering Materials	E3
CENG1102	Computer Aided Design & Drafting	C3
CENG1103	Intro to Computer Application in Civil	C3
CENG1104	Engineering Mechanics	E2
ENGR1100	The Engineering Profession	C3
ENGM1180	Mathematics for Engineers I	E3

Semester 2: 18 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
CVNG1000	Mechanics of Solids	E3
CENG1201	Fundamentals of Fluid Mechanics	E3
CENG1200	Civil Engineering Practice	C3
CENG1203	Introduction to Geotechnics	E3
CENG1204	Civil Engineering Geomatics	E3
ENGM1280	Mathematics for Engineers 2	E3

LEVEL 2 (all courses are compulsory)

Year-Long Courses (Semesters 1 and 2): 7 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
CVNG2003	Civil Engineering Design II	C3
CVNG2006	Structural Design I	C4

Semester 1: 15 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
CVNG2001	Structural Mechanics	E3
CENG2102	Open Channel Flow & Potential Flow	C3
CVNG2008	Soil Mechanics I	E2
ENGR2120	Technical Communications I	C2
GEOM2015	Geomatics for Civil & Environmental Engineers	E2
ENGM2180	Mathematics for Engineers 3	E3

Semester 2: 14 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
CVNG2009	Soil Mechanics II	E2
CVNG2010	Civil Engineering Management	E3
CENG2202	Hydrology & Environmental Engineering	E3
FOUN1301	Law, Governance, Economy and Society	E3
ENGM2280	Probability and Statistics	E3

LEVEL 3

Year-Long (Semesters 1 & 2): 6 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
CVNG3014	Civil Engineering Design Project	C6

Semester 1: 17 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
CVNG3002	Structural Analysis	E3
CVNG3003	Structural Design II	C2
CVNG3005	Foundation Engineering	E3
CENG3102	Construction Engineering & Management	E3
CENG3103	Highway Design	E3
LANG3003	Technical Writing	C3

Semester 2: 6 Credits (Select any two courses)

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
CVNG3001	Structural Engineering	E3
CVNG3008	Environmental Engineering II	E3
CENG3203	Transportation Engineering & Planning	E3
CVNG3011	Pavement Design & Management	E3
CVNG3013	Coastal Engineering	E3
CVNG3015	Special Investigative Project	C3

BSc in Electrical Power Engineering

Head of Programme: Dr. Kolapo Alli

All Electrical Power Engineering students are required to complete a minimum of 111 credits for the award of the BSc in Electrical Power Engineering. The Foundation courses are not shown.

PROGRAMME STRUCTURE AND CONTENT

Note: E = Examination, C = Coursework, and the numeral after E or C = Number of Credits

LEVEL 1 (all courses compulsory)

Semester 1: 16 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ECSE1102	Engineering Circuit Analysis and Devices	E3
ECSE1104	Digital Circuits and Systems	E3
ECSE1109	Programming for Engineers I	C3
ENGR1100	The Engineering Profession	E3
ENGR1105	Engineering Laboratory and Designs I	C1
ENGM1180	Mathematics for Engineers I	E3

Semester 2: 21 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ELNG1101	Physics for Engineers	E3
ENGR1200	Engineering Tools and Practice	C3
ENGR1205	Engineering Laboratory and Designs II	C3
ENGM1280	Mathematics for Engineers 2	E3
EPNG1201	Intro to Thermodynamics and Fluid Mechanics	E3
EPNG1210	Electrical Machines I	E3
FOUN1014	Critical Reading & Writing in the Sciences	E3

LEVEL 2 (all courses compulsory)

Semester 1 : 15 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ECSE2104	Microprocessors and Embedded Systems	E3
ECSE2106	Signals and Linear Systems	E3
ENGR2105	Engineering Laboratory and Designs III	C1
ENGR2120	Technical Communications I	C2
EPNG2110	Electrical Machines II	E3
ENGM2180	Mathematics for Engineers 3	E3

Semester 2 : 21 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ENGM2210	Engineering Electromagnetism	E3
ENGR2205	Engineering Laboratory and Design IV	C3
ECSE2202	Analogue Circuits and Instrumentation	E3
ECSE2209	Control System Engineering	E3
EPNG2010	Nuclear Physics and Reactor Theory	E3
ENGM2280	Probability and Statistical Systems	E2
EPNG2020	Renewable Energy Systems	E3

LEVEL 3

Year-Long (Semesters 1 & 2): 6 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ECNG3020	Final Year Engineering Special Project	E6

Semester 1: 17 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ECNG3021	Introduction to Engineering Management	E3
LANG3003	Technical Writing	C2
EPNG3010	Nuclear Power Systems and Reactor Operations	E3
ECNG3015	Industrial and Commercial Electrical Systems	E3
EPNG3014	Power Systems Analysis	E3

Semester 2: 16 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ELET3405	Practical Analysis of Advanced Electronic Circuits and Systems	C3
MGMT3058	New Venture Management	C3
ECNG3013	Electrical Transmission and Distribution Systems	E3
ELNG3040	Industrial Automation	E3

Electives (3 credits)

Choose any of the following courses or any other Level 2 or Level 3 course from:

(1) A different program in the Faculty of Engineering (FOE)

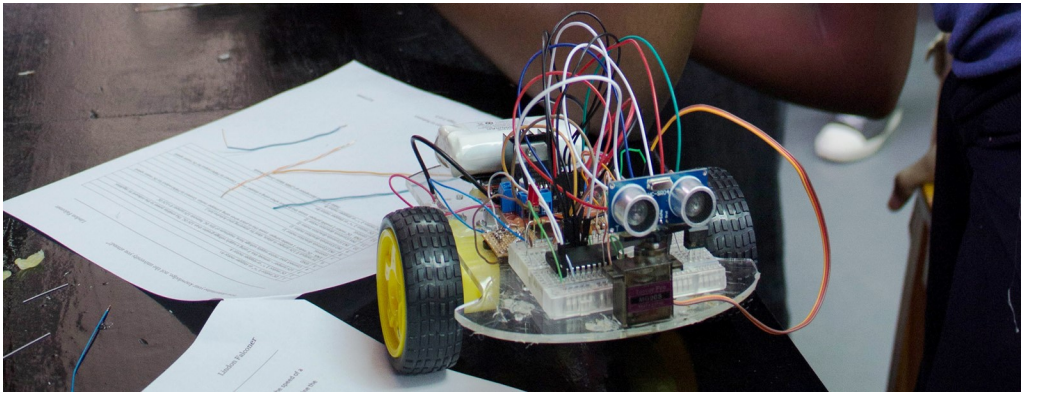
(2) The Faculty of Science and Technology (FST)

(3) A Language course from Faculty of Humanities and Education (FHE)

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ECNG3010	Electrical Machines and Drive Systems	E3
ELET3611	Integrating Alternative Energy	E3
EPNG3012	Cryogenics	E3
EPNG3017	Industrial Refrigeration	E3

BSc in ELECTRONICS ENGINEERING

Head of Programme: Dr. Rahkee



Students are required to complete a minimum of 112 credits for the award of the BSc in Electronics Engineering.

PROGRAMME STRUCTURE AND CONTENT

Note: E = Examination, C = Coursework, and the numeral after E or C = Number of Credits

LEVEL 1 (all courses compulsory)

Foundation courses are compulsory: 6 credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
FOUN1014	Critical Reading and Writing	E3
FOUN1301	Law, Governance, Economy and Society	E3

Semester 1: 16 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ECSE1102	Engineering Circuit Analysis and Devices	E3
ECSE1104	Digital Circuits and Systems	E3
ECSE1109	Programming for Engineers I	C3
ENGR1100	The Engineering Profession	E3
ENGR1105	Engineering Laboratory and Designs I	C1
ENGM1180	Mathematics for Engineers I	E3

Semester 2: 18 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ECSE1207	Computer Architecture and Organization	E3
ECSE1209	Programming for Engineers II	C3
ELNG1101	Physics for Engineers	E3
ENGR1200	Engineering Tools and Practice	C3
ENGR1205	Engineering Laboratory and Designs II	C3
ENGM1280	Mathematics for Engineers 2	E3

LEVEL 2 (all courses are compulsory**)**

Semester 1: 15 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ECSE2102	Semiconductor Devices and Fabrication	E3
ECSE2104	Microprocessors and Embedded Systems	E3
ECSE2106	Signals and Linear Systems	E3
ENGR2105	Engineering Laboratory and Designs III	C1
ENGR2120	Technical Communications I	C2
ENGM2180	Mathematics for Engineers 3	E3

Semester 2: 18 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ECSE2202	Analogue Circuits and Instrumentation	E3
ECSE2208	Analogue and Digital Communication Systems	E3
ECSE2209	Control Systems Engineering	E3
ENGM2210	Engineering Electromagnetics	E3
ENGM2280	Probability and Statistical Systems	C3
ENGR2205	Engineering Laboratory and Designs IV	C3

Summer Apprenticeship/Internship

- **Approved Industry (Summer between Level 2 and Level 3)**

  Summer Apprenticeship is meant to expose students to the practical applications of the concepts learnt in classes and is expected to be a source of motivation and inspiration. It also provides an opportunity to identify potential projects.

LEVEL 3

Students taking Level 3 courses must:

1. Register for all courses listed as compulsory and core for chosen option.
2. Select one of the following options:
    a. Telecommunications or
    b. Industrial Instrumentation
3. Select a year-long project (ECNG3020) from the Project Listing.

YEAR-LONG (compulsory): 6 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ECNG3020	Special Project	C6

Core Courses (compulsory): 22 Credits

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
LANG3003	Technical Writing	C2
MGMT3058	New Venture Management	C3
ECNG3021	Introduction to Engineering Management and Accounting Systems	E4
ECSE3108	Data Communication & Computer	E3
ECSE3042	RF Circuits and Systems	E3
ELET3405	Practical Analysis of Advanced Electronic Circuits and Systems	C3
ECSE3048	Engineering Internet of Things (IoT) System	E3

Option 1: Telecommunications (compulsory) *(9 Credits)*

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ELNG3050	Broadband Networks	E3
ELET3470	Wireless Transmission & Fiber-Optics	E3
ELET3480	Wireless Communication Systems	E3

Option 2: Industrial Instrumentation (compulsory) *(9 Credits)*

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
ELNG3030	Power Electronics and Protection Circuits	E3
ELNG3040	Industrial Automation	E3
ELNG3060	Power Plant Instrumentation	E3

Electives (3 credits)

Choose any of the following courses or any other Level 2 or Level 3 course from:

(1) A different program in the Faculty of Engineering (FOE)

(2) The Faculty of Science and Technology (FST)

(3) A Language course from Faculty of Humanities and Education (FHE)

COURSE CODE	COURSE TITLE	NUMBER OF CREDITS
EPNG3012	Cryogenics	E3
ELET3460	Digital Signal and Image Processing	E3
ELET3485	Introduction to Robotics	E3
ELET3611	Integrating Alternative Energy	E3

SECTION 7: CO-CURRICULAR, FOUNDATION & FOREIGN LANGUAGE COURSES

The Co-curricular, Foundation and Foreign Language courses are an integral part of the official credit system at undergraduate level at The University of the West Indies. They provide students with valuable opportunities for skill development in areas not available in their core programme. These courses are designed to help students become well-rounded graduates - prepared for their role in society and in the workplace.

CO-CURRICULAR CREDITS

At the Mona Campus, Co-curricular credits are three credits and offered in Semester 2, Level 2 for involvement in the following courses:

- COCR2005 Netball
- COCR2003 Cricket
- COCR2004 Football
- COCR2008 Track and Field
- COCR2010 Debating
- COCR2009 Photography (Camera Club)
- COCR2007 Panoridim (Steel Orchestra)
- COCR2015 UWI Leads

For more information contact the Office of the Director of Student Services and Development, Sports Department or Phillip Sherlock Centre for the Creative Arts.

FOUNDATION COURSES

Faculty of Engineering students at the Mona Campus MUST complete 3 Foundations Courses. It is also highly recommended that students complete their Foundation Courses in Semester 2 of each academic year. The following are eligible Foundation Courses:

- FOUN1014 Critical Reading and Writing in Science & Technology and Medical Sciences
- LANG3003 Technical Writing
- FOUN1301 Law, Governance, Economy and Society

FOREIGN LANGUAGE COURSES

UWI Mona students may substitute one of the non-language Foundation Courses (i.e. FOUN1101, or FOUN1301) with a foreign language course at the level of their competence. Students may choose a course in Chinese, French, Japanese, Portuguese or Spanish.

The courses which may be used as substitutes, based on the student's level of competence in the particular language are as follows:

Chinese, Japanese, Portuguese

- ALL students are eligible to do Beginners' courses

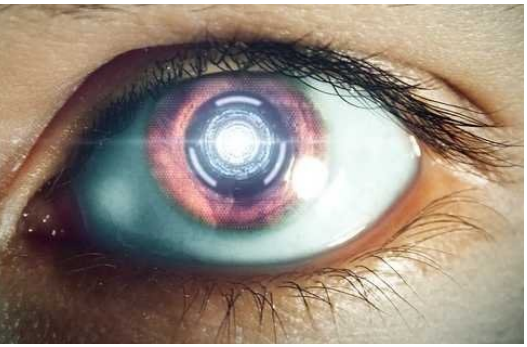
French

- Students without CSEC — Basic French or Beginners' French I
- Students with CSEC — Beginners' French II (Intermediate)
- Students with CAPE — French Language IA

Spanish

- Students without CSEC — Basic or Beginners' Spanish
- Students with CSEC — Intermediate Spanish
- Students with CAPE — SPAN1001

SECTION 8: COURSE DESCRIPTIONS



SEMESTER: **2**
COURSE CODE: **BMNG1210**
COURSE TITLE: **INTRODUCTION TO BIOMEDICAL ENGINEERING**
NUMBER OF CREDITS: **3**
Course Description: This course provides an introduction to biomedical engineering principles using foundational resources from molecular and cellular biology and physiology, and relating them to various subspecialties of biomedical engineering. The essential molecular biology, cellular biology, and human physiology background are included for students to understand the context in which biomedical engineers work. The course also highlights important advances made over recent years, including iPS cells, microRNA, Nano medicine, imaging technology, biosensors, and drug delivery systems, giving students a modern description of the various subfields of biomedical engineering. Further, this introductory course will provide concrete examples of applying engineering knowledge to solve problems related to human medicine as well as concrete examples of recent technological breakthroughs.

SEMESTER: **1**
COURSE CODE: **BMNG2130**
COURSE TITLE: **BIOMATERIALS**
NUMBER OF CREDITS: **3**
Course Description: The course introduces students to the types, properties and applications for biomaterials along with discussions around legal and ethical consideration to align with standards and regulatory constraints. It covers a wide range of biomaterial types including metals, ceramics, polymers, carbons, composites, biomolecule and nanoparticles, as well as their uses in biomedical devices and implants. The course emphasizes application to medical devices, artificial cells and organs, drug delivery systems, dental implants, orthopedic, ophthalmologic, bio-electrodes, prostheses, medical sensors, skin substitute and sutures, implant and inserts, and tissue engineering. The interaction of biomaterials within the body is discussed in terms of inflammation, immunity, infection, and toxicity.

SEMESTER: **1**
COURSE CODE: **BMNG2120**
COURSE TITLE**: BIOMEDICAL INTEGRATED CIRCUITS AND SYSTEMS**
NUMBER OF CREDITS: **3**
Course Description: The course will expose the students to the design of various technological solutions for low-power biomedical devices. It is interdisciplinary, combining electrical engineering, biology, and anatomy, developing, and designing new medical devices for the biomedical field. Emphasis will be placed on a core understanding of the fundamental components used within biomedical devices, the semiconductor devices such as MOSFETS for their sub-threshold conduction and its similarities to bio-molecular transport, as well as microcircuits and systems will be explored as to how the students develop life-changing medical devices, with low-cost solutions for daily life, management of bodily functions, and improve on the designs of already existing biomedical devices. The course will also explore designing instrumentation amplifiers, understanding biosensors, biosensor devices, and associated devices and focusing on problems related to making highly integrated devices, and thereafter, looking into electromagnetic effects on tissue. The practical work required for understanding key concepts, troubleshooting devices, sensor integration, and systems design will be explored in ENGR 2205 Laboratory and Project Design IV.

SEMESTER: **2**
COURSE CODE: **BMNG2210**
COURSE TITLE: **BIOMEDICAL INSTRUMENTATION I**
NUMBER OF CREDITS: **3**
Course Description: This course will expose the students to the basic principles of biomedical instrumentation and measurements employed in the health care industry. Emphasis will be placed on how the biological signals of human body can be acquired and used in a successful manner. This course is part 1 of a two-part course in biomedical instrumentation and will explore the operation and application of a range of medical equipment dealing with instrumentation techniques for measuring common physiological signals, including bioelectric and biochemical sensors bio-stimulation, electronic circuit design issues, digital signal acquisition, electrical safety, signal conditioning and protection against noise. The practical work required in the use, servicing and maintenance of these instruments/equipment will be explored in ECNG2005 Laboratory and Project III.

SEMESTER: **2**
COURSE CODE: **BMNG2230**
COURSE TITLE: **BIOMECHANICS**
NUMBER OF CREDITS: **3**
Course Description: The course integrates the classic fields of mechanics—statics, dynamics, and strength of materials—using examples from biology and medicine, while introducing students to concepts of engineering mechanics required to understand the structure and movement of biological systems. This course covers the mechanical principals of living tissues and their effects of the motion dynamics and growth. It deals primarily with explaining biomechanics from a continuum mechanics perspective and covers topics such as concepts of tensorial stress and strain, constitutive equations, and mechanical properties of bio-solid and bio-fluid materials, viscoelasticity, torsion, and bending. The course also introduces topics specifically relevant to biological materials such as anisotropy, heterogeneity and failure mechanics. In addition to exploring fundamental engineering mechanics, this course will also enable students to apply these engineering principles to relevant real world biomedical problems.

SEMESTER: **1**
COURSE CODE: **BMNG3110**
COURSE TITLE: **BIOMEDICAL INSTRUMENTATION II**
NUMBER OF CREDITS: **3**
Course Description: This course This course covers the advanced principles, concepts, and operations of medical sensors and devices. The origin and nature of measurable physiological signals are studied, including chemical, electrochemical, optical, and electromagnetic signals. The principles and devices used to make the measurements, including design of electronic instrumentation, will be rigorously presented. This course will cover emerging frontiers of general diagnostics, including Electrophysical methods like ECG, EEG, EMG, defibrillator and pacemaker; imaging techniques: X-rays, nuclear medicine, ultrasound, and magnetic resonance. Supporting instrumentation such as incubators, respirators, anesthesia and dialysis machines. Surgical techniques with diathermy and laser.

SEMESTER: **1**
COURSE CODE: **BMNG3112**
COURSE TITLE: **HUMAN PHYSIOLOGY FOR ENGINEERS**
NUMBER OF CREDITS: **3**
PREREQUISITES: **ENGR2105 and BMNG2130**
Course Description: This course introduces students to the various organ systems in the body and how the activities of the human body are facilitated. These systems include muscular, nervous, endocrine, cardiovascular, respiratory, digestive, urinary, and reproductive systems. Students will also explore the effects that specific perturbations have on the organ systems and subsequent ability to maintain homeostasis. The students' knowledge of physiology will then be applied to various clinical cases via weekly quizzes. The students will be assessed using assignments such as case studies, an in-course test and a final examination.

SEMESTER: **2**
COURSE CODE: **BMNG3230**
COURSE TITLE: **CLINICAL ENGINEERING**
NUMBER OF CREDITS: **3**
Course Description: This course covers the critical issues relating to the risk management and implementation of new technologies in the healthcare sector. It represents a

comprehensive summary of the advances in clinical engineering and presents guidance on compliance and safety for hospitals and engineering teams. Students will solve common problems in the area of healthcare technology. Topics include compliance with the European Directive on Medical Devices 93/42/EEC, European Norms EN 60601-1-6, EN 62366, and the American Standards ANSI/ AAMI HE75: 2009. Content coverage includes decision support systems, clinical complex systems, and human factor engineering. Examples are fully supported with case studies, and global perspective is maintained throughout. The course emphasizes how to assess new healthcare technologies and what are the most critical issues in their management, and provides information on how to carry out risk analysis for new technological systems or medical software. Various tactics on how to improve the quality and usability of medical devices will be explored .

SEMESTER: **2**
COURSE CODE: **BMNG3202**
COURSE TITLE: **TISSUE ENGINEERING**
NUMBER OF CREDITS: **3**
PREREQUISITE: **BMNG2130**
Course Description: This course incorporates engineering and cellular biology principles in an effort to establish foundational understanding of structure-function relationships in normal and pathological mammalian tissues. This course will also explore the development of substitutes to restore or improve tissue and organ function. Concepts to be taught include cryobiology, stem and progenitor cell technologies and regenerative medicine applications. The students' knowledge will then be applied to various clinical cases via quizzes. The students will be assessed using assignments, one laboratory exercise, an in-course test and an oral presentation.

SEMESTER: **2**
COURSE CODE: **BMNG3207**
COURSE TITLE: **CELL AND TISSUE MECHANICS**
NUMBER OF CREDITS: **3**
PREREQUISITE: BMNG2130

Course Description: This course will explore the relationship between internal and external cellular environment highlighting key mechanisms in cellular function and tissue behaviour. Topics explored include Organization of Biological Tissue, Cellular and extracellular filaments, The cellular membrane, Biofluids and molecular transport, Cell/tissue behaviour, Adhesion and migration, Mechanotransduction, Embryonic development, Stem cell and tissue regeneration, Hypothesis in cellular/tissue behaviour and properties. Students will be assessed weekly via quizzes to further gauge understanding of topics covered. Course assessment will be done using assignments, case studies, an in-course test and a final examination.

SEMESTER: **2**
COURSE CODE: **BMNG3240**
COURSE TITLE: **REHABILITATION ENGINEERING AND DESIGN**
NUMBER OF CREDITS: **3**
Course Description: This course introduces the fundamentals and applications of rehabilitation engineering and assistive technologies (ATs). It is an introduction to a field of engineering dedicated to improving the lives of people with disabilities. A range of disabilities and assistive technologies will be investigated. The course will examine the three basic approaches of assistive technologies and rehabilitation engineering, namely: design for use by the broadest possible population, design for subpopulations, and design for the individual. The relationship between engineering innovation, the engineering design process, the human-technology interface, and the physical medicine and rehabilitation medical community will be explored. The course highlights the models for AT service delivery, the design tools and principles of universal design, and various technology-transfer mechanisms, models, and principles. It explains the process for creating assistive device standards, followed by a review of seating biomechanics and soft tissue biomechanics, followed by the design and service delivery principles of wheelchairs and scooters, functional electrical stimulation and its applications, wheelchair-accessible transportation legislation, and the applications of robotics in medical rehabilitation. Prosthetic and orthotic design and usage, visual and hearing impairment, and augmentative and alternative communication (AAC) technology are also discussed .

SEMESTER: **1**
COURSE CODE: **CENG1101**
COURSE TITLE: **CIVIL ENGINEERING MATERIALS**
NUMBER OF CREDITS: **3**
Course Description: This course provides an overview of modern construction materials and their use in civil engineering applications. The course focuses on the main material types, e.g. concrete (plain & reinforced), metals (ferrous and non-ferrous), timber and masonry, but also includes engineering polymers, fibre reinforced composites, glass and bituminous materials. The lectures provide an explanation of the composition, manufacture, properties and behaviour of these materials and the hazards and risks they may pose both during construction and subsequent operation of a structure.

SEMESTER: **1**
COURSE CODE: **CENG1102**
COURSE TITLE: **COMPUTER AIDED DESIGN & DRAFTING (CADD)**
NUMBER OF CREDITS: **3**
Course Description: This course provide a broad fundamental to 2D and 3D Computer Aided Design and Drafting with the AutoCAD and Revit software. It covers coordinates methods, blocks, attributes, external references, slides, sheeting working drawings, 3D modeling and building Information Modeling (BIM). It will be assessed by assignments, in-class test and project.

SEMESTER: **1**
COURSE CODE: **CENG1103**
COURSE TITLE: **INTRODUCTION TO COMPUTER APPLICATION IN CIVIL**
NUMBER OF CREDITS: **3**
Course Description: This course introduces students to the fundamentals for computational analyses using Mathlab and Excel. The focus of this course is on the fundamentals of engineering computing and involves algorithm development, selection of appropriate tools, documentation of solutions, and verification and interpretation of results. Students will be exposed to the characteristics of a procedure-oriented language, the representation of information, and an introduction to algorithms. Emphasis will be placed on the solution of characteristic problems arising in engineering. Selected assignments and laboratory exercises are included and are designed to reinforce and expand the student understanding of the fundamental concepts and their application to solving engineering problems.

SEMESTER: **1**
COURSE CODE: **CENG1104**
COURSE TITLE: **ENGINEERING MECHANICS**
NUMBER OF CREDITS: **2**
Course Description: This course introduces students to the theory and application of engineering mechanics. It covers both statics and dynamics.

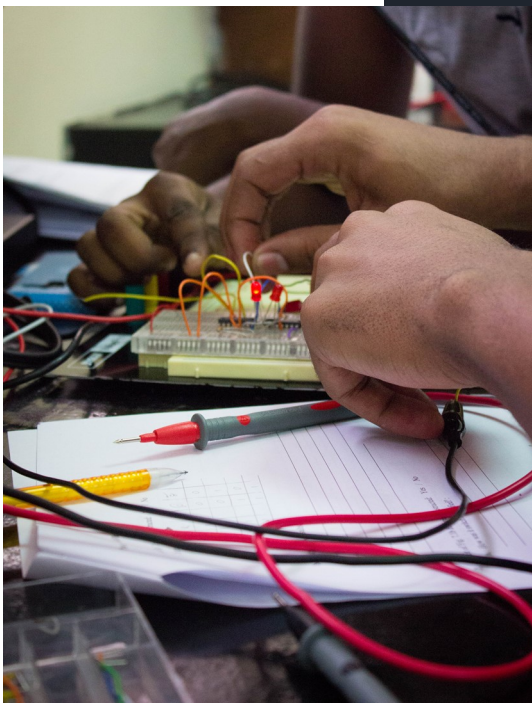
SEMESTER: **2**
COURSE CODE: **CENG1200**
COURSE TITLE: **Civil Engineering Practice**
NUMBER OF CREDITS: **3**
ANTIREQUISITE: **CVNG1002**
Course Description: Civil engineering encompasses a diversity of specialty sub-disciplines such as structural, water resources, environmental, construction, transportation and geotechnical engineering. Many civil engineers are involved in major projects that require them to conceptualize and design within complex constraints. Key skills for a successful civil engineer include communication (both written and oral); perceiving, visualizing, reasoning and problem solving; managing oneself, other people, time and things; working with other people; and using mathematics and science in design and problem solving.

Engineering Practice provides a perspective and an exposure to modern civil engineering practice. Students work in small groups on a (contrived) major project in which a broad range of issues, parameters and constraints must be considered. The importance of civil engineering drawings, and written communication are also covered throughout the course. A physical/virtual field trip to a construction site is arranged to give students an understanding of practical issues in construction. Students are required to design, build and test a structure to observe structural behavior.

SEMESTER: **2**
COURSE CODE: **CENG1201**
COURSE TITLE: **FUNDAMENTALS OF FLUID MECHANICS**
NUMBER OF CREDITS: **3**
Course Description: Physical properties of fluids. Statics: pressure distribution, forces on plane and curved surfaces, floating. Kinematics: ideal and real fluid, stream lines, path lines, streak lines; graphical plotting of stream lines. Dynamics: continuity, momentum and energy equations for one-dimensional flow. Laminar and turbulent flow, flow in pipes, flow measurenents. Introduction to dimensional analysis. Dynamic similarity. Boundary layers. Pipe friction. Darcy Equation. Rotodynamic machines: selection, performance, cavitation.

SEMESTER: **2**
COURSE CODE: **CENG1204**
COURSE TITLE: **CIVIL ENGINEERING GEOMATICS**
NUMBER OF CREDITS: **3**
Course Description: The course introduces students to Geomatics as a broad field of study and then moves into specific areas of the discipline that have strong linkages to Civil Engineering. Students will be introduced to Geomatics principles and techniques which include theory, practical applications, computational procedures, report writing, plan production and design. It exposes students to conventional surveying methods as well as more modern methods with a specific focus on their use on civil engineering projects.

SEMESTER: **2**
COURSE CODE: **CVNG1000**
COURSE TITLE: **MECHANICS OF SOLIDS**
NUMBER OF CREDITS: **3**
Course Description: Simple static forces, stress, strain. Hardness, impact & temperature effects. Two-dimensional stress and strain, torsion, combined stresses. Statically determinate beams and plane frames. Bending theory and moment, shearing, force, slope, defluxion, moment-area.



SEMESTER: **1**
COURSE CODE: **CENG1203**
COURSE TITLE: INTRODUCTION TO GEOTECHNICS
NUMBER OF CREDITS**: C2**
Course Description: The course starts with a general Geotechnical engineering, also known as geotechnics, is the branch of civil engineering concerned with the engineering behavior of earth materials. It uses the principles and methods of soil mechanics and rock mechanics for the solution of engineering problems and the design of engineering works. This course traces the genesis of Geotechnical Engineering and its development, practice, and importance as a subdivision of Civil Engineering. Students are further introduced to the nature, origin, and types of rocks and minerals, soils, weathering and its agents, and other geological processes. The course starts with a general description of typical geotechnical works. The main issues and timescales for these works are discussed, and the roles and responsibilities of the geotechnical engineer working as part of an engineering team are discussed. The characterization of soil is introduced, in terms

of particle sizes and shapes, plasticity, consistency, and strength. Some practical activities involved in the preparation of ground are described. The student is introduced to the design issues associated with all the typical geotechnical works.

SEMESTER: **1**
COURSE CODE: **CVNG2001**
COURSE TITLE: **STRUCTURAL MECHANICS**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **CVNG1000**
Course Description: Introductory concepts, equilibrium and compatibility, statical determinacy; compatibility of deformations, flexibility method applied to simple flexural systems; analysis of beams (flexure , shear, thin walled sections); compression members, strain energy and related theorems. Analysis of beams (asymmetrical bending); simple plastic theory (hinges, mechanism, equilibrium diagram method, redistribution of bending moments, moment capacity, fundamental theorems of plastic collapse), approximate methods of analysis; influence lines for statically determinate systems.

SEMESTER: **YEAR-LONG**
COURSE CODE: **CVNG2003**
COURSE TITLE: **CIVIL ENGINEERING DESIGN II**
NUMBER OF CREDITS: **C3**
PREREQUISITES: **CVNG1002**
Course Description: Innovation and creativity in conceptual design; sustainability; health and safety; investigative procedures. The use of analysis, synthesis and optimization in design; project planning, networks and graphs. Design of embankments, dams; drainage design; route location and alignment design of roads; assessment of natural hazard impacts and environmental impacts. (Coursework)

SEMESTER: **YEAR-LONG**
COURSE CODE: **CVNG2006**
COURSE TITLE: **STRUCTURAL DESIGN I**
NUMBER OF CREDITS: **C4**
PREREQUISITES: **CVNG1000**
Course Description: Conceptual design of structures; structural design of steel, reinforced concrete, timber and masonry structures, use of construction materials in design. (Coursework)

SEMESTER: **1**
COURSE CODE: **CVNG2008**
COURSE TITLE: **SOIL MECHANICS I**
NUMBER OF CREDITS: **E2**
PREREQUISITE: **CVNG1007**
Course Description: Calculations for various different measures of particle packing and density are developed, culminating in Terzaghi's Fundamental Principle of Effective Stress. The theory of elasticity is applied to soils, and practical calculations are developed for short-term elastic settlements of various types of foundation. Concepts of different types and timescales for stress, deformations, and strength are developed. Terzaghi's Theory of Primary Consolidation is introduced.

SEMESTER: 1
COURSE CODE: **CENG2102**
COURSE TITLE: **Mechanics of Structures**
NUMBER OF CREDITS: **C3**
PREREQUISITE: **CVNG1000**
ANTIREQUISITE: **CVNG2001**
Course Description: This course covers the fundamental concepts of structural mechanics with applications to civil structures. CENG2102 builds on theories of stress and strain and the equations of statics that were developed in CVNG1000 – Mechanics of Solids.

SEMESTER: **2**
COURSE CODE: **CVNG2009**
COURSE TITLE: **SOIL MECHANICS II**
NUMBER OF CREDITS: **E2**
PREREQUISITE: **CVNG2008**
Course Description: Starting from the principles developed in the previous course Soil Mechanics 1, an introduction is presented to the procedures, stages, and approaches of a geotechnical job. After recalling Darcy's Law, calculations are developed for aquifers, pumping from wells, and more generally the flow of water through soils and its effects on compositional and mechanical stability. The ideas of limit equilibrium and mechanisms are introduced and used to analyze the stability of slopes. Some aspects of landslide stabilization and avoidance are also covered.

SEMESTER: **2**
COURSE CODE: **CVNG2010**
COURSE TITLE: **CIVIL ENGINEERING MANAGEMENT**
NUMBER OF CREDITS: **E3**
PREREQUISITE: **NONE**
Course Description: Introduction to management theory; human resource management, leadership, corporate strategy, communication, conduct of meetings; Management Information Systems (MIS); resolution of engineering ethics, Civil Engineering case studies, resources and reasoning methods; Civil Engineering project management, networks and graphs, quality management; Facilities Management, maintenance management, managing Health and Safety; Introduction to Management Accounting and Financial Management.

SEMESTER: **2**
COURSE CODE: **CENG2202**
COURSE TITLE: **HYDROLOGY & ENVIRONMENTAL ENGINEERING**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **CVNG2005**
Course Description: This course is one of the core subjects (Environmental Engineering) and consists of two essential components which are fundamental to practicing civil engineers – understanding of engineering hydrology and how water is treated. The relationship of hydrology to climate change and hence the need for environmental sustainability is implicit in this course and explicitly explained as the course progresses. The lectures provide an explanation of the processes by which water affects civil engineering design, and how the effects of excessive and polluted water are dealt with via engineering means. A catchment-based approach is taken in the "Engineering Hydrology" section, where the hydrological cycle is examined, and the processes of reservoir and river flow are covered in detail. In the "Water Treatment" section, treatment methods for drinking water are covered in a comprehensive manner to ensure that students have a fundamental and good understanding of the processes they have to design and manage as a civil engineer working in (or for) water treatment works.

SEMESTER: **2**
COURSE CODE: **CVNG3001**
COURSE TITLE: **STRUCTURAL ENGINEERING**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **CVNG2001 and CVNG2006**
Course Description: Plate theory, the finite element method, matrix methods, torsional seismic loads, plastic collapse methods for frames, the direct design method, shear walls and yield line analysis of reinforced concrete slabs.

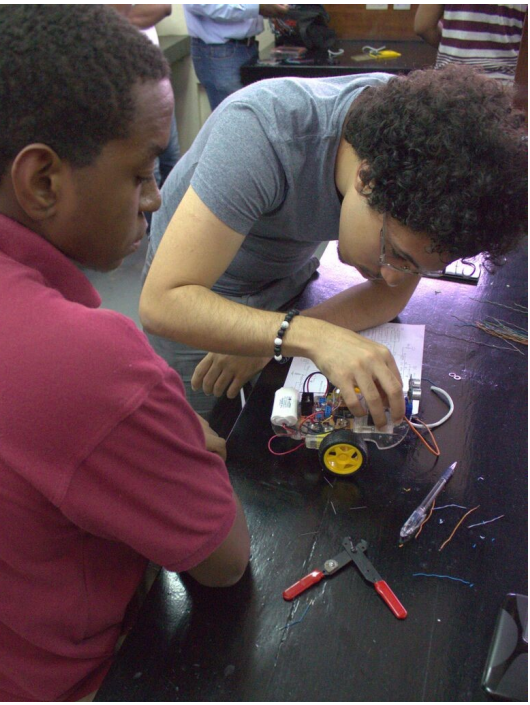
SEMESTER: **1**
COURSE CODE: **CVNG3002**
COURSE TITLE: **STRUCTURAL ANALYSIS**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **CVNG2001 and CVNG2006**
Course Description: Symmetry and anti-symmetry, indeterminacy, slope deflection, moment distribution, structural dynamics,

stability, pre-stressed concrete, plates, combined bending and axial loads, arches, influence lines, suspension cables.

SEMESTER: **1**
COURSE CODE: **CVNG3003**
COURSE TITLE: **STRUCTURAL DESIGN II**
NUMBER OF CREDITS: **C2**
PREREQUISITES: **CVNG2001 and CVNG2006**
Course Description: Computer modelling, hurricane resistant design, earthquake resistant design of concrete and steel moment frames, pre-stressed concrete. (Coursework)

SEMESTER: **1**
COURSE CODE: **CVNG3005**
COURSE TITLE: **FOUNDATION ENGINEERING**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **CVNG2008 and CVNG2009**
Course Description: Site investigations, bearing capacity and settlement, design of spread footings and rafts, pile foundations, sheet pile walls.

SEMESTER: **1**
COURSE CODE: **CVNG3007**
COURSE TITLE: **ENVIRONMENTAL ENGINEERING I**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **NONE**
Course Description: Environmental needs and priorities, pollution, the role of environmental engineering, water quality standards, unit operations in water treatment, sources of wastewater, wastewater quality and effluent standards, unit operations in wastewater treatment, on site treatment and disposal, stream purification processes, sources of solid wastes, treatment of solid and fecal wastes, control of leachates, recycling, environmental impact assessment, soil conservation systems and mitigation of forest destruction.



SEMESTER: **1**
COURSE CODE: **CENG3102**
COURSE TITLE: **Construction Engineering & Management**
NUMBER OF CREDITS: **3**
PREREQUISITES: **NONE**
ANTIREQUISITE: **CVNG1012 & CVNG2010**
Course Description: . Statutory and regulatory legislations, contract formation, contracting strategies and contractual procedures. The rights, duties, liabilities, and obligations of the parties to the building contract as dictated by a standard form of building contract are evaluated to enable professional contract management. Principles such as Duty of Care, professionalism and ethical obligations and conduct are discussed.

SEMESTER: **1**
COURSE CODE: **CENG3103**
COURSE TITLE: **Highway Design**
NUMBER OF CREDITS: **3**
PREREQUISITES: **MATH2230, ENGM2280, CENG2300 and CVNG2009**
ANTIREQUISITE: **CENG3009**
Course Description: This course introduces students to transportation planning, and parking studies. The course exposes the students to the study of traffic engineering. This involves having an understanding of highway traffic characteristics, being able to design and determine the capacity of intersections while having an appreciation of engineering economics. The course also allows students to understand how to determine the route location for highways, how to execute highway geometric designs, rigid and flexible pavement designs, highway drainage designs, while having an appreciation of the selection of suitable pavement materials, quality control, pavement maintenance management and the potential environment impacts of transportation projects.

SEMESTER: **1**
COURSE CODE: **CVNG3009**
COURSE TITLE: **HIGHWAY ENGINEERING**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **MATH2230, MATH2240, CVNG2003, CVNG2009**
Course Description: Highway traffic characteristics, capacity of roadways and intersections, design of intersections, traffic management, parking studies; environmental impact, road safety; route location, economic analysis, introduction to transportation planning; pavement materials, pavement and drainage design; quality control and pavement maintenance management systems.

SEMESTER: **2**
COURSE CODE: **CENG3203**
COURSE TITLE: **TRANSPORTATION ENGINEERING & PLANNING**
NUMBER OF CREDITS: **E3**
PREREQUISITE: **CENG3103**
Course Description: Transportation management, transportation economics, traffic flow theory, traffic signalization, highway safety, highway geometric design, pavement design and highway construction and asphalt technology ; Transportation planning, Intelligent Transportation Systems (ITS).

SEMESTER: **2**
COURSE CODE: **CVNG3011**
COURSE TITLE: **PAVEMENT DESIGN & MANAGEMENT**
NUMBER OF CREDITS: **E3**
PREREQUISITE: **CVNG3009**
Course Description: Roads and highways pavement design, airport runway design, seaports and special pavements, pavement management systems, road rehabilitation and maintenance.

SEMESTER: **2**
COURSE CODE: **CVNG3013**
COURSE TITLE: **COASTAL ENGINEERING**
NUMBER OF CREDITS: **E3**
PREREQUISITE: **CVNG2005**
Course Description: Introduction to coastal zone management; The marine environment, coastal processes; Wave generation and propagation; Coastal sediment transport, sediment budget; Port and marine structures. Design of coastal defense works; Port-planning and management. Coastal pollution control, EIA and waste disposal in the coastal zone.

COURSE CODE: **CVNG3015**
COURSE TITLE: **SPECIAL INVESTIGATIVE PROJECT**
NUMBER OF CREDITS: **C3**
PREREQUISITES: **NORMALLY ALL LEVEL 1 AND LEVEL 2 COURSES**
Course Description: This course is a project-based one, designed to generate an investigative learning atmosphere. The project work engenders a sense of enquiry, research and verification in the student, and draws on the first two years of learning in the programme. The emphasis is on self-learning, creativity, understanding, communication skills, as well as on engineering analysis and problem solving. The projects are supervised by tutors from the Department of Civil & Environmental Engineering. Special permission may be sought to pursue a relevant engineering-based project in other Departments in the Faculty of Engineering.

SEMESTER: **YEAR-LONG**
COURSE CODE: **CVNG3014**
COURSE TITLE: **CIVIL ENGINEERING DESIGN PROJECT**
NUMBER OF CREDITS: **C6**
PREREQUISITES: **NORMALLY ALL LEVEL 1 AND LEVEL 2 COURSES**
Course Description: The purpose of this course is to develop the student's ability in Civil Engineering Design as well as the ability to work in a team. The emphasis is on self - learning, creativity, design, understanding, project team working and communication skills, as well as engineering judgment and problem solving. The project gives professional orientation to work in the final year by simulating as closely as is possible, the investigation and design works which are required for substantial Civil Engineering works and projects in the provision of buildings, lifeline facilities and Civil Engineering infrastructure. The integration of health and safety, and risk and vulnerability in the design process gives the student a complete outlook on the design process.

SEMESTER**: YEAR-LONG**
COURSE CODE: **ECNG3020**
COURSE TITLE: **SPECIAL ENGINEERING PROJECT**
NUMBER OF CREDITS: **6**
PREREQUISITES: **ELET2405, ELET2415 and at LEVEL 3**

Course Description: This is the capstone course of the entire BSc Engineering Programme. The course is a student-driven, research and development project. Monthly seminars, intended to support the student in the research process are held and students are assessed by a final project submission and dissertation presentation. The course is year-long and counts for 6 credits and contributes 20% of the final weighted average used in the determination of honours. ECNG3020 Special Project is designed to develop technical skills in the following areas: Design to specification; Formulation of creative solutions to engineering problems; Engineering analysis and enquiry; Validation and testing against benchmarks; Project management; Time management; and Communication. The course presents the opportunity to build upon the core of engineering skills gained in the earlier years and to broaden the scope of knowledge already gained. Project details are provided in a Project Handbook.

SEMESTER**: 1**
COURSE CODE: **ECNG3021**
COURSE TITLE: **INTRODUCTION TO ENGINEERING MANAGEMENT AND ACCOUNTING SYSTEMS**
NUMBER OF CREDITS: **3**
PREREQUISITES: **at LEVEL 3**

Course Description: This course provides final year engineering students with a background in management and accounting skills to equip them to function in the business world. It provides a working understanding of the main elements of the successful planning, operation and control of industries and businesses as they relate to the following essential areas: Accounting and Finance; Management and Organizational Theory; Project Management, Production Planning and Control Techniques; and Introduction to Business Law. The course is loaded with examples of its applications in engineering firms and industries.

SEMESTER: **1**
COURSE CODE: **ECSE1102**
COURSE TITLE: **ENGINEERING CIRCUIT ANALYSIS AND DEVICES**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **None**

Course Description: This course introduces students to the fundamental building blocks of electrical and electronic circuit theory. The basic electrical circuit tools required to analyze the characteristics, behavior, functionality and performance characteristics of electrical circuits containing resistors, inductors, capacitors, transformers, diodes, transistors and operational amplifiers are introduced. These tools are applied to obtain both the full dynamic performance of circuits and the steady state performance of sinusoidal systems. Laplace Transforms will be used in analysis of transient systems .

SEMESTER: **1**
COURSE CODE: **ECSE1104**
COURSE TITLE: **DIGITAL CIRCUITS AND SYSTEMS**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **None**
Course Description: This course introduces students to the basics of digital electronic devices and methodologies used in the design of digital circuit and systems. Students will use Boolean algebra, DeMorgan's Theorem, truth tables and Karnaugh Maps to analyze, design, troubleshoot, and simplify logic gates, counters, registers, memory units, pulse and switching and control circuits. The basic operation of flip flops will be extensively discussed along with their application to the design of counters, frequency dividers, shift registers and memory cells. The application to digital circuit and state diagram concepts to the design systems design and programmable logic devices will be explored. Students will use relevant software tools with increasing complexity such as hardware description language (AHDL and VHDL) to describe and analyze digital circuits and systems. A simplified overview of the IC fabrication process will be presented.

SEMESTER: **1**
COURSE CODE: **ECSE1109**
COURSE TITLE: **PROGRAMMING FOR ENGINEERS I**
NUMBER OF CREDITS: **C3**
PREREQUISITES: **None**
Course Description: Students will be introduced to the basic concepts of computer architecture and operating systems are discussed leading to compilers and interpreters. The uses of algorithms are introduced for basic problem-solving. Students are introduced to the programming languages, C and C++. Here they are expected to perform basic programming concepts as outlined by the course objectives. The students would also be introduced to programming the Arduino using C and C++.

SEMESTER: **2**
COURSE CODE: **ECSE1207**
COURSE TITLE: **COMPUTER ARCHITECTURE AND ORGANISATION**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **ELET1400**
Course Description: This course covers the basics of modern computer organization and architectures. The emphasis is on understanding the interaction between computer hardware units and the hierarchy in which these units are organized to achieve specific designed objectives. It has always been important to design computer systems to achieve high performance, but this requirement continues to provide a challenge. All of the basic performance characteristics of computer systems, including processor speed, memory speed, memory capacity, and interconnection data rates, are increasing rapidly. Moreover, they are increasing at different rates. This makes it difficult to design a balanced system that maximizes the performance and utilization of all elements. Thus, computer design increasingly becomes a game of changing the structure or function in one area to compensate for a performance mismatch in another area. This course will investigate design methodologies to address these challenges.

SEMESTER: **2**
COURSE CODE: **ECSE1209**
COURSE TITLE: **SEMICONDUCTOR DEVICES**
NUMBER OF CREDITS: **3**
PREREQUISITES: **ECSE1109 and ECNG1009**
Course Description: This course covers the methodologies of database systems and programming from an object-oriented perspective. It continues the development of OOP principles that was started in the prerequisite course. It also introduces object-oriented testing and debugging techniques, as well as the basics of graphical user interface programming and event-driven programming. It introduces the use of OOP in the development of applications for mobile devices using Android Studio. The course also introduces database development using an open source database application such as MariaDB or PostgreSQL.

SEMESTER: **1**
COURSE CODE: **ECSE2102**
COURSE TITLE: **SEMICONDUCTOR DEVICES AND FABRICATION**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **ECSE1102 and ELNG1101**
Course Description: This course provides the basic foundation for understanding design and operation of semiconductor devices, and their circuit applications and limitations. It has introductory elements of quantum mechanics as a requirement for understanding the dynamics of the behavior of charge carriers and energy distributions within a semiconductor lattice and across p-n junctions.

SEMESTER: **1**
COURSE CODE: **ECSE2104**
COURSE TITLE: **MICROPROCESSORS AND EMBEDDED SYSTEMS**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **ECSE1104 and ECSE1109**
Course Description: The main objectives of this course are to introduce students to the design of microprocessors using a hardware description language (HDL) and the design and implementation of embedded systems using microcontroller or microprocessor technology. The students will be exposed to processor design using complex instruction set computers (CISC) and reduced instruction set computer (RISC) architectures; however emphasis will be placed on the design of a RISC architecture processor. The student will also be introduced to the inner workings of embedded system solutions and the underlining technology, which include the development of circuits and embedded software programmes using current embedded systems programming language. Additionally, students will develop real-world embedded applications and interfaces that allow man-to-machine and machine-to-machine communication.

SEMESTER: **1**
COURSE CODE: **ECSE2106**
COURSE TITLE: **SIGNALS AND LINEAR SYSTEMS**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **ENGR1180**
Course Description: This course introduces students to the input-output mode of thinking. Students will be taught how to translate the everyday notions of cause and effect into input-output models. They will be required to study, understand and use a set of mathematical tools for describing and analyzing inputs and outputs and the relationships between them. It provides an exploration of signals and systems that develops continuous-time and discrete-time concepts/methods in parallel, while highlighting the similarities and differences. Introductory treatments of the applications of these basic methods in such areas as filtering, communication, sampling, discrete-time processing of continuous-time signals, and feedback are explored. The application of Laplace and Z Transforms and Fourier analysis using a mathematical software tool such as MATLAB are entrenched throughout the course .

SEMESTER: **2**
COURSE CODE: **ECSE2202**
COURSE TITLE: **ANALOGUE CIRCUITS AND INSTRUMENTATION**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **ECSE1102 and ECSE1104**
Course Description: The three fundamental areas of semiconductor devices; semiconductor theory, p-n junction devices, are adequately covered in this course. The learning experience is enhanced with computer-based exercises and assignments. MATLAB and SPICE simulation tools will be used throughout this course.

SEMESTER: **2**
COURSE CODE: **ECSE2208**
COURSE TITLE: **ANALOGUE AND DIGITAL COMMUNICATION SYSTEMS**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **ECSE1102 and ENGR1180**
Course Description: This course provides a thorough introduction to the basic principles and techniques used in analogue and digital communications. It first reviews the fundamentals of signals and systems and introduces core communication and statistical information theory topics along with the tools essential to the design and analysis of communications systems and components. These include techniques used in modern communication systems such as source coding, channel coding, multiplexing, multiple access, spread spectrum, cellular concepts, analogue and digital modulation techniques, communication receiver and transmitter design, baseband and bandpass communication techniques, techniques, and noise analysis. It also introduces students to the analysis and synthesis of waveforms using Fourier analysis. Students will gain a working knowledge of both classical mathematical and personal computer methods to analyze, design, and simulate modern communication systems.

SEMESTER: **2**
COURSE CODE: **ECSE2209**
COURSE TITLE: **CONTROL SYSTEMS ENGINEERING**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **ECSE1102 and ENGR1180**
Course Description: Control engineering aims at understanding the physical systems through mathematical modeling in the form of inputs and outputs of a system. This course provides a broad range of techniques used in modern control systems analysis and synthesis. It gives insight to real-world, global engineering problems while touching on evolving design strategies like green technology. Throughout the course, the student applies relevant theory to the design and analysis of control systems, with particular emphasis on design techniques to achieve desirable transient and steady state behavior. The material presented emphasizes the classical analysis and design techniques to achieve overall system stability and acceptable performance. The class of Linear Time Invariant (LTI) Single-input Single Output (SISO) systems is of primary focus, although a more general introductory treatment is also given in terms of state space and transfer matrix representations of Multi-input Multi-output (MIMO) systems. The course also exhibits control systems as a multidisciplinary subject finding applications in electrical, chemical, mechanical, biomedical, and other branches of engineering.

SEMESTER: **2**
COURSE CODE: **ECSE3038**
COURSE TITLE: **Engineering Internet of Things Systems**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **ECSE2104 and ECSE3108**
Course Description: This course introduces students to the design and implementation of the Internet of Things (IoT) systems. It starts by giving the background of the technologies that are integrated to create IoT systems, through the protocols used to implement IoT communications networks, network security and energy harvesting, to the use of open-source tools to implement basic IoT systems. Students will be exposed to programming languages and programming frameworks used in IoT best practices. They will connect embedded devices to the Internet, build a web server, and implement data visualization on a website.
The course will be assessed through practical/ laboratory exercises, assignment, exam and a final project.

SEMESTER: **2**
COURSE CODE: **ECSE3042**
COURSE TITLE: **RF Circuits and System**
NUMBER OF CREDITS: **3**
PREREQUISITES: **ECSE2202 and ECSE2208**
Course Description: This course introduces students to the basic design and analysis of radio frequency (RF) circuits and communication systems. It starts with a review of fundamentals principles in electromagnetic (EM) transmission and signal propagation, through analysis of circuit components behaviors at high frequency, RF amplifier, mixer, modulator, demodulator, and oscillator circuit topologies, all the way to the basic system communication theory behind the RF transceiver operation. Some aspects of the analysis and design of microwave components and systems will be covered. Students will be introduced to modeling of high frequency circuits; transmission lines; scattering parameters; impedance matching; passive microwave components; noise in receivers; elemental antennas and simple and phased arrays antenna systems. An overview of the technology behind current trends in RF systems designs (including 4G , 5G and IoT) will be presented.

SEMESTER: **2**
COURSE CODE: **ECSE3054**
COURSE TITLE: **DEFECTS IN ENGINEERING MATERIALS**
NUMBER OF CREDITS: **E3**
PREREQUISITES: **ECSE2102**
Course Description: This course introduces students to the various types of defects in crystalline materials that are regularly used in engineering. The course is divided into three sections: point defects, dislocations, and planar defects. Topics include point defect formation and equilibrium populations in elements, compounds, pure and impure crystals. The properties and characteristics of dislocations, their motion, and the role of dislocations in deformation will also be discussed. Finally, the crystallography and energetics of planar defects, grain boundaries, and interfaces will be discussed.

SEMESTER: **1**
COURSE CODE: **ESCE3108**
COURSE TITLE: **Data Communication and Computer Networks**
NUMBER OF CREDITS: **3**
PREREQUISITE: **ESCE2108**
ANTIREREQUISITES: **ECNG3002 and COMP3150**
Course Description: This course introduces students to data communication and

computer networks using a practical approach. It explains the topics in a structured way; firstly, giving an overview of the technology, then by explaining the concepts in the layered network architecture. Current standards, including the OSI and the TCP/IP reference models, are investigated. The course covers topics in the transmission of data over different physical media, datalink, network, transport, and applications layers. Students will conduct laboratories to reinforce the theoretical concepts covered in the course. The course will be assessed through practical/ laboratories, assignment, quizzes and a final exam.

SEMESTER: **1**
COURSE CODE: **ELET3460**
COURSE TITLE: **DIGITAL SIGNAL AND IMAGE PROCESSING**
NUMBER OF CREDITS: **3**
PREREQUISITES: **ELET2460**
Course Description: This course reviews the basics of DSP – building on the fundamentals taught in ELET2460 – before moving to more advanced concepts of signal processing. In the first part of the course the students will be taken through the processes required for digital filter design, starting with the basic methods and moving on to more sophisticated techniques. Digital imaging processing will be covered in the second module. The tools and techniques employed in basic image processing (compression and de-noising) will be addressed; this will provide the student with the capacity to grasp the more complex concepts and techniques employed in modern image processing applications. Given that DSP is essentially about the manipulation of real-world signals, the tools, techniques and approaches to problem-solving taught in this course can be applied in disparate fields, from telecommunications to medical imaging, video and audio processing for law enforcement, to investment banking.

SEMESTER: **1**
COURSE CODE: **ELET3470**
COURSE TITLE: **WAVE TRANSMISSION AND FIBER OPTICS**
NUMBER OF CREDITS: **3**
PREREQUISITES: **ELET2480**
Course Description: This course starts with coverage of the basic background in electromagnetic theory that is required for understanding the behavior of waves in various mediums. It continues with the fundamentals of wave propagation and wave guiding of all kinds; the essentials of propagation along optical fibers; and the concepts underlying integrated optics systems. It details the theoretical analyses of various transmission line including twisted wire pairs, coaxial cables, and traces on printed circuits boards. A study of antennas and their interfacing to transmission line is included. A thorough analysis is done on the theory of fiber optic and dielectric transmission medium with extended discussions on their practical application. Finally practical fiber optic communication system, its signals and its components are studied.

SEMESTER: **1**
COURSE CODE: **ELET3480**
COURSE TITLE: **WIRELESS COMMUNICATION**

NUMBER OF CREDITS: **3**
PREREQUISITES: **ELET2480**
Course Description: This course offers a definitive professional's overview of wireless communications technology and system design. Virtually every important new wireless standard and technological development, including W-CDMA, cdma2000, UMTS, and UMC 136/EDGE; IEEE 802.11 and HIPERLAN WLANs; Bluetooth, LMDS, and more, have been reviewed. The technologies and applications that drive the development of 2G, 2.5G, and 3G systems are explored. An overview of the 4G technologies is presented.

SEMESTER: **1 and 2**
COURSE CODE: **ELNG1101**
COURSE TITLE: **PHYSICS FOR ENGINEERS**
NUMBER OF CREDITS: **3**
Course Description: This is calculus-based course covering the basic laws and phenomena in electricity and magnetism, oscillation and waves, rotational mechanics and modern Physics. It revises and expands on selected areas of the CAPE Physics content so as to reinforce and expand the student understanding of the fundamental concepts and their application to solving engineering problems.

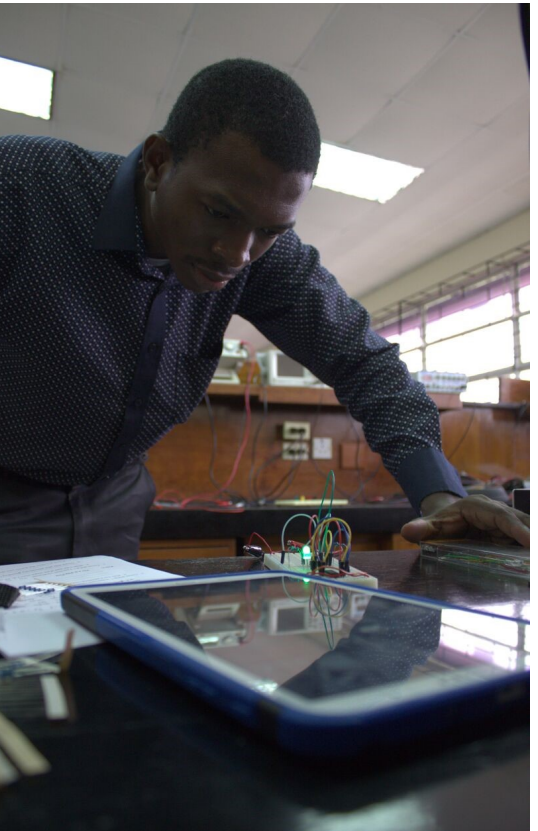
SEMESTER: **1**
COURSE CODE: **ELNG3030**
COURSE TITLE: **POWER ELECTRONICS AND PROTECTION CIRCUITS**
NUMBER OF CREDITS: **3**
PREREQUISITES: **ELET2410 and ELET2420**
Course Description: Power electronics refers to control and conversion of electrical power from one form to another by power semiconductor devices that are usually operate as switches. This course offers a comprehensive coverage of power electronic devices and circuits. It provides a basic knowledge of circuitry for the control and conversion of electrical power with high efficiency. It begins with the introduction of power semiconductor devices, their basic operations and characteristics. The required semiconductor physics background would have been covered in ELET2420 (semiconductor devices) which is a prerequisite for this course. The application of these devices to the design of controlled rectifiers, inverters, choppers, cyclo-converters, and dual converter circuits are presented. Typical commercial and industrial applications along with their waveform analyses are also discussed. These converters can change and regulate the voltage, current, or power; dc-dc converters, ac-dc rectifiers, dc -ac inverters, and ac-ac cyclo-converters are in common use. Several low and high power applications are included. All high power circuits require some form of cooling and protection from over-current and/or over-voltages. The components, circuit design techniques and application of several cooling and protection circuits are presented.

SEMESTER: **1**
COURSE CODE: **ELNG3040**
COURSE TITLE: **INDUSTRIAL AUTOMATION**
NUMBER OF CREDITS: **3**
PREREQUISITES: **ECNG2009 and ELET2450**
Course Description: This course provides the student with basic skills useful in identifying the concepts of automated machines and equipment and describes the terms and phrases associated with industrial automation. A range of automated control systems will be studied in depth with special emphasis on the use of ladder Logic and F- Logic for PLC programming. The industry standards and protocols are covered. The design and operation of distributed control systems (DCS) is emphasized. The methods of programming for the various automated controllers are an integral part of this course. Examples of automation in selected industries are discussed to highlight the various applications of the automated systems. The practical component for this class will be covered in the advanced electronics lab course.

SEMESTER: **2**
COURSE CODE: **ELNG3050**
COURSE TITLE: **WIRELESS BROADBAND NETWORKS**
NUMBER OF CREDITS: **3**
PREREQUISITES: **ELET3480**
Course Description: This course starts with a description of the latest techniques in block based transmission with strong emphasis on Orthogonal Frequency Division Multiplexing (OFDM). Multiple input/output antennas systems with applications to ultra wideband systems are then analyzed. Access control and management to ensure quality data transmission is discussed. The introduction of WIMAX and LTE systems and standards are detailed as examples of 4G systems.

SEMESTER: **2**
COURSE CODE: **ELNG3060**
COURSE TITLE: **POWER PLANT INSTRUMENTATION**
NUMBER OF CREDITS: **3**
PREREQUISITES: **ELET3430, ELNG3030 and ELNG3040**

Course Description: This course provides a comprehensive study of the instruments that are used to measure and control the processes of electricity power generation. The student is first exposed to an in-depth analysis of the processes of controlling the generation of electricity from tradition fuel sources. This is followed by a study of the instrumentation and control aspects of alternative form of electricity generation. Special emphasis is made to sensitize students to the environmental impact of these systems. Design ethics and design for safety are embedded in this course. A Case study of specific application of instruments in the control processes of power plants is an integral part of this course.



SEMESTER: **2**
COURSE CODE: **ENGM2210**
COURSE TITLE: **ENGINEERING ELECTROMAGNETICS**
NUMBER OF CREDITS: **3**
PREREQUISITES: **ELET3430, ELNG3030 and**

Course Description: This course introduces students to the theory of electromagnetism and its practical application in the fields of Electronics, Computer, and Electrical Power engineering. In the course students will be exposed to the application of Coulomb's law, Gauss's law and Maxwell's equation to practical electromagnetics problems. Students will explore static and dynamic electromagnetic (EM) fields, energy, and power. EM forces on charges, currents, and materials. EM fields and waves within and at the boundaries of media. EM radiation and propagation in space, within transmission lines and waveguides. The course provides thorough explanations and insightful examples that equips the student with a firm foundation in the field of electromagnetism, which will enable the understanding of practical examples in the fields of telecommunications, electrical machines and drives and electrical energy transmission.

SEMESTER: **2**
COURSE CODE: **ENGM2280**
COURSE TITLE: **PROBABILITY AND STATISTICAL SYSTEMS**
NUMBER OF CREDITS: **3**

Course Description: This course provides an introduction to probability theory, random variables and the rudimentary principles and practice in applied statistics. The goal is to expose students to analytical and numerical tools, including a statistical software application to design experiments to effectively and efficiently solve real-world engineering problems. Students will explore the application of statistical procedures to describe real sets of data, what statistical tests mean in terms of practical application, how to evaluate the validity of the assumptions behind statistical tests, and what to do when statistical assumptions have been violated. The course provides thorough explanations and insightful examples that equips the student with a firm foundation in statistical concepts, as well as the tools to apply them to

practical problems facing the world.

SEMESTER: **1**
COURSE CODE: **ENGR0110**
COURSE TITLE: **PRE-ENGINEERING PHYSICS I**
NUMBER OF CREDITS: **3**
Course Description: This course is a pre-calculus-based physics course primarily intended for engineering students. It covers fundamental topics in mechanics, oscillations and heat, with emphasis on the study of forces, motion and the properties of matter and heat. This is the first of two introductory physics courses that revises and expands on selected areas of the high school physics and prepares the engineering student for more advanced topics in physics and engineering. Selected assignments and laboratory exercises are included and are designed to reinforce and expand the student understanding of the fundamental concepts and their application to solving engineering problems.

SEMESTER: **1**
COURSE CODE: **ENGR0120**
COURSE TITLE: **PRE-ENGINEERING MATHEMATICS I**
NUMBER OF CREDITS: **4**
Course Description: A practical introduction to the core mathematics required for engineering study and practice. Students will be led through basic geometry, algebra and pre-calculus to an introduction to calculus, and will cover topics in algebra ranging from polynomial, rational, and exponential functions to conic sections. Trigonometry concepts such as Law of Sines and Cosines will be introduced. An introduction to probability and statistics is also be included. The mathematical theories will be explained in a straightforward manner, being supported by practical engineering examples and applications.

SEMESTER: **1**
COURSE CODE: **ENGR0130**
COURSE TITLE: **CHEMISTRY FOR ENGINEERS**
NUMBER OF CREDITS: **3**
Course Description: This course provides an introduction to chemistry that prepares students for further study in any engineering field. It offers a balance of conciseness, rigor, and depth needed to prepare students for more advanced coursework and careers in various engineering specialties, such as civil, environmental, electrical, computer, mechanical, and biomedical engineering. It elucidates the key concepts and skills important for entering engineering students, including problem solving, qualitative and quantitative thinking, and importance of units. It emphasizes the connection between molecular properties and observable physical properties and the connections between chemistry and other subjects studied by engineering students, such as mathematics and physics. Examples are drawn from problems of interest to modern engineers, including alternative energy, advanced materials, and the environment. Selected assignments and laboratory exercises are included and are designed to reinforce and expand the student understanding of the fundamental concepts and their application to solving engineering problems.

SEMESTER: **2**
COURSE CODE: **ENGR0210**
COURSE TITLE: **PRE-ENGINEERING PHYSICS II**
NUMBER OF CREDITS: **3**
Course Description: This course continues from the introduction of fundamental physics concepts in ENGR0110 to explore topics in electricity and magnetism, nuclear physics and optics. The fundamental theories of electromagnetism are used to describe the operation of electrical circuit components and measurements, and encompass the description and application of Coulomb's law, Faraday's law, Ohm's law, Kirchhoff's laws, Lenz's law to the electric and magnetic fields. The concept of light as an electromagnetic wave and its various manipulations are also studied. The course closes of with a basic introduction of nuclear model of the atom and the phenomenon of radioactivity. Selected assignments and laboratory exercises are included and are designed to reinforce and expand the student understanding of the fundamental concepts and their application to solving engineering problems.

SEMESTER: **2**

SEMESTER: **2**
COURSE CODE: **ENGR0250**
COURSE TITLE: **PRE-ENGINEERING PHYSICS III**
NUMBER OF CREDITS: **3**
Course Description: This course covers a basic introduction to circuit components and their applications in DC and AC circuits. It also provides an introductory look at the operational amplifier device and the basic operation of two-input logic gates and their circuits. This is the third segment of introductory physics that revises and expands on selected areas of high school physics and prepares the engineering student for more advanced topics in physics and engineering. Selected assignments and laboratory exercises are included and are designed to reinforce and expand the student's understanding of the fundamental concepts and their application to solving engineering problems.

COURSE CODE: **ENGR0220**
COURSE TITLE: **PRE-ENGINEERING MATHEMATICS II**
NUMBER OF CREDITS: **4**
Course Description: This course will introduce students to the topics of differential and integral calculus. Emphasis is placed on concepts of limits and continuity, differentiation and integration and their applications to solving problems. Concepts in probability and statistics will be explored. The theoretical concepts will be supported by practical engineering examples and applications .

SEMESTER: **1**
COURSE CODE: **ENGR0230**
COURSE TITLE: **BIOLOGY FOR ENGINEERS**
NUMBER OF CREDITS: **3**
Course Description: This is an introductory course of biology for a student in the engineering discipline to develop their engineering career in a bio-related field. The contents of the course include the basic knowledge of biological functions at the organ, tissue, cellular, and molecular level. It introduces students to modern biology with an emphasis on the evolution of biology as a multi-disciplinary field, to make them aware of the application of engineering principles in biology, and engineering robust solutions inspired by biological examples. This course is designed to convey the essentials of cell and molecular biology to provide a framework for more advanced courses.

SEMESTER: **2**
COURSE CODE: **ENGR0240**
COURSE TITLE: **COMPUTER APPLICATIONS FOR BEGINNER ENGINEERS**
NUMBER OF CREDITS: **2**
Course Description: This course introduces students to the fundamentals for computational analyses using Matlab and Excel. The focus of this course is on the fundamentals of engineering computing and involves algorithm development, selection of appropriate tools, documentation of solutions, and verification and interpretation of results. Students will be exposed to the characteristics of a procedure-oriented language, the representation of information, and an introduction to algorithms. Emphasis will be placed on the solution of characteristic problems arising in engineering. Selected assignments and laboratory exercises are included and are designed to reinforce and expand the student understanding of the fundamental concepts and their application to solving engineering problems.

SEMESTER: **1**
COURSE CODE: **ENGR1100**
COURSE TITLE: **THE ENGINEERING PROFESSION**
NUMBER OF CREDITS: **E3**
Course Description: This course includes provisions concerning safety regarding the work environment and equipment, fire protection, noise, ionizing radiations and explosives. The theory and practice of engineering ethics using a multi-disciplinary and cross-cultural approach will be introduced. Each student will carry out case studies which will be orally presented in a class room setting.

SEMESTER: **1**
COURSE CODE: **ENGR1105**
COURSE TITLE: **ENGINEERING LABORATORY AND DESIGN I**
NUMBER OF CREDITS: **C1**
CO-REQUISITES: **ELET1400 and ECNG1000**
Course Description: This is the first of four engineering laboratory and design courses and will provide hands-on design experience for the contents of the electronics and electrical engineering courses taught in semester 1. The course is divided into three modules. Lab orientation will be completed by all students in the first week of the semester. Four weeks are successively assigned for each module.

Students will be guided in performing various explorations of the practical aspects of electronics and their skills will be tested in a design test at the end of each module .

SEMESTER: **1**
COURSE CODE: **ENGM1180**
COURSE TITLE: **MATHEMATICS FOR ENGINEERS I**
NUMBER OF CREDITS: **3**
Course Description: The first of a series of four Mathematics courses that are deemed compulsory for all students in the Faculty of Engineering. This is a level I course which focuses on the basics of linear algebra, analytic geometry and revises fundamental concepts of complex numbers/theory.

SEMESTER: **2**
COURSE CODE: **ENGM1280**
COURSE TITLE: **MATHEMATICS FOR ENGINEERS 2**
NUMBER OF CREDITS: **3**
Course Description: The second of a series of four Mathematics courses that are deemed compulsory for all students in the Faculty of Engineering. This is a level I course which focuses on the extension of the students' basic knowledge of calculus. Thus, this course will dive further into limits and continuity, differentiation and integration as it, along with ENGM1180, provides the foundation for ENGM2180, as well as other courses throughout their programme.

SEMESTER: **2**
COURSE CODE: **ENGR1200**
COURSE TITLE: ENGINEERING TOOLS AND PRACTICE
NUMBER OF CREDITS: **3**
PREREQUISITE: **ENGR1105**
CO-REQUISITE: **ECNG1015 or BMNG1210**
Course Description: This course is specially designed to train incoming engineering students to operate and apply various software and hardware tools for engineering practice. It's divided into four modules to cover the range of software and hardware tools that are normally used by a practicing engineer. *Module 1:* Tools and techniques for circuit design will provide hands on training

with various software CAD tools used for design, simulation and fabrication of electronics and electrical circuits and systems. MATLAB will be introduced and its application to simulations for various theoretical models. This module will also expose students to tools used in industry to develop and test various software and hardware designs, such as LabVIEW which offers a graphical programming approach that facilitate visualization of every aspect of design and application, including hardware configuration, measurement data, and debugging.

Module 2: Introduction to mechatronics introduces students to the various elements of a mechatronic system, how they relate to each other and how to design, build and troubleshoot such systems. The practical aspect of the course utilizes microcontrollers in the form of Arduino, various sensors, circuits, motor drivers, motors and 3D printed designs to enable students to develop a familiarity with the various processes and mechatronic systems. The techniques involved in the production of engineering drawings and prototypes, and the function and utilization of basic mechanical workshop tools and equipment, are covered in modules 3 and 4, respectively. The workshop technology module introduces students to workshop equipment and provides students with basic workshop skills, which they will apply in the design and construction of a flat blade screw driver at the end of the module.

SEMESTER: **2**
COURSE CODE: **ENGR1205**
COURSE TITLE: **ENGINEERING LABORATORY AND DESIGN II**
NUMBER OF CREDITS: **C1**
CO-REQUISITE: **ENGR1105**
Course Description: This is the second of four engineering laboratory and designs courses and will provide hands-on design and application experience using the contents of the electronics, biomedical and electrical power engineering courses taught at level 1. The course is divided into two sections. Section 1 contains three modules, each having six laboratory exercises for biomedical, electrical power and electronics engineering, respectively, and is offered during the first 6 weeks of the semester. Section 2 consists of a design project that will be assigned to groups of three to four students representing a mixture of the engineering disciplines. The design aspect of this course focuses on holistic design processes applied to an engineering design problem.

SEMESTER: **1**
COURSE CODE: **ENGR2105**
COURSE TITLE: **ENGINEERING LABORATORY AND DESIGN III**
NUMBER OF CREDITS: **C1**
CO-REQUISITE: **ENGR1205**
Course Description: This is the third of four engineering laboratory and designs courses and will provide more advanced hands-on design and application experience using the contents of the electronics, biomedical and electrical power engineering courses taught at Level 2, Semester 1. The course is divided into two sections. Section 1 contains three modules, each having six laboratory exercises for biomedical, electrical power and electronics engineering, respectively, and is offered during the first 6 weeks of the semester. Section 2 consists of a design project that will be assigned to groups of three to five students with representation from each of the three engineering disciplines. The design aspect of this course focuses on holistic design processes applied to an engineering design problem.

SEMESTER: **1**
COURSE CODE: **ENGR2120**
COURSE TITLE: **TECHNICAL COMMUNICATIONS I**
NUMBER OF CREDITS: **C2**
CO-REQUISITE: **FOUN1014**
Course Description: This course will prepare students for any workplace writing situation. It offers an introduction to the field while still delivering practical, effective support for students at every level. The course also includes the work of technical communicators in the context of today's highly collaborative, rapidly evolving digital practices. Fresh, social-media driven sample documents and coverage of the latest tools and technologies ensure that students work with the kinds of processes and products they will encounter on the job.

SEMESTER: **1**

COURSE CODE: **ENGM2180**
COURSE TITLE: **MATHEMATICS FOR ENGINEERS 3**
NUMBER OF CREDITS: **3**
Course Description: The third of a series of Mathematics courses that are deemed compulsory for all students in the Faculty of Engineering. This course is a level II course which focuses on the utilization of the concepts from ENGM1180 and ENGM1280 in order to conduct experimentation, analysis and interpretation of higher-order engineering problems.

SEMESTER: **2**
COURSE CODE: **ENGR2205**
COURSE TITLE: **ENGINEERING LABORATORY AND DESIGN IV**
NUMBER OF CREDITS: **C1**
CO-REQUISITE: **ENGR1205**
Course Description: This is the last of four engineering laboratory and designs courses and will provide hands-on design and application experience using the contents of the electronics, biomedical and electrical power engineering courses taught at level 2, semester 2. The course is divided into two sections. Section 1 contains three modules, each having six laboratory exercises for biomedical, electrical power and electronics engineering, respectively, and is offered during the first 6 weeks of the semester. Section 2 consists of a design project that will be assigned to groups of three to five students with representation from each of the three engineering disciplines. The design aspect of this course focuses on holistic design processes applied to an engineering design problem.

SEMESTER: **1**
COURSE CODE: **EPNG1201**
COURSE TITLE: **INTRODUCTION TO THERMODYNAMICS AND FLUID MECHANICS**
NUMBER OF CREDITS: **3**
PREREQUISITES: **ENGR1180**
Course Description: This course introduces electrical power engineering students to basic thermodynamic and fluid mechanics principles. It introduces the important concepts of mass, energy, and entropy in thermodynamics and melds traditional content with the web-based resources and learning tools such as the "The Expert System for Thermodynamics" - an interactive platform that offers smart thermodynamic tables for property evaluation and analysis tools for mass, energy, entropy, and energy analysis of open and closed systems. The second section of the course introduces engineering students to the principles of fluid mechanics with a focus on the most essential topics in the field, and includes practical applications for several engineering disciplines.

SEMESTER: **2**
COURSE CODE: **EPNG2010**
COURSE TITLE: **NUCLEAR PHYSICS AND REACTOR THEORY**
NUMBER OF CREDITS: **3**
PREREQUISITES: **ELNG1101**
Course Description: This course introduces the basic concepts of atomic and nuclear physics, subatomic particles and the mechanisms involved in nuclear reactions. It establishes basic radiation safety principles and highlights the effects of radiation on the human body as well as introduces students to fundamental principles of nuclear reactor theory and operation.

SEMESTER: **2**
COURSE CODE: **EPNG2020**
COURSE TITLE: **RENEWABLE ENERGY SYSTEMS**
NUMBER OF CREDITS: **3**
PREREQUISITES: **ECNG1000 and ELNG1101**
Course Description: This course covers all the technologies available to produce electrical energy from renewable sources, including solar, wind, hydro, geothermal and biomass. The physics governing the operation of these devices will presented combined with the engineering application of monitoring, controlling and connecting to the electrical grid. Students will do engineering calculations of power and energy availability of renewable energy sources and learn about requirements for integrating renewable energy sources into production, distribution and end-use systems.

SEMESTER: **2**
COURSE CODE: **EPNG3012**
COURSE TITLE: **CRYOGENIC ENGINEERING**
NUMBER OF CREDITS: **3**
Course Description: This course introduces students to low-temperature engineering via

the design and analysis of cryogenic systems. It includes the physics and engineering principals of cryogenic materials and fluids with emphasis on liquid natural gas technology, rectification system design, and instrumentation. This course is offered in collaboration with New Fortress Energy and is particularly useful to electronics, electrical, mechanical and chemical engineering students who will be involved in the design of cryogenic systems and their uses in modern day electrical power systems. Computer simulation exercises, field trips to LNG storage and gasification facilities and to natural gas electrical power plants are integral components of this course.

SEMESTER: **2**

COURSE CODE: **EPNG3014**

COURSE TITLE: **POWER SYSTEMS ANALYSIS**

NUMBER OF CREDITS: **3**

Course Description: This course is an elective three (3) credit course intended for students in the third year of the BSc degree programme in Electrical and Computer Engineering. The course provides students with comprehensive material about the operation and analysis of electric power systems. It covers the major topics likely to be encountered by the transmission and distribution power systems engineer. Students will become familiar with the most common practices and technology through the classes, computer exercises and reading material.

SEMESTER: 2

COURSE CODE: EPNG3017

COURSE TITLE: INDUSTRIAL REFRIGERATION

NUMBER OF CREDITS: 3

PREREQUISITES: None

Course Description: This course presents the principles of industrial refrigeration from a thermodynamic standpoint as pure science in its introductory stage, and later delves into the nuances of equipment selection as a shop practice.

SEMESTER: **2**

COURSE CODE: **FOUN1301**

COURSE TITLE: **LAW, GOVERNANCE, ECONOMY AND SOCIETY IN THE CARIBBEAN**

NUMBER OF CREDITS: **3**

PREREQUISITES: **None**

Course Description: This is a multi-disciplinary course of the Faculty of Social Sciences, designed mainly for non-Social Sciences students. This course will introduce students to some of the major institutions in Caribbean society with exposure to both the historical and contemporary aspects of Caribbean society, including Caribbean legal, political and economic systems. In addition, Caribbean culture and Caribbean social problems are discussed.

SEMESTER: **1**

COURSE CODE: **GEOM2015**

COURSE TITLE: **GEOMATICS FOR CIVIL AND ENVIRONMENTAL ENGINEERS**

NUMBER OF CREDITS: **3**

PREREQUISITE: **None**

Course Description: Principles and field practice of Geomatics as applied to tasks in Civil and Environmental Engineering. Introduction to Geomatics; Measurement Basics. Leveling Techniques. Procedures and Applications. Distance and Angle Measurements. Adjustment of measurements. Traversing and Control Surveying; Volumetric Applications; Earthwork Applications; Profiles and Cross Sections; Construction Applications; Transportation Applications. Global navigation satellite systems (GNSS).

SEMESTER: **1**

COURSE CODE: **LANG3003**

COURSE TITLE: **TECHNICAL WRITING**

NUMBER OF CREDITS: **3**

PREREQUISITE: **FOUN1014**

Course Description: This course is designed for students who wish to develop the ability to design, write and produce technical documents for different organizations, intended for different purposes – operations manuals, company ethics code, safety manuals, manufacturing guidelines, operating procedures, employees' reports, product reports, etc., intended for communication within the organization, with other organizations and with the public. The course will address practical skills through its focus on research methods, working in a collaborative technical writing environment, and writing for different media. It will also include audience

considerations, legal principles and cross-cultural issues.

SEMESTER: **1**
COURSE CODE: **MATH2230**
COURSE TITLE: **ENGINEERING MATHEMATICS II**
NUMBER OF CREDITS: **3**
PREREQUISITE: **ENGR1180**
Course Description: Vector calculus: parametric curves and arc length, review of partial differentiation, vector fields, line integrals and double integrals, Green's theorem, surface integrals, triple integrals and Divergence theorem. Laplace transforms: definition and existence of Laplace transforms, properties of Laplace transforms (linearity, inverse transform, shift formulae, Laplace transform of derivatives), applications and further properties of Laplace transforms (solving differential equations, convolution and integral equations, Dirac's delta function, differentiation of transforms, Gamma function). Fourier series: definitions, convergence, even and odd functions, half range expansions. Partial differential equations: definitions, heat equation (derivation, solution by separation of variables, insulated ends as boundary conditions, nonhomogeneous boundary conditions), wave equation (derivation, solution by separation of variables), Laplace's equation in Cartesian and polar coordinates.

SEMESTER: **2**
COURSE CODE: **MATH2240**
COURSE TITLE: **PROBABILITY AND STATISTICS**
NUMBER OF CREDITS: **2**
PREREQUISITE: **ENGR1180**
Course Description: Statistics and probability; frequency distribution, frequency polygons and histograms; introduction to probability; basic axioms; conditional probability, Bayes theorem, mutual independence; introduction to random variables; probability distribution, Bernoulli trials, the binomial distribution and the Poisson distribution; probability density and mass functions of a continuous random variable; expectation and variance; the exponential and normal distributions; distributions of sample means; point estimates; confidence intervals; statistical inference - tests of significance; linear regression.

SEMESTER: **2**
COURSE CODE: **MGMT3058**
COURSE TITLE: **NEW VENTURE MANAGEMENT**
NUMBER OF CREDITS: **3**
PREREQUISITES: **at LEVEL 3**
Course Description: This course is designed to provide participants with the requisite skills to engage in entrepreneurship. Students will learn the fundamental skills necessary for the development of a successful business plan and new venture, as well as metrics to determine its feasibility for implementation. Students will be exposed to a multi-step approach for creating a business plan, which will include financial, operational, and marketing aspects. Students will be required to work effectively with group members on their selected project of choice. As such, class attendance and group participation are essential elements for success in the creation of your project. By the end of the course, students should be confident in their abilities to understand the process, execution, and feasibility of a business plan.

NOTES

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