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HOW TO USE THIS HANDBOOK

Faculty Handbooks are available in both a printed format and an electronic format.

The printed version of this Faculty Handbook is an abridged version which contains only the relevant Faculty regulations as well as select extracts of University regulations. It also contains full programme descriptions, specific programme regulations and general requirements for progression and graduation in the particular programmes of study.

The electronic version of this Faculty Handbook, which is found online, includes all of the above as well as course details and descriptions.

To find out more about the contents of a specific course or programme of study, please refer to the full, online version of the Faculty Handbook, which is available for download at www.sta.uwi.edu/facultybooklets.asp

Students should note that their 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 Handbooks, the University reserves the right to modify, add or altogether remove from a programme of study, certain aspects of any course offered by the University, as described in either or both the electronic and printed versions of the relevant Faculty Handbooks.

<table>
<thead>
<tr>
<th>Information</th>
<th>Printed Handbook</th>
<th>Online Handbook</th>
</tr>
</thead>
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<tr>
<td><strong>Staff Listings</strong></td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td><strong>Relevant Faculty Regulations</strong> – eg. Admission Criteria, Exemptions, Progression, GPA, Leave of Absence, etc.</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td><strong>Relevant University Regulations</strong> including Plagiarism Regulations and Declaration Forms</td>
<td>✔️</td>
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<tr>
<td><strong>Other Information:</strong> eg. Co-Curricular courses, Language courses and Assistance for Students with Disabilities.</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td><strong>Programme Descriptions and Course Listings</strong> – includes 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.</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td><strong>Course Descriptions</strong> including details on prerequisites and methods of assessment</td>
<td>✔️</td>
<td></td>
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</table>
### ACADEMIC CALENDAR 2015-2016

<table>
<thead>
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<th>ACTIVITY</th>
<th>SEMESTER 1</th>
<th>SEMESTER 2</th>
<th>SUMMER</th>
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<tr>
<td>Teaching BEGINS</td>
<td>September 01, 2015</td>
<td>January 18, 2016</td>
<td>May 16, 2016</td>
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<tr>
<td>Orientation and Ice Breaker (UWILIFE)</td>
<td>August 28, 2015</td>
<td></td>
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<td>Late registration / Late Payment Fee of TT$200.00 APPLIES</td>
<td>September 07, 2015</td>
<td>February 01, 2016</td>
<td>May 31, 2016</td>
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<tr>
<td>Application to Carry forward Coursework ENDS</td>
<td>September 11, 2015</td>
<td>February 05, 2016</td>
<td>June 03, 2016</td>
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<tr>
<td>Change in Registration (ADD/DROP) ENDS</td>
<td>September 11, 2015</td>
<td>February 05, 2016</td>
<td>June 03, 2016</td>
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<tr>
<td>Application for Leave of Absence ENDS</td>
<td>September 11, 2015</td>
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<td>June 03, 2016</td>
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<td>Teaching ENDS</td>
<td>November 28, 2014</td>
<td>April 17, 2015</td>
<td>July 11, 2015</td>
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<td></td>
<td>April 19 – 26, 2015</td>
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<td>December 02, 2015</td>
<td>April 25, 2016</td>
<td>July 12, 2016</td>
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<td>ELPT TEST: Scheduled for the following dates</td>
<td>August 17, 2015 and October 15, 2015</td>
<td>February 18, 2016</td>
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### SPECIALLY-ADMITTED 2015/2016

<table>
<thead>
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### CEREMONIES

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<td>Matriculation Ceremony</td>
<td>September 17, 2015</td>
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<tr>
<td>Graduation Dates</td>
<td>October 10, 2015 (Open Campus) October 22 - 24, 2015 (St. Augustine)</td>
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</tbody>
</table>
MISSION STATEMENT

The Mission of the Faculty of Engineering is to be the provider of a world class quality education in Engineering, Geoinformatics and Geosciences and research and development programmes 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 region.
MESSAGE FROM THE DEAN

The Faculty of Engineering of the University of the West Indies welcomes all new and returning students to its exciting undergraduate programmes in Engineering. This Faculty has a rich and enviable tradition of academic excellence and research scholarship developed over the 53 years of its existence. Today the Faculty offers internationally accredited programmes that attract students, lecturers and researchers from across the region and the world.

This booklet contains important information regarding programme content as well as the rules and regulations that will govern your progress through the system. You are encouraged to read it carefully and completely so that you are entirely familiar with your selected course of study and the associated regulations. The courses of study and research are many and varied and cover the broad spectrum of engineering.

We in the Faculty are continuously striving to produce distinctive graduates by providing students with a high-quality and enjoyable learning experience. Towards this end, and in keeping with the University’s quality assurance practices, our programmes are regularly reviewed by teams of professionals from other institutions regionally and internationally and always meet or surpass the demanding accreditation standards of recognized international accreditation bodies. My colleagues and I stay at the cutting edge of research and innovation in order to expose our students to the very best ideas and techniques.

Students in turn are expected to display diligence, discipline and dedication in this teaching and learning exercise by, among other things, attending all classes, completing all assignments and engaging in adequate self-study. Also, in order to perform at optimum levels students should eat healthy meals, exercise regularly and get adequate rest. Finally, I encourage you to work closely with your lecturers who are all knowledgeable in their fields and are eager to assist and motivate you to high levels of achievement and success.

The world of the 21st century is filled with opportunities for those who are prepared to grasp them. Your entry to the Faculty signifies that you are prepared to take up the challenge. We are on your side and look forward to celebrating your success.

Stephan J. G. Gift
BSc (Eng), PhD (UWI), FAPETT, SMIEEE, MCAS, REng
PROFESSOR AND DEAN, FACULTY OF ENGINEERING
AN HISTORICAL NOTE

The University of the West Indies was founded in 1948 at Mona, Jamaica as a College in special relationship with the University of London, to serve the British territories in the Caribbean area. It achieved full University status by Royal Charter in 1962, thereby becoming a degree-granting institution in its own right.

A second campus of the University was established in 1960 when the Imperial College of Tropical Agriculture (ICTA) at St. Augustine, Trinidad was incorporated into the University College. On August 25, 1959, a Plan of Operation was signed which provided for a United Nations Special Fund allocation and a Government counterpart contribution for the establishment of a Faculty of Engineering. The then Vice-Chancellor and Principal of the University College, Nobel Laureate Sir Arthur Lewis had the overall responsibility of securing funding for the financing of the Engineering buildings and for expediting the final decision to locate the Faculty of Engineering at St. Augustine.

The initial layout comprised five (5) blocks with a total of 5,400 square metres of floor space of which the laboratories occupied 3,030 square metres.

Construction commenced in 1961 and was completed by the end of 1962. During the 1961/62 Academic Year (the first year of teaching), the Faculty was housed in temporary accommodation on the campus. The formal opening of the new buildings of the Faculty took place on February 1, 1963.

Initially, undergraduate and graduate research degrees were offered in the main branches of Engineering - Chemical, Civil, Electrical and Mechanical. The Faculty steadily grew over the years with a major expansion of both physical infrastructure and academic programmes in the 1980s with additional disciplines at the BSc level and several specialist MSc degrees. Floor space now occupies close to 53,181 square metres of classrooms, laboratories and offices, with expansion continuing almost on a yearly basis.

From a modest beginning of 28 students in the Academic Year 1961/62, the Faculty has produced, up to Semester 2 of the 2014/2015 Academic Year, over 9000 graduates in the fields of Chemical, Civil, Civil with Environmental, Electrical and Computer, Agricultural, Geomatics, Industrial, Land Management (Valuation), Mechanical, Mechanical with Biosystems, Petroleum, Petroleum Geoscience and Surveying and Land Information.

Administratively, the semester system was introduced in 1990 following decades of course delivery of over a 1-year period. The Grade Point Average (GPA) system was introduced in 2003 in an attempt to better measure student performance and improve global graduate marketability. The Faculty and the University engaged in another major change in the GPA system in which the pass-mark for all courses was changed from the old British tradition of a 40% threshold to 50%. This change took place for new students of engineering as of Academic Year 2014/2015. Continuing students up to the 2016/2017 Academic Year will be assessed using the current GPA system.
QUICK REFERENCE

REGISTRATION

REGISTRATION DEADLINES SET BY THE UNIVERSITY WILL BE STRICTLY ADHERED TO BY THE FACULTY. THERE WILL BE NO EXCEPTIONS. THESE DEADLINES ARE AS FOLLOWS:

*On-line Registration Dates:*
**SEMESTER 1:** August 17, 2015 to September 11, 2015

**LATE REGISTRATION/LATE PAYMENT FEE:** from September 07, 2015

**CHANGE OF REGISTRATION (ADD/DROP):** until September 11, 2015

*On-line Registration Dates:*
**SEMESTER 2:** January 11, 2016 to February 05, 2016

**LATE REGISTRATION/LATE PAYMENT FEE:** from February 01, 2016

**CHANGE OF REGISTRATION (ADD/DROP):** until February 05, 2016

REGULATIONS

Pages 24 - 33 of the Faculty of Engineering Undergraduate Information Guide

EXEMPTION & CREDIT

Regulations 3.3-3.5 of the Faculty of Engineering Undergraduate Information Guide

EXAMINATIONS

GENERAL EXAMINATION REGULATIONS
Section II (17-32), pages 9-13 of the Examination Regulations for First Degrees, Associate Degrees, Diplomas and Certificates, 2008-2009

CONDUCT OF WRITTEN EXAMINATIONS
Section V (84-103), pages 28-34 of the Examination Regulations for First Degrees, Associate Degrees, Diplomas and Certificates, 2008-2009

REVIEW OF EXAMINATION RESULTS
Section VII (142-143), page 41 of the Examination Regulations for First Degrees, Associate Degrees, Diplomas and Certificates, 2008-2009

REMARKING OF EXAMINATION SCRIPTS
Section VII (144-152), pages 41-43 of the Examination Regulations for First Degrees, Associate Degrees, Diplomas and Certificates, 2008-2009

SCHEME OF EXAMINATION
Regulations 3.6-3.11 and 3.25(c) of the Faculty of Engineering Undergraduate Information Guide

WARNINGS / WITHDRAWAL
Regulation 3.29 - 3.30 of the Faculty of Engineering Undergraduate Information Guide

RE-ENTRY
Regulation 3.30(d) of the Faculty of Engineering Undergraduate Information Guide

PLAGIARISM
Regulation 3.32(b) of the Faculty of Engineering Undergraduate Information Guide
SECTION 0 - STAFF LISTING

OFFICE OF THE DEAN

DEAN  
Gift, Stephan J.G.
BSc (Eng), PhD (UWI), FAPETT, SMIEEE, MCAS, REng  
Professor of Electrical Engineering  
Leader, Control Systems Group; Electronic Systems Group  
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Exts. 82198/82199

DEPUTY DEANS

Undergraduate Student Affairs  
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Dip. C.S. (CAST), (Hons), M.Sc.E., PhD (New Brunswick),  
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(Land Information Management)  
Ext:  82061/82564

Research & Postgraduate Student Affairs  
Ekwue, Edwin
BEng (Nigeria), MSc, PhD (Cranfield), MASABE, MNSAE  
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Exts. 82072/83149

Enterprise Development & Outreach  
Hosein, Raffie
BSc (Pet. Eng.), MPhil (Pet. Eng.), PhD (Pet. Eng.) (UWI),  
FIMMM, MSPEI  
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(Petroleum and Reservoir Engineering)  
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ENGINEERING INSTITUTE

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FAPETT, MASME  
Honorary Professor  
Exts: 82175,82197

ADMINISTRATIVE STAFF

Ms. Charmain Subero
Administrative Officer  
Exts: 82059 / 84156

Ms. Sabah Ali
Assistant to Administrative Officer  
Ext: 84156

Ms. Melissa Dattoo
Administrative Assistant  
Research & Postgraduate Student Matters  
Ext: 82065

Mrs. Nicole Holder-Purcell
Administrative Assistant  
Human Resources  
Ext: 82200

Ms. Nancy Ayoung
Administrative Assistant  
Human Resources  
Ext: 82200

Mrs. Marlene Fletcher-Cockburn
Administrative Assistant  
Enterprise Development & Outreach  
Ext: 83919

Mrs. Margaret Richards
Secretary to the Dean  
Exts: 82198 / 82199

Ms. Sunita Khoon Khoon
Secretary to the Deputy Deans  
Ext: 83396

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Workshop Engineer  
Ext: 83485

Mrs. Paula John
Manager, Computer Systems Laboratory  
Exts: 82375 / 82370

Mrs. Candice Nicholls-Jones
Clerical Assistant, Computer Systems Laboratory  
Ext: 82370

Mr. Raymond Ward
Manager, Classroom Technology and Support Unit  
Exts: 83409 / 84435

Mrs. Carol-Ann Persad-Ramlogan
Clerical Assistant, Classroom Technology and Support Unit  
Ext: 84443 / 83397 / 83409
TEACHING STAFF

ENGINEERING MATHEMATICS

Ramsamooj, Neil R.
BSc (UWI), MA (Wisconsin-Madison), MA (Auburn),
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Lecturer
(Abstract Algebra, Topology, Combinatorial Maths,
Applied Mathematics)
Ext: 83911

MSc PROJECT MANAGEMENT PROGRAMME

Ellis, Ruel
BSc (Eng)(UWI), MSc (Brunel), PhD (UWI)
MIEEE, Snr. MIIE, MASEE
Programme Coordinator
Ext: 83169

Mrs. Margaret Sylvester-Lawrence
Administrative Assistant
Ext: 83838

PART-TIME LECTURERS

Suite, Winston H.E.
BSc (Sp Physics), BSc (Eng), MSc, PhD (UWI)
FAPETT, MASCE
Emeritus Professor
(Construction Engineering and Management, Project
Management)
Ext 83149

Burgess, Kenrick
BSc (Hons) (UWI), MBA (Brunel), DipCon. Eng. & Man,
DipPA (UWI), DipMan (UK), MA
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Jantzen, Manfred
BA and PhD (Economic History/Economics), University of
Wisconsin, USA,
Ext: 83838

Lau, Stanley
BSc (Eng) (UWI), MEng (Cornell), MSc (Accounting) (UWI),
CSE, MAPETT, MIEEE (Industrial Management,
Engineering Economics & Finance)
Ext: 83838

DEPARTMENT OF CHEMICAL
ENGINEERING

HEAD OF DEPARTMENT

Baccus-Taylor, Gail S.H.
BSc Agri (UWI), Dip, MSc Food Technology (UWI), MSc
Food Technology (Reading, UK), PhD Food Science
(Wisconsin, Madison, USA), MIFT,
Senior Lecturer
(Food Microbiology/Food Safety & Risk Assessment/Food
Quality Assurance/Food Product Development)
Tel: 662-2002, Ext. 82169/82196

ADMINISTRATIVE ASSISTANT
(To be appointed)
Tel: 662-2002 Ext: 82168

SECRETARIES

Mrs. Natalie Thomas-Chance
(Department)
Tel: 662-2002, Exts: 82169 / 82196

Mrs. Nikeisha Plato-Robinson
(Food Science and Technology and
Petroleum/Reservoir Engineering Programmes)
Petroleum Studies Unit
Ext. 82190

Ms. June Bradshaw
Petroleum Geoscience
Petroleum Studies Unit
Ext: 83686

CLERICAL ASSISTANT

Ms. Ayana Waldron
Ext: 83412

Ms. Genevieve Noel (Temp)
Ext: 83412

ACADEMIC STAFF

PROFESSORS EMERITII

Dawe, Richard
BA, MA, DPhil (Oxford), Eur Eng, CEng, CSc, CGeol,
FEI, CChem, FRSC, FGS
(Reservoir Engineering, Hydrocarbon Thermodynamics,
Improved Oil Recovery)

McGaw, David R.
BSc, MSc (Wales), PhD (UWI), FIChemE, CEng, MAIChemE
(Separation Processes, Particle Technology)
Mellowes, Winston A.
BSc (Eng), MSc, PhD (UWI), MIChemE, CEng,
MAIChemE, MCIC, FAPETT, REng
(Transport Phenomena, Sugar Technology,
Biomass Utilisations)
Ext: 82513

Richards, George Maxwell (His Excellency, former
President of the Republic of Trinidad & Tobago)
CM, MSc (Manch), PhD (Cantab), ARIC, AMCST, FinstPet,
MAPE, CEng
(Process Design & Economics, Petroleum Technology)

PROFESSORS
Jupiter, Andrew
BSc (UWI), MSc (Penn State University), FEI, FIMMM
Distinguished Fellow in Practice in Petroleum Studies
MHTL Chair in Petroleum Engineering
(Petroleum Engineering, Petroleum Taxation and
Contractual Arrangement)
Ext. 83076

Meerdink, Gerrit
MSc (IR) Chemical Technology (Twente University, The
Netherlands)
PhD Food Process Engineering (Wageningen University,
The Netherlands)
Coordinator of Food Science and Technology Programme
Ext. 82195

Wilson, Jeremy Brent
BSc, MSc, PhD (Wales), FGS
(Palaeontology, Stratigraphy and Sedimentology)
Ext: 83676

SENIOR LECTURERS
Hosein, Raffie
BSc (Pet. Eng.), MPhil (Pet. Eng.), PhD (Pet. Eng.) (UWI),
FIMMM, MSPEI
Coordinator of MSc Reservoir Engineering Programme
(position funded by bpTT)
(Petroleum and Reservoir Engineering)
Ext: 82164

Janes, David
BSc (Aston), PhD (Birmingham)
(Simulation, Automation, Optimisation
Process Design)
Ext: 84430

Riverol, Carmen
BSc, MSc (Chem Eng) (Simon Bolivar), PhD (Vigo)
(Process Design & Economics, Process Control)
Ext: 82677

LECTURERS
Abder, Clyde
BSc (Mech Eng) (UWI), Dual MS (Penns), CQE, CQA,
CPIM, CIRM (USA), MAPE, MSPE
(Drilling & Completions, Production Engineering)
Ext: 83679

Blake, Oshaine
BSc (UWI), PhD (Univ. of Liverpool)
(Petroleum Geophysics)
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**Bansee, Jainarine**
BSc (Eng Council) M.Sc. (Production Engineering & Management (UWI)

GRADUATE / RESEARCH ASSISTANTS

**Ali, Fahraz**
BSc (Eng) (UWI)

**Ramsoobag, Geeta**
BSc (Eng) (UWI)

**Rodriguez, Ricardo**
MSc (Eng. MST) (UWI), PhD (Eng) (UWI)

**Singh, Devin**
BSc (Eng) (UWI)

**Sumadh, Dennis**
BSc Metallurgy, PG Dip (Nottingham Trent)
(Total Quality Management)

INDUSTRY LIAISONS

**Goyal, Arun**
Former General Manager, TCL

**Jhagroo, Kishore**
Asset Maintenance & Reliability Engineering Consultants

**Khan, Zaid**
In-Corr-Tech Ltd

**Tiah, Eugene**
President
Phoenix Park Gas Processors Limited
SECTION 1 - GENERAL INFORMATION

1.1 PROGRAMMES OF STUDY
The Faculty offers programmes of study leading to the BSc, MSc, MPhil and PhD degrees in a variety of programmes offered by the Departments of Chemical and Process Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Geomatics Engineering and Land Management and, finally, Mechanical and Manufacturing Engineering. Overall, these Departments offer ten (10) undergraduate programmes, 9 postgraduate diploma programmes, 23 MSc programmes and 18 MPhil/PhD Programmes.

BSc Programmes
BSc programmes are offered at Levels 1, 2 and 3 and delivered over three (3) academic years of two (2) semesters each. These programmes are all accredited by British Professional Engineering Institutions relevant to the particular discipline.

Cooperative Programme (COOP)
Students who have completed Levels 1 and 2 may register for the Cooperative Programme (COOP) to spend a full year in industry undergoing supervised practical engineering training. At the end of their year in industry, students can return to complete their programme at Level 3. The COOP was introduced by the Faculty in 1994 and is now administered by the Student Advisory Services (http://www.uwi.tt/sas/services/career.asp).

Pre-Engineering Programme
The aim of the Pre-Engineering Programme is to provide an alternative path for potential regional candidates to BSc programmes offered by the Faculty of Engineering at the UWI. In this regard, the programme seeks to effectively prepare and motivate students for success in the first year programmes in engineering.

Specifically, the Foundation Programme strives to achieve these aims by setting objectives that are realized through educational components that:
(a) Raise all students to the equivalent of CAPE Level 2, the benchmark entry qualification for entry into BSc Engineering programmes.
(b) Expose students to the breadth and depth of University life, allowing them to better choose their academic paths and to become better prepared for the rigours of student life.
(c) Facilitate the development of key skills required for the world of work.

The programme is delivered through a 1-year course of study that includes traditional theoretical components that include Mathematics and a Practical Immersion Activity component that provides students with Caribbean Vocational Component (CVQ) certified skills in a variety of engineering related disciplines. The Programme is administered by Faculty but delivered through the Open Campus.

Students must apply through the UWI Open Campus, Pre-University Centre, St. John Road, St. Augustine using the prescribed application forms.

Entry Requirements:
1. CAPE UNITS I & II in Mathematics and Physics or Chemistry, (CSEC in Chemistry) OR
2. GPA 3.0 – 3.4 – COSTAAT/UTT/UTECH/BCC

Certificate in Geographic and Land Information Systems Management (GLIS)
The Certificate in GLIS was introduced to meet the increasing demand for GIS specialists in the job market as a result of advancements in information technology, and the development of spatial/geographic database management programmes. This Certificate therefore provides participants with the essential skills in GIS with the aim to develop a core of trained GIS persons who can lend support for GIS programmes in the Caribbean.

Entry Requirements:
1. A minimum of five (5) O’ level GCE/CXC subjects including English Language and Mathematics or equivalent qualification.
2. Applicants must also be computer literate, as knowledge of the MS Windows operating system will be required.
3. Relevant experience in application areas will be an advantage.
SECTION 2 - STUDENT PRIZES

The Faculty prides itself on its strong tradition of nurturing top class graduates who have gone on to accomplish themselves as regional and international industry professionals or in degree programmes in other universities. Student motivation plays a significant role in this regard. This section comprehensively lists prizes awarded to students who have excelled in their respective programmes. Many of these prizes are awarded by industry stakeholders.

2.1 CHEMICAL ENGINEERING

Association of Professional Engineers of Trinidad and Tobago ($2,000)
For the student graduating with the most outstanding Chemical & Process Engineering Design Project

EOG Resources Prize ($2,500)
To the student in Level 3 Chemical & Process Engineering producing the best Chemical Engineering Research Project

EOG Resources Prize ($5,000)
For the student producing the best Petroleum Geoscience Final Year Project

GSTT Prize ($1,000)
To the Level 1 student with the best academic performance and continuing in Level 2 Petroleum Geoscience

GSTT Prize ($1,000)
To the Level 2 student with the best academic performance and continuing in Level 3 Petroleum Geoscience

GSTT Prize ($1,000)
To the Level 3 student with the best academic performance

PETROTRIN Prize ($1,000)
To the best student in Level 1 Chemical & Process Engineering

PETROTRIN Prize ($1,000)
To the best student in Level 2 Chemical & Process Engineering

PETROTRIN Prize ($1,000)
To the best student in Level 3 Chemical & Process Engineering

PETROTRIN Prize ($1,000)
To the student in Level 3 Chemical and Process Engineering producing the best Chemical & Process Engineering Design Project

Schlumberger Prize (TT$2,500)
To the best all-round Level 1 student currently in Level 2 Petroleum Geoscience

Schlumberger Prize (TT$2,500)
To the best all-round Level 2 student currently in Level 3 Petroleum Geoscience

Schlumberger Prize (TT$2,500)
To the best all-round student who graduated from Level 3

SPETT ($1,500)
For the best Energy Industry Related Final Year Project in Chemical & Process Engineering

2.2 CIVIL & ENVIRONMENTAL ENGINEERING

Airports Authority of Trinidad & Tobago Prize ($1000)
To the student obtaining the highest Level 3 mark in Transportation Engineering

Ali Meahjohn Ltd ($3000 TT)
To the most outstanding (highest GPA) Level 3 Civil with Environmental Engineering

Association of Professional Engineers of Trinidad & Tobago Prize ($2000)
To the student producing the best Civil Engineering Design Project

Bill Massiah/Percy Phillips Memorial Prize ($1000)
To the best student in Level 1 Civil Engineering

Bill Massiah/Percy Phillips Memorial Prize ($1000)
To the best student in Theory of Structures including coursework at Level 2 Civil Engineering

Bill Massiah/Percy Phillips Memorial Prize ($1,100)
To the best student who is a National of Trinidad & Tobago in Level 2 and not on scholarship

Bill Massiah/Percy Phillips Memorial Prize ($1000)
To the best student in Level 3 Structural Analysis and Design Courses including coursework

B.G. Singh Prize ($1000)
To the Level 3 Civil Engineering student obtaining the highest mark in Coursework including Design, over the three-year period

CE Management and Services Ltd ($2000TT) to graduating student with the highest mark in CVNG3013
2.3 ELECTRICAL & COMPUTER ENGINEERING

Association of Professional Engineers of Trinidad & Tobago Prize ($1,000)
To the student producing the best Electrical & Computer Engineering Laboratory Project

Charles R. Massy Book Prize ($1,000)
To the best student in Level 1 Electrical & Computer Engineering

Charles R. Massy Book Prize ($1,000)
To the best student in Level 2 Electrical & Computer Engineering

Charles R. Massy Book Prize ($1,000)
To the best student in Level 3 Electrical & Computer Engineering

2.4 GEOMATICS ENGINEERING AND LAND MANAGEMENT

Barbados Land Surveyors Association ($1,000)
To the Level I student who is a National of Barbados obtaining the highest mark in Surveying Project (GEOM 1050)

Institute of Surveyors of Trinidad & Tobago Prize ($1,000)
To the Level 1 student producing the best Project in Geomatics

Institute of Surveyors of Trinidad & Tobago Prize ($1,500)
To the Level 2 student producing the best Project in Geomatics

Institute of Surveyors of Trinidad & Tobago Prize ($2,500)
To the Level 3 student producing the best Special Investigative Project in Geomatics

Ixanos Limited ($2,000)
To the student with the most innovative Level 3 Special Project

Massy Technologies InfoCom (Trinidad) Ltd. Prize ($6,000)
To the best student in the Electronic Systems Option

Teleios Prize ($1,000)
To the student producing the highest mark in Communication Systems I

Teleios Prize ($1,000)
To the student producing the highest mark in Communication Systems II

Telecommunication Services of Trinidad and Tobago Prize ($6,000)
To the best student in the Communication Systems Option

Trinidad & Tobago Electricity Commission Prize ($1,000)
To the student producing the highest mark in Industrial and Commercial Electrical Systems

Trinidad & Tobago Electricity Commission Prize ($1,000)
To the student producing the best Level 3 Special Project in Energy Systems

Trinidad and Tobago Electricity Commission Prize ($6,000)
To the best student in the Energy Systems Option including Industrial and Commercial Electrical Systems
Institute of Surveyors of Trinidad & Tobago Prize ($1000)
To the Level 1 student producing the best Project in Land Management (Valuation)

Institute of Surveyors of Trinidad and Tobago Prize ($1500)
To the Level 2 student producing the best Project in Land Management (Valuation)

Institute of Surveyors of Trinidad and Tobago Prize ($2500)
To the Level 3 student producing the best Project in Land Management (Valuation)

L&S Surveying Services Limited Prize ($1000)
To the most outstanding Level 2 student that entered the degree programme through the non-traditional route (i.e. technical institutions/work experience)

L&S Surveying Services Limited Prize ($2000)
To the graduating student averaging the highest in the combination of professional application courses (Cadastral Studies, Engineering Surveying, Hydrography and Professional Practice)

Peter Goodridge Prize ($1000)
For the best Level 2 student in Hydrographic Surveying

Peter Goodridge Prize ($1000)
For the best Level 3 student in Hydrography

Royal Institution of chartered Surveyors (RICS) Prize (£40)
Book Voucher
To an outstanding student nominated by UWI for its accredited degree in Geomatics

Samuel Opadeyi Prize ($1,000)
To the best student in Level 1 Geomatics

Samuel Opadeyi Prize ($1,200)
To the best student in Level 2 Geomatics

Samuel Opadeyi Prize ($1,300)
To the best student in Level 3 Geomatics

2.5 MECHANICAL & MANUFACTURING ENGINEERING

Alvin Daniell Prize ($1000)
To the best student in Level 1 Industrial Engineering

Alvin Daniell Prize ($1000)
To the best student in Level 1 Mechanical Engineering

ASME Prize ($1000)
To the best student who has completed Level 3 in Biosystems Engineering Minor

ASME Prize ($1000)
To the best student in Level 2 Industrial Engineering

Damus Ltd. Prize ($1,000)
To the best student in Level 3 Mechanical Engineering

Damus Ltd. Prize ($1000)
To the best student in Level 3 Industrial Engineering

Association of Professional Engineers of Trinidad & Tobago Prize ($1,000)
To the student producing the best Mechanical Engineering Special Project

Powergen Prize ($2000)
To the student obtaining the highest mark in the course Power Plant Engineering

Powergen Prize ($2000)
To the student obtaining the highest mark in the course Energy Engineering

Schlumberger Prize (US$500)
To the best student in Level 2 Mechanical Engineering

2.6 SPECIAL PRIZES

British Gas Trinidad & Tobago Ltd. Prize ($5,000)
To the graduating student with the best weighted average

Charles R. Massy Prize ($1,000)
To the most outstanding Level 3 student

EOG Resources (Trinidad) Ltd. Prize ($2,500) To the most outstanding Level 2 student

EOG Resources (Trinidad) Ltd. Prize ($2,500) To the Level 1 student obtaining the highest mark in the course Civil Engineer in Society or Communication and Ethics

Engineering Students Society (ESS) Prize ($1000)
To the student who must have made a significant contribution to the ESS

Faculty Prize ($1000)
To the best student in Level 1 BSc Land Management (Valuation) Programme

Faculty Prize ($1000)
To the best student in Level 2 BSc Land Management (Valuation) Programme

Faculty Prize ($1000)
To the best student in Level 3 BSc Land Management (Valuation) Programme

Fujitsu Transaction Solutions (Trinidad) Prize ($2,500)
To the most outstanding Level 1 student
Ministry of Energy Prize ($5,100)
To the most outstanding Level 3 student

NP Prize ($2,500)
To the student producing the best Level 3 Special Project
in the area of Environmental Engineering

PCS Nitrogen Trinidad Ltd. Prize ($5,000)
To the best student in Level 2 who is a National of
Trinidad & Tobago

RiteResumes Prize ($1,000)
To the student in Level 1 obtaining the highest mark in
Engineering Mathematics I who is not a national of
Barbados

RiteResumes Prize ($1,000)
To the student in Level 2 obtaining the highest mark in
Engineering Mathematics II who is not a national of
Barbados

The Barbados Association of Professional Engineers
(BAPE) Prize ($1,000)
For the student in Level 1 who is a National of Barbados
obtaining the highest mark in Engineering Mathematics I

The Barbados Association of Professional Engineers
(BAPE) Prize ($1,000)
For the student in Level 2 who is a National of Barbados
obtaining the highest mark in Engineering Mathematics II

Yorke Structures Prize ($1,000)
To the most outstanding Level 2 student

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
the Faculty and the University Regulations, the University
Regulations shall apply.

The Faculty of Engineering offers ten (10) of Bachelor of
Science, Engineering (BSc (Eng.)) Degree Programmes as
follows:

In the Department of Chemical Engineering
1. Chemical & Process Engineering
2. Petroleum Geoscience

In the Department of Civil and Environmental
Engineering
3. Civil Engineering
4. Civil with Environmental Engineering

In the Department of Electrical and Computer
Engineering
5. Electrical and Computer Engineering

In the Department of Geomatics Engineering and Land
Management
6. Geomatics
7. Land Management (Valuation)

In the Department of Mechanical and Manufacturing
Engineering
8. Industrial Engineering
9. Mechanical Engineering
10. Mechanical Engineering with a Minor in Biosystems

These programmes embody a suite of courses governed
by regulations described below. 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.
3.0 QUALIFICATIONS FOR ADMISSION TO THE FACULTY OF ENGINEERING

3.1 Applications for entry into programmes offered by the Faculty of Engineering will only be considered if applicants have met the following criteria:
   (a) Satisfied the University’s Matriculation Requirements for entry to a Degree Programme
   (b) Amassed qualification points as specified in Regulations 3.1.1 to 3.1.7. Qualification points are obtained by summing individual qualification scores as listed in Table 3.1.

Preference will be given to applicants with passes in Applied Mathematics at CAPE 2

The entry requirements for the Faculty of Engineering are listed below by programme of study. Qualification codes referenced are defined as follows:

'A' Level: Advanced Level Examinations GCE (Cambridge or London)
'O' Level: Ordinary Level Examinations GCE (Cambridge or London)
CXC: Caribbean Examinations Council
CAPE: Caribbean Advanced Proficiency Examination
GCE: General Certificate of Education (Cambridge or London)
N1: Preliminary Subjects at the former Faculty of Science and Agriculture, UWI
N2: Introductory Subjects at the former Faculty of Science and Agriculture, UWI
BCC: Barbados Community College
CAST: College of Arts, Science & Technology
COSTAATT: College of Science, Technology and Applied Arts of Trinidad and Tobago
EEET: Electrical & Electronics Engineering Technician
MET: Mechanical Engineering Technician
NEC: National Examinations Council
PreENG: Pre Engineering Programme, administered by the Open Campus Centre for the Faculty of Engineering, UWI St Augustine
PreSci1: Preliminary Subjects at the Faculty of Science and Technology, UWI
PreSci2: Introductory Subjects at the Faculty of Science and Technology, UWI
TTIT: Trinidad & Tobago Institute of Technology
UTech: University of Technology, Jamaica
UTT: University of Trinidad and Tobago

3.1.1 CHEMICAL & PROCESS ENGINEERING
   (a) A minimum total of 14 qualification points as calculated from Table 3.1 based on passes in Pure Mathematics, Physics and Chemistry at any combination of 'A' Level or CAPE (averaged over CAPE I and II) or N1 and N2, or PreSci 1 and PreSci 2, OR
   (b) A minimum GPA of 3.5 obtained in PreENG OR
   (c) Any of the following Diplomas, based on merit:
      • UTT National Engineering Technician Diploma (NETD) - Chemical Engineering - (GPA of 3.5 and above);
      • BCC Associate Degree in Science - Chemistry, Mathematics, Physics - (GPA of 3.5 and above).
      • COSTAATT Associate Degree - Chemistry, Physics - (GPA of 3.5 and above) OR
   (d) Any other qualification that is considered by the Department, in addition to those listed in Regulation 3.1 above.

3.1.2 CIVIL ENGINEERING AND CIVIL WITH ENVIRONMENTAL ENGINEERING
   (a) A pass in Chemistry at GCE ‘O’ Level or CXC or equivalent, AND
   (b) A minimum total of 8 qualification points as calculated from Table 3.1 based on passes in Pure Mathematics and Physics at any combination of ‘A’ Level or CAPE (averaged over CAPE I and II) or N1 and N2, or PreSci 1 and PreSci 2, OR
   (c) A minimum GPA of 2.5 obtained in PreENG, OR
   (d) Any of the following Diplomas, based on merit using the scores calculated in Table 3.1:
      • NEC Construction Engineering Technician (Trinidad & Tobago) - Score of 65% and above;
      • BCC Ordinary Technician Diploma (GPA of 3.0 and above).
      • CAST or UTech Technician Diploma, Jamaica. OR
   (e) Any other equivalent qualification and experience as determined by the Department, in addition to those listed in Regulation 3.1 above.

3.1.3 ELECTRICAL & COMPUTER ENGINEERING
   (a) A pass in Chemistry at GCE ‘O’ Level or CXC or equivalent, AND
   (b) A minimum total of 8 qualification points as calculated from Table 3.1 based on passes in Pure Mathematics and Physics at any combination of ‘A’ Level or CAPE (averaged
over CAPE I and II) or N1 and N2, or PreSci 1 and PreSci 2, OR
(c) A minimum GPA of 2.5 obtained in PreENG, OR
(d) Any of the following Diplomas, based on merit using the scores calculated in Table 3.1:
   • NEC (CET, EEET, MET) Diplomas with a B+ grade (65%) in final year Mathematics;
   • TTIT/UTT Mechanical or Electrical Technician Diploma with a B+ grade in final year Mathematics and GPA of 3.0 and above;
   • COSTAATT Associate Degree with A grade in final year Mathematics and GPA of 3.5 and above;
   • CAST or UTech Diplomas in Mechanical or Electrical Technology with a B+ grade in final year Mathematics;
   • BCC Ordinary Technician Diploma in Mechanical or Electrical Technology with a B+ grade in final year Mathematics and GPA of 3.5 and above.
OR
(e) Any other qualification that is considered by the Department, in addition to those listed in Regulation 3.1 above.

3.1.4 GEOMATICS
(a) A minimum total of 6 qualification points as calculated from Table 3.1 based on passes in Pure Mathematics and one other science related subject, at any combination of ‘A’ Level or CAPE (averaged over CAPE I and II) or N1 and N2, or PreSci 1 and PreSci 2, OR
(b) A minimum GPA of 2.0 obtained in PreENG, OR
(c) Any of the following Diplomas, based on merit using the scores calculated in Table 3.1:
   • UTT Surveying or Civil Engineering Technician’s Diploma (GPA of 2.8 and above);
   • BCC Surveying Technician’s Diploma (GPA of 3.0 and above).
OR
(d) Any other qualification that is considered by the Department, in addition to those listed in Regulation 3.1 above.

3.1.5 INDUSTRIAL, MECHANICAL AND MECHANICAL ENGINEERING WITH A MINOR IN BIOSYSTEMS
(a) A pass in Chemistry at GCE ‘O’ Level or CXC, AND
(b) A minimum total of 8 qualification points as calculated from Table 3.1 based on passes in Pure Mathematics and Physics at any combination of ‘A’ Level or CAPE (averaged over CAPE I and II) or N1 and N2, or PreSci 1 and PreSci 2, (Note that preference will be given to passes in Applied Mathematics. Technical Drawing will also be an asset), OR
(c) A minimum GPA of 2.5 obtained in PreENG, OR
(d) Any of the following Diplomas, based on merit using the scores calculated in Table 3.1:
   • NEC Mechanical Engineering Technician Diploma – Score of 65% and above;
   • COSTAATT Associate Degree (GPA of 3.5 and above);
   • TTIT/UTT Technician Diploma (GPA of 3.0 and above);
   • BCC Ordinary Mechanical Technician Diploma (GPA of 3.5 and above).
OR
(e) Any other qualification that is considered by the Department, in addition to those listed in Regulation 3.1 above.

3.1.6 LAND MANAGEMENT
(a) A minimum total of 6 qualification points as calculated from Table 3.1 based on passes at any combination of ‘A’ Level or CAPE (averaged over CAPE I and II) or N1 and N2, or PreSci 1 and PreSci 2, in any two of the following: Pure Mathematics, Physics, Geography, Accounting, Economics and Management of Business, OR
(b) A minimum GPA of 2.0 obtained in PreENG, OR
(c) Any other qualification that is considered by the Department, in addition to those listed in Regulation 3.1 above.

3.1.7 PETROLEUM GEOSCIENCE
(a) A minimum of 14 qualification points as calculated from Table 3.1 based on passes in Pure Mathematics, Physics or Chemistry and one other science subject or Geography at any combination of ‘A’ level or CAPE (averaged over CAPE I and II) or N1 and N2, or PreSci 1 and PreSci 2, in any two of the following: Pure Mathematics, Physics or Chemistry (the subject Physics or Chemistry not taken at CAPE or ‘A’ level must have a distinction at ‘O’ level or CSEC/CXC)
OR
(b) A minimum GPA of 3.5 obtained in PreENG, OR
(c) Any other qualification that is considered by the Department, in addition to those listed in Regulation 3.1 above.
PROGRAMMES OF STUDY

3.2 All students must:
(a) Not normally carry a load of more than 18 credits per semester.
(b) Pursue the approved Programme curriculum and obtain, within a maximum of 14 semesters, the credits as prescribed in the Programme’s Schedule; except as otherwise provided in Regulations 3.3 (Exemptions), 3.27 and 3.28 (Credit Transfer). Students who CANNOT complete their programmes of study within 14 semesters of registration without exceeding the limit prescribed in Regulation 3.2(a) would be declared as having failed the programme.
(c) Normally pass prerequisites for courses before being allowed to register for those courses.
(d) In any semester, pursue courses worth not less than nine (9) credits except where prerequisites, the timetable and/or the number of courses required for completion of the Degree programme dictate otherwise.
(e) 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.
(f) Not take more than the normal number of credits as stipulated in the Schedule of Courses (Section 4) for the registered Programme in a particular semester unless a single course is being trailed and a minimum GPA of at least 2.0 has been achieved in the Year preceding that semester. In this case, the student shall seek approval from the
Department concerned for registering for a higher load.

(g) Complete the Programme as prescribed in the Schedule of Courses in not less than three (3) academic years except as otherwise provided in Regulation 3.2(b).

(h) 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(i).

(i) Request permission to register for “Examinations Only”, i.e. to not attend classes but to write course examinations, in 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.

EXEMPTION & 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 Department.

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(b) 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 Departments on the matter.

(b) For students who entered the Faculty prior to the 2014/2015 academic year a minimum of 40% must be made in order to pass a course. For students who enter the Faculty as of 2014/2015 as of academic year 2014/2015 a minimum of 50% must be made in order to pass a course.

(c) A candidate may also be orally examined.

(d) Students who have not attended a minimum of 75% of classes would 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 write an examination once they have already passed the relevant course.

3.7. 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.

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 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 Department 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.

(c) A PASS is required in all non-assessable coursework components before a student can be credited with a PASS in a course.

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.

AEGROTAT DEGREES
3.15. A student who has obtained at least three-quarters of the credits required for a Bachelor’s Degree but 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 on complying 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 degrees in the Faculty of Engineering 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), Third Class Honours or Pass on the basis of the final Grade Point Average (GPA) as
given in Regulation 3.22, subject to Regulations 3.11 and 3.19(b).

(b) Where a 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.

(c) Students who have been granted permission to register for “Examinations Only”, i.e. to write examinations without attending classes in up to two (2) courses, or who require up to seven (7) credits in one (1) semester to graduate shall have this period counted as one-half (½) of a semester.

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

i. Credits
Normally, 1 credit shall represent 1 hour per week per semester in face to face lectures, OR one 3-hour lab per week per semester. 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 specialisation 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 [see Regulation 3.21(d)] and courses with designations as given in Section 5 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 as set out in Regulation 3.21(b)(iii) above. Failed courses are also included in the determination of the GPA (see Faculty Webpage for online GPA calculator). Prior to any attempt at the final year project, the Weighted GPA is given by

\[
W'_{gpa} = \frac{\sum Q_jC_j}{\sum C_j + 3\sum Q_jC_j + 6\sum Q_jC_j}
\]

where \(W'_{gpa}\) is the weighted GPA, \(\sum Q_jC_j\) is the summation of the product of quality points, \(Q_j\) and credits \(C_j\), 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

\[
W_{gpa} = 0.8 \left( \frac{\sum Q_jC_j + 3\sum Q_jC_j + 6\sum Q_jC_j}{\sum C_j + 3\sum Q_jC_j + 6\sum C_j} \right) + 0.2Q_{project}
\]
where $Q_{project}$ is the sum of the quality points earned in all attempts at the final year project.

(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 prior to 2014/2015, graduation honours will be awarded upon completion of all course requirements using the old GPA scheme as prescribed in Regulation 3.25.

3.25. (a) In the determination of the GPA, the defined grades and the matching range of marks with the corresponding quality points shall be, for students who entered the Faculty prior to 2014/2015:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Quality Points</th>
<th>% Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.30</td>
<td>80-100</td>
</tr>
<tr>
<td>A</td>
<td>4.00</td>
<td>70-79</td>
</tr>
<tr>
<td>A-</td>
<td>3.70</td>
<td>67-69</td>
</tr>
<tr>
<td>B+</td>
<td>3.30</td>
<td>63-66</td>
</tr>
<tr>
<td>B</td>
<td>3.00</td>
<td>60-62</td>
</tr>
<tr>
<td>B-</td>
<td>2.70</td>
<td>57-59</td>
</tr>
<tr>
<td>C+</td>
<td>2.30</td>
<td>53-56</td>
</tr>
<tr>
<td>C</td>
<td>2.00</td>
<td>50-52</td>
</tr>
<tr>
<td>C-</td>
<td>1.70</td>
<td>47-49</td>
</tr>
<tr>
<td>D+</td>
<td>1.30</td>
<td>43-46</td>
</tr>
<tr>
<td>D</td>
<td>1.00</td>
<td>40-42</td>
</tr>
<tr>
<td>F</td>
<td>0.00</td>
<td>0-39</td>
</tr>
</tbody>
</table>

Students with final weighted averages below 1.00 will be recorded as having failed the programme.

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:

<table>
<thead>
<tr>
<th>Degree Category</th>
<th>Final Weighted GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Class Honours</td>
<td>≥ 3.60</td>
</tr>
<tr>
<td>Upper Second Class Honours</td>
<td>3.00 – 3.59</td>
</tr>
<tr>
<td>Lower Second Class Honours</td>
<td>2.00 – 2.99</td>
</tr>
<tr>
<td>Third Class Honours</td>
<td>1.50 – 1.99</td>
</tr>
<tr>
<td>Pass</td>
<td>1.00 – 1.49</td>
</tr>
</tbody>
</table>

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

(c) Additional designations that are used on the student transcript are shown in Section 5: Additional Regulations. These designations do not directly factor into the GPA calculation.

NOTE: Continuing students, i.e., students who first entered the Faculty prior to 2014/2015, are asked to note that as of Academic Year 2016/2017, ALL students will be assessed under the new GPA scheme and the old scheme will no longer be in effect. Marks and grades attained prior to 2016/2017 will be converted to the new scheme.

3.25. (b) 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:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Quality Points</th>
<th>% Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.30</td>
<td>90-100</td>
</tr>
<tr>
<td>A</td>
<td>4.00</td>
<td>80-89</td>
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<tr>
<td>A-</td>
<td>3.70</td>
<td>75-79</td>
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<tr>
<td>B+</td>
<td>3.30</td>
<td>70-74</td>
</tr>
<tr>
<td>B</td>
<td>3.00</td>
<td>65-69</td>
</tr>
<tr>
<td>B-</td>
<td>2.70</td>
<td>60-64</td>
</tr>
<tr>
<td>C+</td>
<td>2.30</td>
<td>55-59</td>
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<tr>
<td>C</td>
<td>2.00</td>
<td>50-54</td>
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<tr>
<td>F1</td>
<td>1.70</td>
<td>45-49</td>
</tr>
<tr>
<td>F2</td>
<td>1.30</td>
<td>40-44</td>
</tr>
<tr>
<td>F3</td>
<td>0.00</td>
<td>0-39</td>
</tr>
</tbody>
</table>

NOTE: Continuing students, i.e., students who first entered the Faculty prior to 2014/2015, are asked to note that as of Academic Year 2016/2017, ALL students will be assessed under the new GPA scheme and the old scheme will no longer be in effect. Marks and grades attained prior to 2016/2017 will be converted to the new scheme.

3.26. (a) The scheme to be used for conversion of numerical marks to letter grades shall be as prescribed in Regulation 3.25(a) above.
(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 as described in SECTION 4.

(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 entered the Faculty prior to 2014/2015 a student whose GPA for a given semester is less than 1.00 shall be deemed to be performing unsatisfactorily and shall be placed on Warning. 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 WGPA calculation and applying it only to the courses registered for in the relevant semester:

\[ W_{\text{semester}} = \frac{\sum Q_i C_i}{\sum C_i} \]

where \( W_{\text{semester}} \) is the semester GPA, \( \sum Q_i C_i \) is 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 entered the Faculty prior to 2014/2015 a student on Warning whose semester GPA for the succeeding semester is less than 1.00 will be required to withdraw. 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 3.29(a) and 3.29(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 counselled by the Dean or a designated Faculty/Department 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 Department 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 because of failure to progress due to poor performance 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 3.30(a) and 3.30(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 3.30(a) and 3.30(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 3.27.

COURSE AUDIT
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.

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

(b) Satisfactory attendance certified by the Head of Department shall be awarded the designation V. In the absence of such certification, the designation 'NV' shall be recorded (see Section 5: Additional Regulations).

(c) 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 in Section 5: Additional Regulations.

(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.

Additional designations are as indicated Section 5: Additional 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, and as directed by the Department in which the student is registered.

(b) In consideration of Occupational Health and Safety issues in the laboratories, Departments would advise students on the appropriate attire to be worn in laboratories and other locations where practical work is conducted. PRESCRIBED LABORATORY ATTIRE WOULD 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.

(d) 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.

(e) Food and drink SHALL NOT be brought into classrooms or laboratories.
SECTION 4

Time to start thinking about …

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 programme, our research areas and any undergraduate requirements or prerequisites. For more detailed information and advice, please consult the Postgraduate Information Guide and speak with your Academic Advisor.

About Postgraduate Study

The Faculty of Engineering at the University of the West Indies offers 13 Diploma programmes, 25 MSc programmes, 18 MPhil programmes and 18 PhD programmes. Our Diploma and taught Masters programmes (e.g. MASc) are particularly well suited to those who have already embarked upon their professional career and are looking to gain deeper insight into a specialised area in their field. 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.

Definitions and Admission Requirements

Below are brief descriptions of the different types of programmes offered by the Faculty and the general admission requirements. Please consult the Postgraduate Information Guide for more detailed information.

Postgraduate Diplomas

These programmes involve a mix of taught classes, examinations, coursework and a written paper. The duration is generally one year for full-time study and two years for part-time study.

General Admission Requirements:

- A Bachelor’s Degree (at least Second Class Honours) in the specific subject area or in a related area with a record of experience in the subject area.
- Students with Pass degrees in the relevant field of study shall only be accepted for admission provided they have obtained at least two years’ experience in the field and have a satisfactory confidential reference from their employer.
- Applicants holding non-engineering Bachelor’s degrees may be required to pass a qualifying examination.

Master’s Degrees

All Master’s programmes offered by the Faculty are generally one year in duration for full-time study and two years for part-time study. MSc and MASc programmes involve courses of instruction, examination by written papers, supervised design/research work which may be industry-based and oral and written presentations. Master of Philosophy (MPhil) degrees are research degrees and are awarded on the basis of an examination by thesis.

General Admission Requirements:

- Masters’ candidates should normally possess at least a Lower Second Class Honours Degree in the specific subject area or a degree in a related area with a record of experience in the subject area.
- MPhil candidates should normally possess at least a Upper Second Class Honours Degree or equivalent in the area in which he/she is working or in a related area. Holders of a Pass Degree or a General Bachelor’s Degree must normally pass qualifying examinations.
- A candidate may be required to satisfy such prerequisites as are deemed necessary before proceeding to the Master’s degree programme.

Doctor of Philosophy

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

Admission Requirements

- Applicants who do not already have a Master’s degree by research will be required to register for the MPhil first and may be allowed to upgrade their registration to the PhD upon satisfying the appropriate regulations.
- Candidates who have obtained a Master’s degree from the UWI or another approved University, provided that the Master’s 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. Candidates who possess such other qualifications and experience as the Board for Graduate Studies and Research may approve.
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.

PREREQUISITE COURSES
Some postgraduate programmes in the Faculty require students to have passed particular courses offered at the undergraduate level. In 2014-2015 these include:

DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING

MASC AND DIPLOMA PROGRAMMES

Major in Communication Systems
Prerequisite Courses:
ECNG 3001 Communication Systems II
ECNG 3002 Data Communication Systems
ECNG 3003 Telecommunication Networks

Major in Control Systems
Prerequisite Courses:
ECNG 3004 Control and Instrumentation II
ECNG 3032 Control and Instrumentation I

Major in Energy Systems
Prerequisite Courses:
ECNG 3008 Power Electronic Circuits
ECNG 3010 Electrical Machines & Drive Systems
ECNG 3012 Power Systems Analysis
ECNG 3015 Industrial and Commercial Electrical Systems

Major in Integrated Systems
Prerequisite Courses:
ECNG 3006 Microprocessor Systems Design and Applications

DEPARTMENT OF MECHANICAL & MANUFACTURING ENGINEERING

Master of Philosophy (MPhil) or a Doctor of Philosophy (PhD) in Mechanical Engineering, Manufacturing Engineering or Industrial Engineering
Prerequisite Courses:
IENG 3004 Control Systems Technology
IENG 3013 Simulation of Industrial & Business Processes
MATH 2240 Statistics
IENG 3007 Operations Research II

Mechanical/Manufacturing Engineering Option
Prerequisite Courses:
MENG 2008 Manufacturing Technology
MENG 3015 Materials Technology

MSc Programmes in Production Engineering & Management, Production Management, & Engineering Management

COURSE NAME: Production Technology and Materials
Prerequisite Courses:
MENG 2008 Manufacturing Technology
MENG 3015 Materials Technology

COURSE NAME: Production Systems Design
Prerequisite Courses:
MENG 3006 Production Management

COURSE NAME: Engineering Management & Optimisation
Prerequisite Courses:
MENG 3013 Product Design & Development
Postgraduate Programmes 2015/2016

All postgraduate programmes offered by the Faculty of Engineering may be pursued part-time or full-time. For further information, please check the Faculty of Engineering Postgraduate booklet. Programmes offered in the current academic year are as follows:

<table>
<thead>
<tr>
<th>CHEMICAL ENGINEERING</th>
<th>Diploma</th>
<th>MSc</th>
<th>MPhil</th>
<th>PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Science &amp; Technology</td>
<td>x</td>
<td></td>
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<tr>
<td>Petroleum Engineering</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Chemical &amp; Process Engineering</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical &amp; Process Engineering with Environmental Engineering</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Chemical &amp; Process Engineering with Management</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reservoir Engineering</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Geoscience</td>
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<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Petroleum Geoscience</td>
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<td></td>
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<table>
<thead>
<tr>
<th>CIVIL &amp; ENVIRONMENTAL ENGINEERING</th>
<th>Diploma</th>
<th>MSc</th>
<th>MPhil</th>
<th>PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Engineering &amp; Management</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Construction Management</td>
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<td>Construction Engineering</td>
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<td>Civil Engineering</td>
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<tr>
<td>Civil with Environmental Engineering</td>
<td>x</td>
<td>x</td>
<td></td>
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<tr>
<td>Coastal Engineering &amp; Management</td>
<td>x</td>
<td></td>
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<tr>
<td>Environmental Engineering</td>
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<tr>
<td>Water and Wastewater Services Management</td>
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<thead>
<tr>
<th>ELECTRICAL &amp; COMPUTER ENGINEERING</th>
<th>Diploma</th>
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<th>MPhil</th>
<th>PhD</th>
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<tbody>
<tr>
<td>Communication Systems (Major)*</td>
<td>x</td>
<td>x</td>
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<td>Control Systems (Major)*</td>
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<td>Energy Systems (Major)*</td>
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<tr>
<td>Integrated Systems* (Computer Systems and Electronic Systems)</td>
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<table>
<thead>
<tr>
<th>GEOMATICS ENGINEERING AND LAND MANAGEMENT</th>
<th>Diploma</th>
<th>MAsc</th>
<th>MPhil</th>
<th>PhD</th>
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<tbody>
<tr>
<td>Land Administration</td>
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<td>Geoinformatics</td>
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<td>Urban and Regional Planning</td>
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<td>Surveying and Land Information</td>
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Return to Table of Contents
Postgraduate Programmes 2015-2016 cont’d

<table>
<thead>
<tr>
<th>MECHANICAL &amp; MANUFACTURING ENGINEERING</th>
<th>Diploma</th>
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<td>Industrial Engineering*</td>
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<tr>
<th>OFFICE OF THE DEAN</th>
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</table>

* Denotes undergraduate prerequisites. See above for details.

Research 2015/2016

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:

DEPARTMENT OF CHEMICAL ENGINEERING
- Agricultural Crop Processing
- Biochemical Engineering
- Enhanced Oil Recovery
- Food Science & Technology
- Heavy Oil Recovery
- Industrial Pollution Control
- Mineral Processing
- Natural Gas Engineering
- Petroleum Processing Technology
- Process Design, Optimisation and Control
- Reaction Engineering
- Reservoir Engineering
- Sugar Technology
- Utilisation of Biomass

DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING
- Behaviour of Structural Elements/Systems under Loadings
- Building Aerodynamics
- Caribbean Construction Firms
- Civil Engineering Economics
- Civil Engineering Project Management
- Computer-aided Engineering & Design
- Construction Economics
- Construction Finance
- Construction Management & Administration
- Construction Materials
- Construction Public Policy
- Construction Technology
- Contract Procurement Systems
- Disaster Mitigation & Management
- Disaster Mitigation & Management
- Earthquake & Hurricane Resistance Design
- Energy Management and Thermal Comfort in Buildings
- Environmental Engineering
- Expert Systems
- Flood Management
- Infrastructure Planning
- Infrastructure Technology in Construction Management
- Macro & Micro Economic Issues in Construction
- Maintenance, Rehabilitation & Finance
- Management of Quality in Construction
- Materials Engineering
- Productivity in Construction
- Resource Management
- Structural Design & Codes for Disaster Mitigation
• The Analysis & Design of Foundations
• The Analysis & Design of Hydraulic Systems
• The Analysis & Design of Structures
• Transport Engineering

**DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING**

**COMMUNICATION SYSTEMS RESEARCH**
• Mobile technologies to demonstrably advantage traditionally excluded populations in the Caribbean
• Cognitive, semantic and related technologies to enable increased business effectiveness and personal productivity
• Communication network and application performance studies

**CONTROL SYSTEMS RESEARCH**
• Distributed Control Systems
• Optimum deployment of control networks for small and medium sized plants
• Algorithms for control system performance enhancement
• Web labs

**ENERGY SYSTEMS RESEARCH**
• Motors and Drives
• Renewable Energy
• Modelling, simulation and analysis
• Energy efficiency in motors and drives
• Alternative sources of energy
• Vector controlled motor drives, convertors and controllers
• Innovation systems for small developing countries

**INTEGRATED SYSTEMS RESEARCH**
• Artificial intelligence
• Robotics
• Computer Architecture
• Embedded systems
• Electronic System Design Methods
• Reconfigurable Hardware
• Linear Circuit Applications
• Near-Field Acoustical Holography for the PAN Acoustic Study
• Visualization

**DEPARTMENT OF GEOMATICS**

**ENGINEERING AND LAND MANAGEMENT**
• Priority areas and new themes of research have been identified and are being pursued. The research focus extends to areas covering geomatics, geodesy, land administration, spatial analysis, geoinformatics, spatial and settlements planning, the environment and ecosystems. The following are some topics of immediate concern:
  - Mapping, monitoring, and modeling land use/cover dynamics for the sustainable management of the environment and natural resources.
  - Image processing for the extraction of spatial information from aerial and satellite Imagery and Lidar.
  - Coastal zone management, developing plans for coastal zones, coastal erosion and modelling coastal changes for sustainable development.
  - Comparative analysis of planning statutes and administrative structures in the Caribbean.
  - Design for sustainable development of urban and other settlement areas, environmental planning and policy planning.
  - Urban structure and urban form in the Caribbean.
  - Community and participatory planning.
  - Non-structural measures for hazard mitigation.
  - Formulation and definition of national datums.
  - Geohazards; flooding and landslides, developing plans for areas exposed to natural and man-made hazards.
  - Global climate change, climate change and food security, sea level change.
  - Land tenure rights and practices including family land in specific jurisdictions.
  - Quality assurance of spatial data and other land-related information, development of standards for spatial data exchanges.
  - Relevant theory and methodology for Caribbean Planning and Resource Management.

Resources for research include automated field and GPS data recording and computation systems, photogrammetric and satellite images processing and analysis tools, GIS and mapping hardware and software, in addition to state-of-the art computing and digital services facilities.
DEPARTMENT OF MECHANICAL & MANUFACTURING ENGINEERING

Agricultural (Biosystems) Engineering
- Thermal and Electrical Conductivity of Soils
- Hydroponics System of Irrigation
- Computer-Aided Irrigation Water Scheduling
- Engineering Properties of Soils and Water Treatment Sludge
- Evaluation of Livestock Structures
- Drying of Agricultural Materials
- Post-Harvest Technology
- Engineering Design of Machinery

Industrial Engineering
- Workstudy and Ergonomics
- Testing of the Eco Tech Tutor
- Quality Management Systems
- HSC Radiation Management Model
- Strategic Formulation, Performance and Knowledge Measurement
- Comparative Studies on Different Industrial Layouts
- Science, Technology and Innovation

Manufacturing and Mechanical Engineering
- Computer Integrated Manufacture
- Rapid Prototyping Paradigms for Virtual Manufacturing Systems
- Computer-Aided Design and Drafting of Machine Elements
- Modeling, Scheduling and Analysis of Flexible Manufacturing Systems
- Cellular Manufacturing Systems
- Virtual Learning (e-Learning) to Aid Distance Engineering Education
- Disaster Management
- Thermal Conductivity of Engineering Materials
- Heat Transfer
- Solar Engineering
- Vehicle Emissions
- University-Industry Collaboration and Technology Transfer

For More Information and Advice

FIRST
- Request the 2014-2015 Faculty of Engineering Postgraduate Information Guide CD OR download the guide from the UWI St. Augustine website http://www.sta.uwi.edu

THEN
- Contact the following person for an appointment: Research & Postgraduate Student Affairs
  Lewis, Winston G.
  BSc (Eng), MPhil (UWI), PhD (Tuns), FAPETT, FASME, REng
  Professor of Industrial Systems Engineering
  Manufacturing Technology, Plant Layout & Ergonomics
  Ext: 83181
## SECTION 5: ADDITIONAL REGULATIONS

### 5.1: Additional GPA Designations

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AB</strong></td>
<td>Absent - when a student is absent from an examination for acceptable reasons other than medical reasons.</td>
</tr>
<tr>
<td><strong>AM</strong></td>
<td>Absent Medical</td>
</tr>
<tr>
<td><strong>CR</strong></td>
<td>Credit</td>
</tr>
<tr>
<td><strong>DIS</strong></td>
<td>Disqualified</td>
</tr>
<tr>
<td><strong>E</strong></td>
<td>Exemption</td>
</tr>
<tr>
<td><strong>EC</strong></td>
<td>Exemption with credit</td>
</tr>
<tr>
<td><strong>EI</strong></td>
<td>Examination Irregularity - Candidate disqualified from examination on account of breach of the Regulations</td>
</tr>
<tr>
<td><strong>EQ</strong></td>
<td>Examination Query</td>
</tr>
<tr>
<td><strong>FA</strong></td>
<td>When a student is absent from an examination without a valid reason</td>
</tr>
<tr>
<td><strong>FC</strong></td>
<td>Failed Coursework - Indicates that a candidate has failed to satisfy the Examiner in the coursework component of the course</td>
</tr>
<tr>
<td><strong>FE</strong></td>
<td>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</td>
</tr>
<tr>
<td><strong>FM</strong></td>
<td>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 authorised medical practitioner</td>
</tr>
<tr>
<td><strong>FNP</strong></td>
<td>Failed – No Penalty</td>
</tr>
<tr>
<td><strong>FO</strong></td>
<td>Fail Oral</td>
</tr>
<tr>
<td><strong>FP</strong></td>
<td>Failed Practical</td>
</tr>
<tr>
<td><strong>FPR</strong></td>
<td>Failed Programme</td>
</tr>
<tr>
<td><strong>FT</strong></td>
<td>Failed Theory</td>
</tr>
<tr>
<td><strong>FWS</strong></td>
<td>Fail/Supplemental Examination granted</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td>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 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' letter 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'.</td>
</tr>
<tr>
<td><strong>IM</strong></td>
<td>Incomplete Medical</td>
</tr>
<tr>
<td><strong>IP</strong></td>
<td>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</td>
</tr>
<tr>
<td><strong>NFC</strong></td>
<td>Not for Credit</td>
</tr>
<tr>
<td><strong>NP</strong></td>
<td>Not Passed - when a student has failed a course taken on a Pass/Fail basis</td>
</tr>
<tr>
<td><strong>NR</strong></td>
<td>Grade not yet available</td>
</tr>
<tr>
<td><strong>NV</strong></td>
<td>When a student has been permitted to audit a course but has not done so satisfactorily</td>
</tr>
<tr>
<td><strong>P</strong></td>
<td>Pass - a pass obtained in a course taken on a Pass/Fail basis</td>
</tr>
<tr>
<td><strong>PC</strong></td>
<td>Preliminary Credits - used for matriculation purposes or the satisfying of prerequisites only</td>
</tr>
<tr>
<td><strong>R1</strong></td>
<td>Required to Withdraw</td>
</tr>
<tr>
<td><strong>R2</strong></td>
<td>Required to Withdraw – Waived by Dean</td>
</tr>
<tr>
<td><strong>V</strong></td>
<td>Audited - when the course has been taken in accordance with Regulation 22</td>
</tr>
<tr>
<td><strong>W1</strong></td>
<td>Warning</td>
</tr>
<tr>
<td><strong>XM</strong></td>
<td>Medical Accepted</td>
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</table>
5.2: Academic Support/ Disabilities Liaison Unit (ASDLU)

The Unit 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 and evening students, international students, student athletes and students with special needs (disabilities).

Support Services for STUDENTS WITH SPECIAL NEEDS (Temporary and Permanent)
- Provision of Aids and Devices such as laptops, USB drives, tape recorders and special software.
- Special Accommodations for Examinations
- Classroom Accommodations
- Academic Support
- Liaison with Faculties and Departments

Students with special needs should make contact 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.

Academic Support Services for ALL STUDENTS
- Educational Assessment – LADS (dyslexia) – LASSI (Study Skills)
- Time Management
- Examinations Strategies
- Workload Management
- Career Planning
- Study Skills
- Peer Tutoring

How do I register at ASDLU?
- Visit ASDLU to make an appointment to meet the Coordinator.
- Complete the required registration form.
- Students with disabilities must submit a medical report from a qualified medical professional.
- An assessment of the student’s needs will be conducted.
- The required assistance will be provided.

All Students experiencing academic challenges should communicate with Ms. Jacqueline Huggins, Coordinator, Academic Support/Disabilities Liaison Unit, south of The Alma Jordan Library.

Tel: 662-2002 Exts 83921, 83923, 83866, 84254.

Hours:
- 8:30 am - 4:30 pm Monday, Wednesday & Friday
- 8:30 am - 6:00 pm Tuesday & Thursday to accommodate Part-time and Evening students.

Email: ASDLU.Office@sta.uwi.edu

Registration forms are available at the office or from the website at www.sta.uwi.edu/asdlu
5.3: 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.
5.4: 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:
   (i) awarded a fail mark;
   (ii) excluded from some or all further examinations of the University for such period as it may determine;
   (iii) 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.
5.5. Plagiarism Declaration Forms

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  __________________________________________________________

DATE  ________________________________________________________________
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 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 detection service.

NAME ______________________________________________________________________________

SIGNATURE _______________________________________________________________________________

NAME ______________________________________________________________________________

SIGNATURE _______________________________________________________________________________

NAME ______________________________________________________________________________

SIGNATURE _______________________________________________________________________________

NAME ______________________________________________________________________________

SIGNATURE _______________________________________________________________________________

DATE _______________________________________________________________________________
ADDITIONAL ACCOUNTABILITY STATEMENT WHERE WORK HAS BEEN PREVIOUSLY SUBMITTED

1. I/We have set out in an attached statement the details regarding the circumstances under which this paper or parts thereof has been previously submitted.

2. I/We have received written permission from my Supervisor/Lecturer/Instructor regarding the submission of this paper and I have attached a copy of that written permission to this statement.

3. I/We hereby declare that the submission of this paper is in keeping with the permission granted.

NAME _____________________________________________________________________________________

SIGNATURE _________________________________________________________________________________

DATE _____________________________________________________________________________________
SECTION 6 - UNDERGRADUATE SCHEDULE OF COURSES

NOTE: The letter ‘E’ or ‘C’ preceding the credit allocation indicates Examination by written papers or by coursework, respectively.

6.1 DEPARTMENT OF CHEMICAL ENGINEERING

6.1.1 BSc in Chemical & Process Engineering

Accredited by the Institution of Chemical Engineers (IChemE) of the UK to the BEng Level, en route to CEng.

Students who pass all mandatory 95 credits of courses as prescribed below will, subject to applicable regulations, be recognized as having completed their degree and will automatically be placed on the Faculty of Engineering’s list of students recommended for the award of BSc in Chemical and Process Engineering.

COURSE LISTING

<table>
<thead>
<tr>
<th>LEVEL 1</th>
<th>SEMESTER 1</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CHNG 1000</td>
<td>Introduction to Chemical &amp; Process Engineering</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHNG 1001</td>
<td>Applied Chemistry I</td>
<td>E2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHNG 1003</td>
<td>Science of Materials</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHNG 1008</td>
<td>Communication/ Ethics</td>
<td>C2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ENGR 1001</td>
<td>Information Technology for Engineers</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ENGR 1180</td>
<td>Engineering Mathematics I</td>
<td>E3</td>
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<table>
<thead>
<tr>
<th>LEVEL 1</th>
<th>SEMESTER 2</th>
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<td>CHNG 3004</td>
<td>Chemical Reaction Engineering I</td>
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<td>CHNG 3006</td>
<td>Process Design &amp; Economics II</td>
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<td>CHNG 3007</td>
<td>Separation Processes II</td>
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<td>MENG 3000</td>
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<td>Biochemical Engineering</td>
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<td>CHNG 3014</td>
<td>Safety &amp; Loss Prevention in Process Industries</td>
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</table>
6.1.2 BSc in Petroleum Geoscience

Accredited by the Geological Society of London en route to CGeol.

LEARNING OUTCOMES

The BSc programme in Petroleum Geoscience aims to provide the Upstream Petroleum Industry with 'ready to work' graduates in Petroleum Geoscience. It also provides graduates with the required background and skills to easily undertake postgraduate work in any of the specializations in Petroleum Geoscience.

Graduates

• Can appropriately apply the principles, theories, tools and techniques of Petroleum Geoscience in the exploration and development of Petroleum Accumulations.
• Have the background and ability to work with specialists in the Upstream Petroleum Industry.
• Can use their skills to work independently and/or as a member of a team.
• Confidently develop and effectively communicate professional opinions in their field and on topical issues.
• Have developed a sound basis for lifelong, self-motivated academic and professional studies and for personal integrity.

Students who pass all mandatory 100 credits of courses as prescribed below will, subject to applicable regulations, be recognized as having completed their degree and will automatically be placed on the Faculty of Engineering’s list of students recommended for the award of BSc in Petroleum Geoscience.

COURSE LISTING

LEVEL 1

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<thead>
<tr>
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<td>ENGR 1001</td>
<td>Information Technology for Engineers</td>
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<tr>
<td>ENGR 1180</td>
<td>Engineering Mathematics I</td>
</tr>
<tr>
<td>PGSC 1000</td>
<td>Introduction to Geology &amp; Geological History</td>
</tr>
<tr>
<td>PGSC 1002</td>
<td>Paleontology &amp; Stratigraphy</td>
</tr>
<tr>
<td>PGSC 1003</td>
<td>Engineering Graphics &amp; Geodetics for Petroleum Geoscience</td>
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LEVEL 1

<table>
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<tr>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
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<tr>
<td>CVNG 1001</td>
<td>Mechanics of Fluids I</td>
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<td>PGSC 1006</td>
<td>Applied Chemistry II</td>
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<td>PGSC 1001</td>
<td>Introduction to Earth Sciences, Processes &amp; Caribbean Geology</td>
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<tr>
<td>PGSC 1004</td>
<td>Field &amp; Mapping Principles</td>
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<tr>
<td>PGSC 1005</td>
<td>Geophysics Fundamentals</td>
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Internship: 8 weeks with industry (optional)

LEVEL 2

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LEVEL 2

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<td>PGSC 2001</td>
<td>Sedimentology</td>
</tr>
<tr>
<td>PGSC 2010</td>
<td>Communication Skills</td>
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<tr>
<td>PGSC 2011</td>
<td>Mineralogy</td>
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Two (2) weeks Geophysics workshop and one (1) week Field Geology at beginning of Summer.

Internship: Working for 10-12 weeks with industry.

LEVEL 3

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<td>PGSC 3013</td>
<td>Advanced Petroleum Geology</td>
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<td>PGSC 3014</td>
<td>Advanced Petroleum Geophysics</td>
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<td>PGSC 3015</td>
<td>Geoscience Seminar</td>
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LEVEL 3
SEMESTER 1

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<tr>
<td>PGSC 3001</td>
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<td>E2</td>
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<td>PGSC 3003</td>
<td>Formation Evaluation E2</td>
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<td>PGSC 3004</td>
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LEVEL 3
SEMESTER 2

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<td>Computational Petroleum Geology &amp; Geophysics C3</td>
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<tr>
<td>PGSC 3008</td>
<td>Prospect Assessment, Evaluation &amp; Petroleum Economics E3</td>
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NOTE: There may be field-work on a Saturday and/or on a Sunday.

6.2 DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING

Programme Aim
To provide an educational foundation upon which graduate civil engineers can build with further learning and experience in order to achieve higher professional status and responsibility within the civil engineering construction industry, while increasing their contribution to improving the quality of life in society.

Programme Outcomes
Holders of the BSc (Hons) Degree in Civil Engineering, or Civil with Environmental Engineering will be able to:

i) Apply the methods and techniques that they have learned to review, consolidate, extend and apply their knowledge and understanding, and to initiate and carry out civil infrastructure projects;
   - understanding, and to initiate and carry out civil infrastructure projects;

ii) Critically evaluate arguments, assumptions, abstract concepts and data (that may be incomplete), to make judgments, and
   - to frame appropriate questions to achieve a solution - or identify a range of solutions - to a civil or environmental engineering system or design problem;

iii) Communicate information, ideas, problems, and solutions to both specialist and non-specialist audiences on the conceptualization and design of civil and environmental engineering systems and infrastructures; and
   - Demonstrate qualities and transferable skills necessary for employment requiring:
     • the exercise of initiative and personal responsibility;
     • decision-making in complex and unpredictable contexts; and
     • the learning ability needed to undertake appropriate further training of a professional or equivalent nature.

Accredited by the Joint Board of Moderators (JBM) of the UK: BEng (Hons) Accredited CEng (Partial)
This degree is accredited as:
1. Fully satisfying the educational base for an Incorporated Engineer (IEng).
2. Partially satisfying the educational base for a Chartered Engineer (CEng). A programme of accredited Further Learning will be required to complete the educational base for CEng.

See [www.jbm.org.uk](http://www.jbm.org.uk) for further information and details of Further Learning programmes for CEng.

Students who pass 97 credits of courses as prescribed below, subject to applicable regulations, be recognized as having completed their degree and will automatically be placed on the Faculty of Engineering's list of students recommended for the award of BSc Civil Engineering OR BSc in Civil with Environmental Engineering. Unless otherwise stated, all courses listed are mandatory.

### 6.2.1 BSc (Hons) Civil Engineering

**COURSE LISTING**

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<td>Engineering Graphics</td>
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<td>CVNG 1012</td>
<td>Civil Engineering Law</td>
<td>E2</td>
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<td>CVNG 3015</td>
<td>Special Investigative Project</td>
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### LEVEL 3

#### SEMESTER 2

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#### 6.2.2 BSc (Hons) Civil with Environmental Engineering

Levels 1 and 2 are common with BSc (Hons) Civil Engineering.

#### COURSE LISTING

##### LEVEL 3

#### YEAR-LONG

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<td>Design Project Environmental</td>
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<td>CVNG 3021</td>
<td>Special Investigative Project Environmental</td>
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##### LEVEL 3

#### SEMESTER 1

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<td>Foundation Engineering</td>
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<td>CVNG 3007</td>
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LEVEL 3
SEMESTER 2
(14 CREDITS INCL. YEAR-LONG AND OPTIONS)
Two (2) options, subject to the approval of the Head of Department:

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<td>Environmental Geotechnics (Prerequisite: CVNG 3005)</td>
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<td>CVNG 3008</td>
<td>Environmental Engineering II (Prerequisites: CVNG 2005, CVNG 3007)</td>
<td>E3</td>
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<td>CVNG 3013</td>
<td>Coastal Engineering (Prerequisite: CVNG 2005)</td>
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<td>CVNG 3017</td>
<td>Offshore Geotechnical Engineering (Prerequisites: CVNG 2008; CVNG 2009)</td>
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NOTE: THE LETTER ‘E’ OR ‘C’ PRECEDING THE CREDIT ALLOCATION INDICATES EXAMINATION BY WRITTEN PAPERS OR BY COURSEWORK, RESPECTIVELY.

1. Course loadings in any semester shall not exceed the credits as stated above, unless approved by the University.
2. A minimum of 97 credits is required for graduation.
3. Successful completion of the Seminar programme is a compulsory requirement for the award of the BSc Degree.

6.3 DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING

6.3.1 BSc in Electrical & Computer Engineering

Students who pass at least 93 credits of courses as prescribed below will, subject to applicable regulations, be recognized as having completed their programme and will automatically be placed on the Faculty of Engineering’s list of students recommended for the award of the degree in Electrical and Computer Engineering. Unless otherwise stated, all courses listed are mandatory.

COURSE LISTING

LEVEL 1
SEMESTER 1  15 CREDITS

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<td>ECNG 1010</td>
<td>Communication Skills for Engineers</td>
<td>C2</td>
</tr>
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<td>ECNG 1011</td>
<td>Electronics</td>
<td>E3</td>
</tr>
<tr>
<td>ECNG 1012</td>
<td>Engineering Science &amp; Technology</td>
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LEVEL 1
SEMESTER 2  15 CREDITS

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<td>Introduction to Thermodynamics</td>
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### LEVEL 2

#### SEMESTER 1

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**Prerequisites:**
- ECNG 1009
- ECNG 1016
- ENGR 1180

#### SEMESTER 2

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<tr>
<td>ECNG 2005</td>
<td>Laboratory &amp; Project Design III</td>
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<td>ECNG 2006</td>
<td>Introduction to Microprocessors</td>
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<td>Control Systems</td>
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**Prerequisites:**
- ECNG 1000
- ECNG 1015
- ECNG 1009
- ECNG 1014
- ECNG 2011

### LEVEL 3

#### SEMESTER 1

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**Prerequisites:**
- ECNG 1009
- ECNG 1016
- ECGR 1180

### SEMESTER 2

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**Prerequisites:**
- ECNG 1000
- ECNG 1015
- ECNG 1009
- ECNG 1014
- ECNG 2011

### COMPULSORY COURSES

#### YEAR-LONG

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### LEVEL 3

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### SEMESTER 2

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**Prerequisites:**
- ECNG 2013

**PLUS** 21 credits to be obtained from:

### ELECTIVES

#### SEMESTER 1

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<td>ECNG 3002</td>
<td>Data Communication Systems</td>
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<td>ECNG 3006</td>
<td>Microprocessor Systems - Design &amp; Applications</td>
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<td>ECNG 3008</td>
<td>Power Electronics Circuits</td>
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<td>ECNG 3015</td>
<td>Industrial &amp; Commercial Electrical Systems</td>
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<td>ECNG 3023</td>
<td>Introduction to Software Engineering</td>
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<td>ECNG 3029</td>
<td>Robotic Technology and Applications</td>
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<td>ECNG 3031</td>
<td>Engineering &amp; Technology for Acoustics &amp; Music</td>
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<td>MENG 3006</td>
<td>Production Management Distribution Systems</td>
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**Prerequisites:**
- ECNG 2010
- ECNG 1009
- ECNG 1010
- ECNG 1011
- ECNG 1015
- ENGR 1180
- ECNG 1000
- ECNG 1015
- ECNG 1009
- ECNG 1014
- ECNG 2011
- ECNG 2000
- ECNG 2000
- ECNG 2000
- ECNG 2000
- ECNG 2000
- ECNG 2000

### LEVEL 3

- Students doing Level 3 courses must:
  - Register for all courses listed as compulsory.
  - Select at least one (1) of the following options:
    - Communication Systems
    - Computer Systems Engineering
    - Control Systems
    - Electronic Systems
    - Energy Systems

This is achieved by registering for electives that are mandatory for these options as listed in the Department’s Registration Guide.
### Semester 2

<table>
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<td>Telecommunications Networks (Prerequisite: ECNG 3001 and ECNG 3002)</td>
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<td>ECNG 3004</td>
<td>Control &amp; Instrumentation II (Prerequisite: ECNG 3032)</td>
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<td>ECNG 3010</td>
<td>Electrical Machines &amp; Drive Systems (Prerequisite: ECNG 2000)</td>
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<td>ECNG 3012</td>
<td>Power Systems Analysis (Prerequisite: ECNG 3015)</td>
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<td>ECNG 3013</td>
<td>Electrical Transmission &amp; Distribution Systems (Prerequisite: ECNG 3015)</td>
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<tr>
<td>ECNG 3016</td>
<td>Advanced Digital Electronics (Prerequisite: ECNG 3015)</td>
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<td>ECNG 3019</td>
<td>Advanced Control Systems Design (Prerequisite: ECNG 2009)</td>
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<td>ECNG 3024</td>
<td>Network Synthesis</td>
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<td>ECNG 3025</td>
<td>Discrete Signal Processing</td>
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<td>ECNG 3030</td>
<td>Electromechanical Energy Conversion (Prerequisite: ECNG 1007) (Not for Electrical and Computer Engineering Students)</td>
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<tr>
<td>IENG 3009</td>
<td>Industrial Database Systems &amp; Design</td>
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<td>MENG 3001</td>
<td>Engineering Management II</td>
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</table>

**NOTE:** THE LETTER 'E' OR 'C' PRECEDING THE CREDIT ALLOCATION INDICATES ASSESSMENT BY WRITTEN EXAMINATION OR BY COURSEWORK, RESPECTIVELY.

Students are asked to note the following:

i) The maximum course load normally allowed by the University is 18 credits per semester.

ii) The previous Course Listing provides the full complement of courses which the Department is authorised to teach at the Undergraduate level. Level 3 students should consult the Registration Guide for the list of electives which the Department will actually offer.

iii) The Registration Guide may be obtained from the Department’s website at: http://sta.uwi.edu/eng/electrical/index.asp or the Department’s office.

iv) The Department is only responsible for courses with the ‘ECNG’ code. Students should therefore, consult respective Departments for further information on other courses listed.

v) **REGISTRATION FOR LEVEL 3 COURSES WILL NOT нормално быть APPROVED UNTIL CREDITS FOR ALL REQUIRED LEVEL 1 COURSES HAVE BEEN ATTAINED.**

vi) The minimum requirement at Level 3 is 33 credits over the two semesters.

vii) The requirements for graduation are: A MINIMUM OF 93 CREDITS inclusive of all Levels 1, 2 and 3 compulsory courses as well as Level 3 elective courses, which MUST constitute a thematic option.

viii) Selection of a particular thematic option does not exclude the possibility of registering for courses in other thematic areas.

ix) As of 2007/2008, students failing ECNG 3020 are not eligible for an Honours Degree.
6.4 DEPARTMENT OF GEOMATICS ENGINEERING AND LAND MANAGEMENT

6.4.1 BSc Geomatics

Students who pass at least 95 credits of courses as prescribed below will, subject to applicable regulations, be recognized as having completed their degree and will automatically be placed on the Faculty of Engineering’s list of students recommended for the award of BSc Civil Engineering OR BSc in Geomatics. Unless otherwise stated, all courses listed are mandatory.

PROGRAMME AIMS AND LEARNING OUTCOMES

Aims
The BSc Geomatics programme aims at providing a comprehensive and detailed knowledge of the theory and methods of land surveying and the management of land information that prepare and enable graduates to work effectively in response to regional, national and international needs.

Learning Outcomes
The intended learning outcomes are that graduates with a first degree in Geomatics will be able to:

- Explain the principles, theories, tools, and techniques of surveying and land information;
- Appropriately apply specialised knowledge in land surveying and land information management and other transferable skills appropriate to a wide range of disciplines;
- Use the skills required to work independently and as a member of a team;
- Critically examine land surveying and land information management problems and develop solutions within the context of given specifications and standards;
- Confidently develop and effectively communicate professional opinions on topical issues;
- Establish a sound basis for lifelong, self-motivated academic and professional studies.

COURSE LISTING

LEVEL 1

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<tr>
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<th>Course Title</th>
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<td>Information Technology for Engineers</td>
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<td>GEOM 1001</td>
<td>Mathematics for Geomatics Engineering</td>
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LEVEL 1

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<td>Photogrammetry</td>
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<td>Geodesy</td>
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<td>Statistics for Surveying</td>
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<td>GEOM 1045</td>
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LEVEL 2

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<td>Fundamentals of GIS</td>
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<td>Digital Photogrammetry</td>
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<td>Adjustment Computations</td>
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LEVEL 2

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<td>GEOM 2060</td>
<td>Cartography</td>
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<td>Remote Sensing</td>
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<td>GEOM 2048</td>
<td>Introduction to Planning</td>
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<td></td>
<td>GEOM 2050</td>
<td>Mapping Project</td>
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</table>

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LEVEL 3  
SEMESTER 1  
Course Code | Course Title | Credits  
IENG 3016 | Applied Project Management | E3  
GEOM 3010 | Cadastral Systems | E3  
(Prerequisite: GEOM 2045)  
GEOM 3030 | Global Navigation Satellite Systems | E3  
(Prerequisite: GEOM 2035)  
GEOM 3040 | Integrated Surveying Design Project | C3  
Elective Course | E3  

LEVEL 3  
SEMESTER 2  
Course Code | Course Title | Credits  
GEOM 3015 | Professional Practice | E3  
GEOM 3025 | Engineering Surveying | E3  
GEOM 3050 | Special Investigative Project | C3  
Elective Course | E3  
Elective Course | E3  

ELECTIVES  
Candidates in Level 3 are expected to gain 9 credits of elective courses from the list below, or other courses subject to the approval of the Head of Department.

LEVEL 3  
SEMESTER 1  
Course Code | Course Title | Credits  
AGSL 3004 | Integrated Watershed Management | E3  
GEOM 3020 | Professional Internship | E3  
GEOM 3035 | Hydrography (GEOM 2040) | E3  
LMGV 3004 | Mathematics III | E3  
MATH 3530 | Mathematics III | E3  

LEVEL 3  
SEMESTER 2  
Course Code | Course Title | Credits  
ENGR 3001 | Natural Hazards & Disaster Management in the Caribbean | E3  
AGSL 3002 | Soil Survey and Land Evaluation | E4  
LMGV 3003 | Land Economy | E3  

NOTE: The letter “E” or “C” preceding the credit allocation indicates Examination by written papers or by Coursework, respectively.

4.4.2 BSc in Land Management (Valuation)

Students who pass at least 94 credits of courses as prescribed below will, subject to applicable regulations, be recognized as having completed their degree and will automatically be placed on the Faculty of Engineering’s list of students recommended for the award of B.Sc. in Land Management. Unless otherwise stated, all courses listed are mandatory.

PROGRAMME AIMS AND OBJECTIVES  
Aims  
The Land Management (Valuation) programme aims to provide excellent and expert training, and to graduate valuation surveying professionals who are proficient in the principles and concepts of valuation surveying within the framework of land management, in support of the Caribbean regions’ socioeconomic and environmental goals and objectives.

General Objectives  
The graduate with a BSc degree in Land Management (Valuation) will be able to regionally and locally:

- demonstrate and apply appropriate skills to satisfy a growing need for effective land valuation and land management in support of economic, environmental and social goals;
- demonstrate the ability to interact with other key professionals in the construction industry to support national, institutional, and individual physical development goals; and
- demonstrate an excellent grasp of the academic foundations needed to advance research and application in, land valuation, land management, land administration and land economy.

Learning Outcomes  
The following learning outcomes were conceptualised for the Land Management (Valuation) programme and the graduate should be able to:

Knowledge and Understanding
- Demonstrate basic and advanced knowledge and understanding of valuation methods, concepts and principles;
- Demonstrate understanding of how valuation methods are applied locally, regionally and internationally;
- Demonstrate sound knowledge and understanding of land management, estate management, and land administration;
- Demonstrate basic understanding of quantity surveying;
- Demonstrate understanding of the principles of Planning and its implication for valuation surveying;
• Demonstrate sound understanding of the principles and concepts of land economics and land markets;
• Demonstrate sound understanding of the principles and concepts of general economics, finance, and accounting;
• Demonstrate sound understanding of the principles and concepts of engineering management, economics, finance, and accounting;
• Demonstrate understanding appropriate technologies and the ability to apply these technologies to valuation surveying practice;
• Demonstrate basic understanding of land surveying and other cadastral systems;
• Demonstrate understanding of professional and legal issues affecting the ethical practice of valuation surveying locally and regionally.

Cognitive Skills
• Formulate defined problems into well defined projects and reports;
• Apply numerical and reasoning skills to the critical review of different approaches;
• Solve complex problems and make decisions in new situations;
• Undertake independent and group research, applying known theories, concepts and principles.
• Demonstrate competency in written and oral communication skills.

COURSE LISTING

LEVEL 1

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<tr>
<th>SEMESTER I</th>
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LEVEL 2

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<td>Management Information Systems I</td>
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<td>Business Law</td>
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LEVEL 2

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LEVEL 3

<table>
<thead>
<tr>
<th>YEAR-LONG PROJECT</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td></td>
<td>LMGV 3050</td>
<td>Land Management Research Project</td>
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LEVEL 3

<table>
<thead>
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<tbody>
<tr>
<td></td>
<td>GEOM 3010</td>
<td>Cadastral Systems</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>LMGV 3000</td>
<td>Applied Valuation</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>LMGV 3005</td>
<td>Introduction to Quantity Surveying</td>
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</tr>
<tr>
<td></td>
<td>MENG 3000</td>
<td>Engineering Management I</td>
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LEVEL 3

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>GEOM 3015</td>
<td>Professional Practice</td>
<td>E3</td>
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<tr>
<td></td>
<td>IENG 2006</td>
<td>Engineering Economics, Accounting,</td>
<td>E4</td>
</tr>
<tr>
<td></td>
<td>LMGV 3002</td>
<td>Estate and Land Management</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>LMGV 3060</td>
<td>Introduction to Land Administration</td>
<td>E3</td>
</tr>
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</table>
6.5 DEPARTMENT OF MECHANICAL & MANUFACTURING ENGINEERING

BSc (Hons) Programmes in the Department of Mechanical and Manufacturing Engineering have been accredited by the Institute of Mechanical Engineers (IMechE) of the UK to the BEng Level, en route to CEng.

6.5.1 BSc in Industrial Engineering

Students are required to complete at least 97 credits given that they have completed the specified number of electives for the award of the BSc in Industrial Engineering. Students who pass at least 97 credits of courses as prescribed below will, subject to applicable regulations, be recognized as having completed their degree and will automatically be placed on the Faculty of Engineering list of students recommended for the award of BSc in Industrial Engineering. Unless otherwise stated, all courses listed are mandatory.

COURSE LISTING

LEVEL 1

<table>
<thead>
<tr>
<th>SEMESTER 1</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LEVEL 1</td>
<td>MENG 1012</td>
<td>Science of Materials C</td>
<td>E2</td>
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<tr>
<td></td>
<td>ENGR 1001</td>
<td>Information Technology for Engineers</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>ENGR 1180</td>
<td>Engineering Mathematics I</td>
<td>E3</td>
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<td>MENG 1008</td>
<td>Engineering Drawing</td>
<td>C3</td>
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<tr>
<td></td>
<td>MENG 1010</td>
<td>Statics and Strength of Materials</td>
<td>E3</td>
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<tr>
<td></td>
<td>MENG 1006</td>
<td>Introduction to Engineering</td>
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LEVEL 2

<table>
<thead>
<tr>
<th>SEMESTER 1</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>LEVEL 2</td>
<td>IENG 2002</td>
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<td>E2</td>
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<tr>
<td></td>
<td>MENG 2009</td>
<td>Industrial Instrumentation</td>
<td>E2</td>
</tr>
<tr>
<td></td>
<td>MATH 2230</td>
<td>Engineering Mathematics II</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>MATH 2250</td>
<td>Industrial Statistics</td>
<td>E3</td>
</tr>
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<td>MENG 2004</td>
<td>Mechanics of Machines I</td>
<td>E3</td>
</tr>
<tr>
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<td>MENG 2011</td>
<td>Machine Design I</td>
<td>C3</td>
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<table>
<thead>
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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL 2</td>
<td>IENG 2000</td>
<td>Work Study &amp; Ergonomics</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>IENG 2004</td>
<td>Industrial Database Systems &amp; Design</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>IENG 2006</td>
<td>Engineering Economics, Accounting &amp; Financial Management</td>
<td>E4</td>
</tr>
<tr>
<td></td>
<td>IENG 2007</td>
<td>Operations Research II</td>
<td>E2</td>
</tr>
<tr>
<td></td>
<td>MENG 2008</td>
<td>Manufacturing Technology</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>MENG 2015</td>
<td>Control Systems Technology</td>
<td>E3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEVEL 3</th>
<th>YEAR-LONG</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL 3</td>
<td>IENG 3012</td>
<td></td>
<td>Industrial Engineering Project</td>
<td>C6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEMESTER 1</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL 3</td>
<td>IENG 3000</td>
<td>Industrial Management</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>IENG 3005</td>
<td>Quality Control &amp; Reliability Engineering</td>
<td>E2</td>
</tr>
</tbody>
</table>

Together with any THREE (3) of the following elective courses, subject to the approval of the Head of Department, to be chosen from:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IENG 3016</td>
<td>Applied Project Management</td>
<td>E3</td>
</tr>
<tr>
<td>IENG 3015</td>
<td>Enterprise Information Systems</td>
<td>E3</td>
</tr>
<tr>
<td>IENG 3017</td>
<td>Industrial Design of Products and Services</td>
<td>C3</td>
</tr>
<tr>
<td>MENG 3015</td>
<td>Materials Technology</td>
<td>E2</td>
</tr>
</tbody>
</table>
### 6.5.2 BSc in Mechanical Engineering

Students who pass at least 95 credits of courses as prescribed below will, subject to applicable regulations, be recognized as having completed their degree and will automatically be placed on the Faculty of Engineering’s list of students recommended for the award of BSc in Mechanical Engineering. Unless otherwise stated, all courses listed are mandatory.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 3000</td>
<td>The Technology of the Steelpan (Prerequisite: MATH 2230)</td>
<td>E3</td>
</tr>
<tr>
<td>IENG 3003</td>
<td>Behavioural Science in Management</td>
<td>E2</td>
</tr>
<tr>
<td>IENG 3006</td>
<td>Automation</td>
<td>E2</td>
</tr>
<tr>
<td>IENG 3013</td>
<td>Simulation of Industrial &amp; Business Processes</td>
<td>E3</td>
</tr>
<tr>
<td>MENG 3001</td>
<td>Engineering Management II</td>
<td>E2</td>
</tr>
</tbody>
</table>

Together with any TWO (2) courses of the following elective courses, subject to the approval of the Head of Department, to be chosen from:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 3000</td>
<td>The Technology of the Steelpan (Prerequisite: MATH 2230)</td>
<td>E3</td>
</tr>
<tr>
<td>IENG 3003</td>
<td>Behavioural Science in Management</td>
<td>E2</td>
</tr>
<tr>
<td>IENG 3006</td>
<td>Automation</td>
<td>E2</td>
</tr>
<tr>
<td>IENG 3013</td>
<td>Simulation of Industrial &amp; Business Processes</td>
<td>E3</td>
</tr>
<tr>
<td>MENG 3001</td>
<td>Engineering Management II</td>
<td>E2</td>
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**LEVEL 2**

**SEMESTER 2**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 2240</td>
<td>Statistics E2</td>
<td>E2</td>
</tr>
<tr>
<td>MENG 2003</td>
<td>Mechanical Vibrations E3</td>
<td>E3</td>
</tr>
<tr>
<td>MENG 2008</td>
<td>Manufacturing Technology E3</td>
<td>E3</td>
</tr>
<tr>
<td>MENG 2012</td>
<td>Heat Transfer E3</td>
<td>E3</td>
</tr>
<tr>
<td>MENG 2013</td>
<td>Machine Design II C3</td>
<td>C3</td>
</tr>
<tr>
<td>MENG 2015</td>
<td>Control Systems Technology E3</td>
<td>E3</td>
</tr>
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</table>

**LEVEL 3**

**SEMESTER: YEAR-LONG**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MENG 3019</td>
<td>Mechanical Engineering Project</td>
<td>C6</td>
</tr>
</tbody>
</table>

**LEVEL 3**

**SEMESTER 1**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MENG 3000</td>
<td>Engineering Management I E3</td>
<td></td>
</tr>
<tr>
<td>ECNG 3030</td>
<td>Electromechanical Energy Conversion E3</td>
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</table>

**SEMESTER 2**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MENG 3016</td>
<td>Maintenance &amp; Safety Engineering E3</td>
<td></td>
</tr>
</tbody>
</table>

Together with any FOUR (4) of the following optional courses subject to the approval of the Head of Department, to be chosen from:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 3000</td>
<td>The Technology of the Steelpan E3</td>
<td></td>
</tr>
<tr>
<td>IENG 3002</td>
<td>Plant Layout and Material Handling E2</td>
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</tr>
<tr>
<td>IENG 3006</td>
<td>Automation E2</td>
<td></td>
</tr>
<tr>
<td>MENG 3001</td>
<td>Engineering Management II E2</td>
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</tr>
<tr>
<td>MENG 3011</td>
<td>Advanced Mechanics of Solids E3</td>
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</tr>
<tr>
<td>MENG 3014</td>
<td>Computer-aided Design &amp; Manufacture E2</td>
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</tr>
<tr>
<td>MENG 3026</td>
<td>Renewable Energy E2</td>
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</tr>
<tr>
<td>MENG 3027</td>
<td>Traction &amp; Power Hydraulics E2</td>
<td></td>
</tr>
<tr>
<td>MENG 3028</td>
<td>Power Plant Engineering II E2</td>
<td></td>
</tr>
<tr>
<td>MENG 3029</td>
<td>Environmental Control Engineering II C2</td>
<td></td>
</tr>
</tbody>
</table>

OR other Mechanical Engineering or Industrial Engineering course(s) subject to the approval of the Head of Department.

Students doing Level 3 courses must first register for compulsory courses listed above. They must then select one (1) of the three (3) streams of specialty listed below by registering for those courses which are listed under that stream in the Students’ Guide of the Department of Mechanical Engineering.

- Thermal Engineering & Energy Systems
- Engineering Mechanics & Design
- Manufacturing (Design, Processes & Systems)

Students are asked to note that selection of a particular stream of specialisation does not exclude the possibility of registering for courses in other areas.

OR other Mechanical Engineering or Industrial Engineering Level 3 course(s) subject to the approval of the Head of Department.
### 6.5.3 BSc in Mechanical Engineering with a Minor in Biosystems

Students who pass at least 96 credits of courses as prescribed below will, subject to applicable regulations, be recognized as having completed their degree and will automatically be placed on the Faculty of Engineering’s list of students recommended for the award of BSc in Mechanical Engineering with Biosystems. Unless otherwise stated, all courses listed are mandatory.

#### LEVEL 1

<table>
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<tr>
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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>ENGR 1001</td>
<td>Information Technology for Engineers</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>ENGR 1180</td>
<td>Engineering Mathematics I</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>MENG 1006</td>
<td>Introduction to Engineering</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>MENG 1008</td>
<td>Engineering Drawing</td>
<td>C3</td>
</tr>
<tr>
<td></td>
<td>MENG 1010</td>
<td>Statics and Strength of Materials</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>MENG 1012</td>
<td>Science of Materials</td>
<td>E2</td>
</tr>
</tbody>
</table>

#### LEVEL 2

<table>
<thead>
<tr>
<th>SEMESTER 2</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>MATH 2240</td>
<td>Statistics</td>
<td>E2</td>
</tr>
<tr>
<td></td>
<td>MENG 2003</td>
<td>Mechanical Vibrations</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>MENG 2008</td>
<td>Manufacturing Technology</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>MENG 2012</td>
<td>Heat Transfer</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>MENG 2013</td>
<td>Machine Design II</td>
<td>C3</td>
</tr>
<tr>
<td></td>
<td>MENG 2015</td>
<td>Control Systems Technology</td>
<td>E3</td>
</tr>
</tbody>
</table>

#### LEVEL 3

<table>
<thead>
<tr>
<th>YEAR-LONG</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>MENG 3019</td>
<td>Mechanical Engineering Project</td>
<td>C6</td>
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</table>

#### LEVEL 2

<table>
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<th>Course Title</th>
<th>Credits</th>
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<tr>
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<td>Electrical Engineering Technology</td>
<td>E3</td>
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<td></td>
<td>MENG 1001</td>
<td>Engineering Thermodynamics I</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>MENG 1004</td>
<td>Engineering Dynamics</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>MENG 1005</td>
<td>Workshop Technology</td>
<td>C2</td>
</tr>
<tr>
<td></td>
<td>MENG 1009</td>
<td>Machine Drawing</td>
<td>C2</td>
</tr>
<tr>
<td></td>
<td>MENG 1011</td>
<td>Engineering Fluid Mechanics</td>
<td>E2</td>
</tr>
<tr>
<td></td>
<td>MENG 1013</td>
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<td>C1</td>
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#### LEVEL 3

<table>
<thead>
<tr>
<th>SEMESTER 2</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MENG 3016</td>
<td>Maintenance &amp; Safety Engineering</td>
<td>E3</td>
</tr>
</tbody>
</table>

Together with any FOUR (4) of the following optional courses subject to the approval of the Head of Department, to be chosen from:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MENG 3001</td>
<td>Engineering Management II</td>
<td>E2</td>
</tr>
<tr>
<td>MENG 3002</td>
<td>Post-harvest Technology</td>
<td>E2</td>
</tr>
<tr>
<td>MENG 3007</td>
<td>Drainage &amp; Irrigation Engineering</td>
<td>E2</td>
</tr>
<tr>
<td>MENG 3008</td>
<td>Field Machinery &amp; Equipment</td>
<td>E2</td>
</tr>
<tr>
<td>MENG 3027</td>
<td>Traction &amp; Power Hydraulics</td>
<td>E2</td>
</tr>
<tr>
<td>MENG 3030</td>
<td>Basic Engineering Infrastructure</td>
<td>E2</td>
</tr>
</tbody>
</table>

**NOTE:** The letter “E” or “C” preceding the credit allocation indicates evaluation by written examination paper(s) (and may also include a coursework component) or by coursework only, respectively. Registration for Level 3 courses will not be approved until credits for all required Level 1 courses have been attained.
SECTION 7: CO-CURRICULAR & LANGUAGE COURSES

Co-Curricular Programme

The Co-curricular programme is an integral part of the official credit system at undergraduate level at The University of the West Indies. It provides 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.

At the St. Augustine Campus, Co-curricular credits are currently awarded for involvement in the following courses:

<table>
<thead>
<tr>
<th>LEVEL 1</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>COCR 1001</td>
<td>Minding SPEC: Exploring Sports, Physical Education and Health &amp; Wellness</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>COCR 1012</td>
<td>Workplace Protocol for Students</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>COCR 1013</td>
<td>Financial Literacy and Training</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>COCR 1030</td>
<td>Technology Literacy</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>COCR 1031</td>
<td>Managing My High (MY High): Alcohol, Drugs and Addictive Behaviours</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>COCR 1032</td>
<td>Living and Learning: Professional development through community service</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>COCR 1033</td>
<td>Mind the Gap: Towards Psychological Health &amp; Wellness</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>COCR 1034</td>
<td>Public Speaking and Voice Training: Towards a More Confident You</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>COCR 1036</td>
<td>Ethics and Integrity: Building Moral Competencies</td>
<td>3</td>
</tr>
</tbody>
</table>

Microsoft Office 2013

| COCR1025 | Microsoft Word | 2 |
| COCR1026 | Microsoft Excel | 2 |
| COCR1027 | Microsoft PowerPoint | 2 |
| COCR1028 | Microsoft Outlook | 2 |
| COCR1029 | Microsoft Access | 2 |

All co-curricular course codes begin with COCR. Visit http://sta.uwi.edu/cocurricular/ for course descriptions, availability and registration instructions. New courses are to be introduced so keep checking the website for updates during the academic year. You can also speak with your Faculty COCR coordinators for help with course selection and for answers to questions related to the COCR Programme. You will find their names and contact information at the co-curricular website at: http://sta.uwi.edu/cocurricular/contactus.asp or check your faculty office.

Think you won’t have time for co-curricular courses? Visit http://www2.sta.uwi.edu/timetable for the official timetable to see how you can work a COCR course into your schedule!
Languages

Centre for Language Learning

(CLL)
E-mail: CLL.FHE@sta.uwi.edu
Telephone: 645-2278

The Centre for Language Learning is staffed by three full-time lecturers and a number of part-time foreign language tutors.

Courses are offered in:
ARABIC, MANDARIN CHINESE, FRENCH, GERMAN, HINDI, ITALIAN, JAPANESE, PORTUGUESE, SPANISH, YORUBA

No prerequisite is necessary to pursue Level 1 courses. If students have knowledge of the target language, they will be assigned a class based on a Common European Framework of Reference for Languages. To register, students must complete a Registration Form at the CLL, where they will be further guided. To register for credit, students must do so online and then inform the Centre in person.

FEES
For credit: $400.00 per credit PLUS
Registration - TT$50.00 = $850.00
Not for credit: Registration only - TT$50.00

Additional information is available in a separate student handbook by the Centre for Language Learning

CENTRE FOR LANGUAGE LEARNING:
List of courses with 2 credit weighting

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SECTION 8: COURSE DESCRIPTIONS (ONLINE ONLY)

DEPARTMENT OF CHEMICAL ENGINEERING

LEVEL: 1  
SEMESTER: 1  
COURSE CODE: CHNG 1000  
COURSE TITLE: INTRODUCTION TO CHEMICAL & PROCESS ENGINEERING  
NUMBER OF CREDITS: 3  
PREREQUISITES:  

LEVEL: 1  
SEMESTER: 1  
COURSE CODE: CHNG 1001  
COURSE TITLE: APPLIED CHEMISTRY I  
NUMBER OF CREDITS: 2  
PREREQUISITES:  

LEVEL: 1  
SEMESTER: 2  
COURSE CODE: CHNG 1002  
COURSE TITLE: APPLIED CHEMISTRY II  
NUMBER OF CREDITS: 3  
PREREQUISITES:  

LEVEL: 1  
SEMESTER: 1  
COURSE CODE: CHNG 1003  
COURSE TITLE: SCIENCE OF MATERIALS  
NUMBER OF CREDITS: 3  
PREREQUISITES:  

LEVEL: 1  
SEMESTER: 2  
COURSE CODE: CHNG 1004  
COURSE TITLE: CHEMICAL PROCESS PRINCIPLES I  
NUMBER OF CREDITS: 3  
PREREQUISITES:  

LEVEL: 1  
SEMESTER: 1  
COURSE CODE: CHNG 1005  
COURSE TITLE: SCIENCE OF MATERIALS A  
NUMBER OF CREDITS: 1  
PREREQUISITES:  

LEVEL: 1  
SEMESTER: 2  
COURSE CODE: CHNG 1006  
COURSE TITLE: TRANSPORT PHENOMENA I  
NUMBER OF CREDITS: 3  
PREREQUISITES:  
LEVEL: 1
SEMESTER: 2
COURSE CODE: CHNG 1007
COURSE TITLE: CHEMICAL ENGINEERING LABORATORY I
NUMBER OF CREDITS: 2
PREREQUISITES:
COURSE DESCRIPTION:
(Coursework)

LEVEL: 1
SEMESTER: 1
COURSE CODE: CHNG 1008
COURSE TITLE: COMMUNICATION/ETHICS
NUMBER OF CREDITS: 2
PREREQUISITES:
COURSE DESCRIPTION: Critical and creative thinking, elements of communication, written communication: technical reports, proposals, technical descriptions, technical instructions, oral communication: oral presentations, group dynamics and team building, visual aids, technology and communication: formatting reports, electronic documentation, visual aids, information retrieval and citations, ethics: Plagiarism, decision-making, rules of professional conduct.
(Coursework)

LEVEL: 2
SEMESTER: 1
COURSE CODE: CHNG 2000
COURSE TITLE: TRANSPORT PHENOMENA II
NUMBER OF CREDITS: 3
PREREQUISITES: CHNG 1006

LEVEL: 2
SEMESTER: 1
COURSE CODE: CHNG 2001
COURSE TITLE: PROCESS DESIGN & ECONOMICS I
NUMBER OF CREDITS: 3
PREREQUISITES:

LEVEL: 2
SEMESTER: 1
COURSE CODE: CHNG 2002
COURSE TITLE: CHEMICAL PROCESS PRINCIPLES II
NUMBER OF CREDITS: 3
PREREQUISITES:

LEVEL: 2
SEMESTER: 2
COURSE CODE: CHNG 2003
COURSE TITLE: COMPUTER-AIDED ENGINEERING
NUMBER OF CREDITS: 3
PREREQUISITES:
(Coursework)
LEVEL: 2
SEMESTER: 1
COURSE CODE: CHNG 2004
COURSE TITLE: SEPARATION PROCESSES I
NUMBER OF CREDITS: 3
PREREQUISITES:
COURSE DESCRIPTION: Identification, use and characteristics of separation processes. Phase contacting in stage and continuous processes. Analysis of selected processes for the separation of binary mixtures - distillation, absorption, liquid/liquid and solid/liquid extraction. Stage efficiency determination.

LEVEL: 2
SEMESTER: 2
COURSE CODE: CHNG 2006
COURSE TITLE: PROCESS DYNAMICS & CONTROL I
NUMBER OF CREDITS: 3
PREREQUISITES: ENGR 1180

LEVEL: 2
SEMESTER: 2
COURSE CODE: CHNG 2007
COURSE TITLE: PARTICLE TECHNOLOGY
NUMBER OF CREDITS: 3
PREREQUISITES:
COURSE DESCRIPTION: Properties of particles. Interactions between particles and fluids: individual particles, beds of particles. Fluidisation. Processing of particulate materials; storage and transport, size reduction and enlargement, mixing and blending, separation of particles from liquids and gases, separation by size and species.

LEVEL: 2
SEMESTER: 2
COURSE CODE: CHNG 2008
COURSE TITLE: CHEMICAL ENGINEERING PRACTICE
NUMBER OF CREDITS: 2
PREREQUISITES:
COURSE DESCRIPTION: Study of specific process industry. Industrial plant evaluation.
(Coursework)

LEVEL: 2
SEMESTER: 1
COURSE CODE: CHNG 2009
COURSE TITLE: CHEMICAL ENGINEERING LABORATORY II
NUMBER OF CREDITS: 2
PREREQUISITES:
COURSE DESCRIPTION: (Coursework)

LEVEL: 2
SEMESTER: 2
COURSE CODE: CHNG 2010
COURSE TITLE: CHEMICAL ENGINEERING LABORATORY III
NUMBER OF CREDITS: 2
PREREQUISITES:
COURSE DESCRIPTION: (Coursework)

LEVEL: 3
SEMESTER: 1
COURSE CODE: CHNG 3001
COURSE TITLE: TRANSPORT PHENOMENA III
NUMBER OF CREDITS: 3
PREREQUISITES: CHNG 1006

LEVEL: 3
SEMESTER: 2
COURSE CODE: CHNG 3002
COURSE TITLE: BIOCHEMICAL ENGINEERING
NUMBER OF CREDITS: 3
PREREQUISITES:
LEVEL: 3  
SEMESTER: 1  
COURSE CODE: CHNG 3004  
COURSE TITLE: CHEMICAL REACTION ENGINEERING I  
NUMBER OF CREDITS: 3  
PREREQUISITES:  

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: CHNG 3006  
COURSE TITLE: PROCESS DESIGN & ECONOMICS II  
NUMBER OF CREDITS: 3  
PREREQUISITE: CHNG 2001  

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: CHNG 3007  
COURSE TITLE: SEPARATION PROCESSES II  
NUMBER OF CREDITS: 3  
PREREQUISITE: CHNG 2004  

LEVEL: 3  
SEMESTER: YEAR-LONG  
COURSE CODE: CHNG 3012  
COURSE TITLE: CHEMICAL ENGINEERING DESIGN PROJECT  
NUMBER OF CREDITS: 6  
PREREQUISITES:  
COURSE DESCRIPTION: (Coursework)
LEVEL: 1  
SEMESTER:  2  
COURSE CODE: PGSC 1001  
COURSE TITLE: INTRODUCTION TO EARTH SCIENCES, PROCESS & CARIBBEAN GEOLOGY  
NUMBER OF CREDITS: 3  
PREREQUISITES:  

LEVEL: 1  
SEMESTER:  1  
COURSE CODE: PGSC 1002  
COURSE TITLE: PALEONTOLOGY & BIOSTRATIGRAPHY  
NUMBER OF CREDITS: 3  
PREREQUISITES:  
COURSE DESCRIPTION: Environmental variable and evolution theory. Biostratigraphy of ammonites and bivalves, ecology and history of reef communities, the Cretaceous/tertiary boundary. Introduction to paleoecology. Micropaleontology; details of the more important microfossil groups; plat spores, pollen grains, dinoflagellates, benthic and planktonic foraminifera, calcareous nannofossils, and ostracods; historical development; technology development; Applied Biostratigraphy; global biozonations, sequence stratigraphic applications and the role of biostratigraphy in hydrocarbon exploration.

LEVEL: 1  
SEMESTER:  1  
COURSE CODE: PGSC 1003  
COURSE TITLE: ENGINEERING GRAPHICS & GEODETICS FOR PETROLEUM GEOSCIENCE  
NUMBER OF CREDITS: 3  
PREREQUISITES:  
(Coursework)

LEVEL: 1  
SEMESTER:  2  
COURSE CODE: PGSC 1004  
COURSE TITLE: FIELD & MAPPING PRINCIPLES  
NUMBER OF CREDITS: 3  
PREREQUISITES:  
COURSE DESCRIPTION: Dip and strike, folds and fault nomenclature and symbols. Purpose and fundamentals of surface and subsurface mapping. Preparation and uses of surface maps, structure contour, isopach, paleogeographic and facies maps, cross sections block diagrams and fence diagrams. Outcrop descriptions and measured sections surface maps and aerial photographs. Field trips and lab exercises.  
(Coursework)

LEVEL: 1  
SEMESTER:  2  
COURSE CODE: PGSC 1005  
COURSE TITLE: GEOPHYSICS FUNDAMENTALS  
NUMBER OF CREDITS: 3  
PREREQUISITES:  
COURSE DESCRIPTION: Physics of the earth. Vibration and waves, reflection and refraction, earthquake and earth structure, magnetism of the earth, variation with time of earth's magnetic field, magnetic prospecting, earth's gravity, principles of gravity prospecting, Geoelectrics.

LEVEL: 1  
SEMESTER:  2  
COURSE CODE: PGSC 1006  
COURSE TITLE: APPLIED CHEMISTRY II  
NUMBER OF CREDITS: 2  
PREREQUISITES:  
LEVEL: 2  
SEMESTER: 1  
COURSE CODE: PGSC 2000  
COURSE TITLE: STRUCTURAL GEOLOGY  
NUMBER OF CREDITS: 3  
PREREQUISITES:  
COURSE DESCRIPTION: Description, classification, and origin of earth structures. Ways in which the continental crust can deform; link scales of structure from the field, outcrops, hand specimen, thin section by integrating analytical techniques with practical examples. Theoretical and meso to microscale analysis of structures developed through a linked series of lectures and practicals; practical 2D strain analysis; 3D strain concepts; incremental strain, kinematics and polyphase deformations; fold construction and classes; fault evolution and section balancing; fault rock microstructures; fault and fold mechanics, current concepts in plate tectonics, cross-section construction techniques, structural interpretation of seismic data, structural styles in different tectonic settings (thrust and fold belts, rifts, strike-slip, gravity tectonics, inversion), structural geology of reservoir units.

LEVEL: 2  
SEMESTER: 2  
COURSE CODE: PGSC 2002  
COURSE TITLE: PETROPHYSICS  
NUMBER OF CREDITS: 3  
PREREQUISITES:  
COURSE DESCRIPTION: Scope of petroleum petrophysics. Rock properties; porosity and permeability. Core laboratory measurements of rock properties and their application to reservoir studies. Well logging vocabulary; fundamental physics of logging tools; SP, resistivity, density, sonic, nuclear. Well log interpretation, water saturation, shale effects, hydrocarbon in place.

LEVEL: 2  
SEMESTER: 2  
COURSE CODE: PGSC 2004  
COURSE TITLE: GEOFChemISTRY OF PETROLEUM  
NUMBER OF CREDITS: 2  
PREREQUISITES:  
COURSE DESCRIPTION: Basic concepts and terminology of petroleum geochemistry; processes related to preservation of organic matter in sedimentary environments; composition and characterisation of kerogen, bitumen, and petroleum; conversion of kerogen to hydrocarbon; principles and interpretation of geochemical data; basic concepts of maturity modelling; integrating measured geochemical data with conceptual geologic models. Aspects of pure and applied inorganic and organic geochemistry; isotope geology.

LEVEL: 2  
SEMESTER: 2  
COURSE CODE: PGSC 2006  
COURSE TITLE: STRATIGRAPHY  
NUMBER OF CREDITS: 3  
PREREQUISITES:  
COURSE DESCRIPTION: Mechanisms of basin formation and structure of basins; tectonic controls on sedimentation; origins and sedimentary and/or geomorphic impact of sea-level changes; sequence stratigraphic principles and concepts. Processes and products of near-surface and burial diagenesis in clastic and carbonate sediments. Principles of sequence stratigraphy, seismic expression of depositional systems; stratigraphic architecture; sequence boundaries and flooding surfaces. Nature and significance of high-resolution depositional sequences and their stacking patterns based on core, outcrop and wireline log data. Sequence stratigraphic interpretation and mapping of seismic data. Applied biostratigraphy; palynomorphs, spores and pollen, dinoflagellates, benthic and planktonic foraminifera, calcareous nanofossils, global biozonations, sequence stratigraphic applications and the role of biostratigraphy in hydrocarbon exploration.
LEVEL: 2
SEMESTER:  2
COURSE CODE: PGSC 2008
COURSE TITLE: HSE FOR THE UPSTREAM PETROLEUM INDUSTRY
NUMBER OF CREDITS: 3
PREREQUISITES:
COURSE DESCRIPTION: EIA for seismic, drilling and production locations; drilling hazards that affect safety and environment, blow outs, disposal of drilling fluids and drill cuttings; effluent gases and waters in production operations. Use and disposal of CO2 and H2S. Disposal of BS&W. Management of chemicals; oil spills on land and marine; legal framework for HSE in Trinidad, emissions trading, Kyoto protocol. Safety policies and procedures. Hazops.

LEVEL: 2
SEMESTER:  1
COURSE CODE: PGSC 2010
COURSE TITLE: COMMUNICATION SKILLS
NUMBER OF CREDITS: 2
PREREQUISITES:
COURSE DESCRIPTION: Review of personal and transferable skills and use of this information to compile careers documents, including CVs; word processing and use of spreadsheets. Improve oral presentation skills with practice and training in giving a talk; oral presentation of a selected topic relevant to petroleum geoscience. Library searches; collecting information. Enhance certain transferable skills such as team working and writing skills; improve written communication and scientific skills by undertaking literature reviews of scientific controversies and new developments.
(Coursework)

LEVEL: 2
SEMESTER:  2
COURSE CODE: PGSC 2011
COURSE TITLE: MINERALOGY
NUMBER OF CREDITS: 2
PREREQUISITES:
COURSE DESCRIPTION: Introduction to minerals, mineral study techniques. Rock classification; physical properties of minerals and rocks; Mineralogy; crystallography, crystal chemistry, mineral chemistry, optical crystallography, physical properties, and geologic occurrence of rock-forming and economic minerals. Weathering. Review of structure of silicate materials, mineral chemistry and solid solutions of major rock-forming minerals, introduction to thermodynamics, real crystals, defects, grain boundaries and diffusion.

(Coursework)
LEVEL: 2
SEMESTER: 2
COURSE CODE: PGSC 2012
COURSE TITLE: IGNEOUS & METAMORPHIC PETROLOGY
NUMBER OF CREDITS: 2
PREREQUISITES:
COURSE DESCRIPTION: Introduction to the origin and evolution of igneous, sedimentary, and metamorphic rocks; classification and petrographic analysis of major rock types; relationships to tectonic settings. Identification in field, hand specimen and under the microscope.

LEVEL: 3
SEMESTER: 1
COURSE CODE: PGSC 3003
COURSE TITLE: FORMATION EVALUATION
NUMBER OF CREDITS: 2
PREREQUISITES:

LEVEL: 3
SEMESTER: 1
COURSE CODE: PGSC 3004
COURSE TITLE: ESSENTIAL PETROLEUM ENGINEERING
NUMBER OF CREDITS: 3
PREREQUISITES:
LEVEL: 3  
SEMESTER: 2  
COURSE CODE: PGSC 3005  
COURSE TITLE: COMPUTATIONAL PETROLEUM GEOLOGY & GEOPHYSICS  
NUMBER OF CREDITS: 3  
PREREQUISITES:  
COURSE DESCRIPTION: Introduction to a variety of computational tools for solving common quantitative problems in geology and geophysics; statistical description and modelling of data sets; statistical methods – palaeontology and reserves determination, overview and comparison of various techniques applied to modelling of geophysical processes, including mapping and graphics; use of UNIX and modern commercial software (Landmark and Geoquest). (Coursework)

LEVEL: 3  
SEMESTER: YEAR-LONG  
COURSE CODE: PGSC 3008  
COURSE TITLE: PROSPECT ASSESSMENT, EVALUATION & PETROLEUM ECONOMICS  
NUMBER OF CREDITS: 3  
PREREQUISITES:  
COURSE DESCRIPTION: Introduction to the geography and international politics of oil and gas, exploration/production licensing, taxation and development planning. Hydrocarbon history of Trinidad & Tobago. Differences in oil economy and gas economy. Prospect evaluation, risk analysis and volumetric reserves estimates. Reserve estimation, production profiles, parameterisation of risk factors, net present value, rate of return, profit to investment ratios, tax and royalties. Geostatistics; introduction to the software and techniques of geostatistics and their applications to quantifying risk and uncertainty in petroleum geoscience.

LEVEL: 3  
SEMESTER: YEAR-LONG  
COURSE CODE: PGSC 3013  
COURSE TITLE: ADVANCED PETROLEUM GEOLOGY  
NUMBER OF CREDITS: 4  
PREREQUISITES:  
COURSE DESCRIPTION: Development geology, including the geological controls on hydrocarbon distribution, recovery and fluid flow. Effects of Plate Tectonics on reservoir formation; structural geology, palaeontology, petrology and stratigraphy of plate margins. Sedimentological characteristics of clastic and carbonate depositional systems in relation to the distribution of reservoir, source and seal facies. Evaluation of the nature and distribution of reservoir quality patterns in clastic and carbonate deposits. Use of physical and geophysical data to define mechanisms responsible for basin formation.

Modern geological techniques of structure, basin evolution, sequence stratigraphy, facies analysis, geochemistry and mapping techniques to predict trap configuration, integrity and timing; reservoir quality; source and hydrocarbon volume generation, timing and migration; and seal integrity. Diagenesis; effects on reservoir properties, compaction, cementation and dissolution in siliciclastic and carbonates. Local case histories.

Subsurface diagnosis of sedimentary environments from cores, ditch cuttings and wireline logs. Reservoir geological modelling, reservoir mapping and reservoir simulation. Prediction of the distribution, geometry and orientation of reservoir bodies. Engineering analysis of reservoirs; measuring and monitoring reservoir pressures and reservoir formation evaluation; predicting reservoir history. Determining well locations for infill drilling; principles of primary, secondary, and tertiary reservoir performance and recovery.
LEVEL: 3
SEMESTER: YEAR-LONG
COURSE CODE: PGSC 3014
COURSE TITLE: ADVANCED PETROLEUM GEOPHYSICS
NUMBER OF CREDITS: 4
PREREQUISITES:
COURSE DESCRIPTION: Seismic sources and receiver arrays from positioning of cables and streamers to recording instruments. 2D, 3D, 3C and 4D field and marine seismic acquisition and processing of seismic data with emphasis on the applications of modern methodology using software packages to include velocity impedance, amplitude and phase effects to geologic parameters of lithology.

Seismic stratigraphy and structural interpretation of seismic data.

Acoustic wave propagation in boreholes and the acquisition and analysis of full waveform acoustic logs and crosswell and VSP data. Use of modern geophysical techniques including gravity, magnetics and 2D, 3D, and 4D seismic in petroleum exploration and development. Case histories.

DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING

LEVEL: 1
SEMESTER: 2
COURSE CODE: CVNG 1000
COURSE TITLE: MECHANICS OF SOLIDS
NUMBER OF CREDITS: E3
PREREQUISITES: NONE

LEVEL: 3
SEMESTER: YEAR-LONG
COURSE CODE: PGSC 3015
COURSE TITLE: GEOSCIENCE SEMINAR
NUMBER OF CREDITS: 2
PREREQUISITES:
COURSE DESCRIPTION: Each student is assigned topics on aspects of petroleum geoscience of a selected geographic region or discussion of a subject of current importance and presents it to tutors and prepares an abstract/executive summary on each topic.
(Coursework)

LEVEL: 3
SEMESTER: YEAR-LONG
COURSE CODE: PGSC 3016
COURSE TITLE: PETROLEUM GEOSCIENCE PROJECT
NUMBER OF CREDITS: 6
PREREQUISITES:
COURSE DESCRIPTION: The course is an extended practical exercise where well, outcrop, cores, seismic well logs and other geophysical data are interpreted in order to evaluate the exploration or development potential of an area, or an individual study to solve a particular geological/geophysical problem in a field or area. The course integrates all the petroleum geology, geophysics and engineering of earlier and current coursework and practically prepares the students for the job as a petroleum geoscientist.
(Coursework)
LEVEL: 1  
SEMESTER 1  
COURSE CODE: CVNG 1005  
COURSE TITLE: SCIENCE OF MATERIALS  
NUMBER OF CREDITS: E3  
PREREQUISITES: NONE  
COURSE DESCRIPTION: Fundamental structure, properties and behaviour of other major materials used in Civil Engineering; concrete, asphalt, timber, soil, rock, paints, polymers, adhesives, composite materials; Durability and deterioration; Hazardous materials, classification and handling.

LEVEL: 1  
SEMESTER: 2  
COURSE CODE: CVNG 1008  
COURSE TITLE: BUILDING SERVICES ENGINEERING  
NUMBER OF CREDITS: E3  
PREREQUISITES: NONE  
COURSE DESCRIPTION: The course aims to provide an introduction to, and a basic understanding of the scientific principles underlying the major environmental issues related to the built environment. The module also incorporates knowledge of design techniques and issues relating to the internal ‘indoor’ environment.

LEVEL: 1  
SEMESTER: 1  
COURSE CODE: CVNG 1009  
COURSE TITLE: ENGINEERING GRAPHICS  
NUMBER OF CREDITS: C3  
PREREQUISITES: NONE  
COURSE DESCRIPTION: Sketching as communication of design ideas: types of drawings; components of drawing: drawing standards; plans, sections, elevations, perspectives, projections, isometrics; introduction to typical production drawings of civil engineering components; fundamentals of using AUTOCAD for civil engineering design drawings.

LEVEL: 1  
SEMESTER: 2  
COURSE CODE: CVNG 1010  
COURSE TITLE: INFORMATION TECHNOLOGY FOR ENGINEERS  
NUMBER OF CREDITS: C2  
PREREQUISITES: NONE  
COURSE DESCRIPTION: Numerical analysis methods – f(x)=0; integration; solutions of differential equations, introduction to computer programming – flow charts; algorithms; variables, types, storage, scope; sequence, branch, loop; graphical output; introduction to using MATLAB for numerical analysis.

LEVEL: 1  
SEMESTER: 1  
COURSE CODE: CVNG 1011  
COURSE TITLE: GEOLOGY  
NUMBER OF CREDITS: E3  
PREREQUISITES: NONE  
COURSE DESCRIPTION: Fundamental geology for Civil Engineers: The Rock Cycle Structure and geological history of the Earth, surface geological processes, structural geology, geologic maps and their interpretation. Engineering geology - topics and concepts: Principles of rock mechanics, engineering properties of rocks, the stability of slopes and cuttings, industrial rocks and minerals, hydrogeology, geotechnical investigation, engineering seismology, dams and reservoirs. Field trips, tutorial sessions.

LEVEL: 1  
SEMESTER: 1  
COURSE CODE: CVNG 1012  
COURSE TITLE: CIVIL ENGINEERING LAW  
NUMBER OF CREDITS: E2  
PREREQUISITES: NONE  
COURSE DESCRIPTION: An introduction to the different legal systems. The impact of law on the delivery of engineering goods and services; Law and the construction sector. The making of law and the courts; litigation. The elements of contract law and relation with the construction sector. Types of contracts; Different procurement systems; Standard form building contracts (specifications codes of practice; Standards, statutes and local government regulations); The elements of the Law of Tort, disputes and conflict resolution methods; Professional associations, codes of ethics, professional liability; Construction claims; Different forms of business organizations; Business law and the company act; Health and safety legislation; Environmental law; Introduction to intellectual property; Confidentiality of information; Warranties and indemnity.; Introduction to international law.
LEVEL: 1
SEMESTER: 1
COURSE CODE: CVNG 1013
COURSE TITLE: INTRODUCTION TO ENGINEERING MECHANICS
NUMBER OF CREDITS: E2
PREREQUISITES: NONE


Constitutive Laws; 1D Linear Elasticity, Hooke’s Law, 2D Linear Elasticity, The Mohr-Coulomb Failure Criterion, Factors of Safety, Load Factors, Reliability.

Elastic Stress Distribution; Bousinessq Theory of stress distribution in semi-infinite Elastic Half Spaces from surface loading.


LEVEL: 2
SEMESTER: 1
COURSE CODE: CVNG 2001
COURSE TITLE: STRUCTURAL MECHANICS
NUMBER OF CREDITS: E3
PREREQUISITES: CVNG 1000 MECHANICS OF SOLIDS
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.

LEVEL: 2
SEMESTER: YEAR-LONG
COURSE CODE: CVNG 2003
COURSE TITLE: CIVIL ENGINEERING DESIGN II
NUMBER OF CREDITS: C3
PREREQUISITES: CVNG1002 CIVIL ENGINEERING DESIGN I
COURSE DESCRIPTION: Innovation and creativity in conceptual design; sustainability; health and safety; investigative procedures. The use of analysis, synthesis and optimisation 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)

LEVEL: 2
SEMESTER 1
COURSE CODE: CVNG 2005
COURSE TITLE: MECHANICS OF FLUIDS II
NUMBER OF CREDITS: E3
PREREQUISITES: CVNG 1001 MECHANICS OF FLUIDS I
COURSE DESCRIPTION: Rotational and irrotational flow; potential flow. Euler and Navier-Stokes equations. Bernoulli theorem, Reynolds stresses, lift and drag, curved flow, vortices. Open channel flow, energy and momentum principles, critical depths, hydraulic jump, backwater curves, surges, resistance to flow, waves, model analysis, sediment transport.

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LEVEL: 2
SEMESTER: YEAR-LONG
COURSE CODE: CVNG 2006
COURSE TITLE: STRUCTURAL DESIGN I
NUMBER OF CREDITS: C4
PREREQUISITES: CVNG 1000 MECHANICS OF SOLIDS
COURSE DESCRIPTION: Conceptual design of structures; structural design of steel, reinforced concrete, timber and masonry structures, use of construction materials in design.
(Coursework)

LEVEL: 2
SEMESTER: 1
COURSE CODE: CVNG 2008
COURSE TITLE: SOIL MECHANICS I
NUMBER OF CREDITS: E2
PREREQUISITE: CVNG 1013 INTRODUCTION TO ENGINEERING MECHANICS
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.

LEVEL: 2
SEMESTER: 2
COURSE CODE: CVNG 2010
COURSE TITLE: CIVIL ENGINEERING MANAGEMENT
NUMBER OF CREDITS: E3
PREREQUISITES: 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.

LEVEL: 2
SEMESTER: 2
COURSE CODE: CVNG 2011
COURSE TITLE: ENGINEERING HYDROLOGY
NUMBER OF CREDITS: E3
PREREQUISITE: CVNG 2005 MECHANICS OF FLUIDS II
COURSE DESCRIPTION: The water resource system, meteorology, hydrologic cycle, hydro-meteorologic measurements and instrumentation, hydrologic statistics, rainfall and run-off, unit hydrographs, low flows, impoundment reservoirs, reservoir safety, groundwater flow, flow to wells, seawater intrusion, and contaminant transport.

LEVEL: 3
SEMESTER: 2
COURSE CODE: CVNG 3001
COURSE TITLE: STRUCTURAL ENGINEERING
NUMBER OF CREDITS: E3
PREREQUISITES: CVNG 2001 STRUCTURAL MECHANICS; CVNG 2006 STRUCTURAL DESIGN I
COURSE DESCRIPTION: Introduction to matrix stiffness and flexibility methods, plate bending theory, introduction to finite element analysis, seismic loads II, plastic collapse analysis of framed structures, yield line analysis.

LEVEL: 3
SEMESTER: 1
COURSE CODE: CVNG 3002
COURSE TITLE: STRUCTURAL ANALYSIS
NUMBER OF CREDITS: E3
PREREQUISITES: CVNG 2001 STRUCTURAL MECHANICS; CVNG 2006 STRUCTURAL DESIGN I
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.
LEVEL: 3  
SEMESTER: 1  
COURSE CODE: CVNG 3003  
COURSE TITLE: STRUCTURAL DESIGN II  
NUMBER OF CREDITS: C2  
PREREQUISITE: CVNG 2001 STRUCTURAL MECHANICS; CVNG 2006 STRUCTURAL DESIGN I  
COURSE DESCRIPTION: Computer modelling, hurricane resistant design, earthquake resistant design of concrete and steel moment frames, pre-stressed concrete. (Coursework)

LEVEL: 3  
SEMESTER: 2  
COURSE CODE: CVNG 3004  
COURSE TITLE: STRUCTURAL DYNAMICS  
NUMBER OF CREDITS: E3  
PREREQUISITES: CVNG 3002 STRUCTURAL ANALYSIS  
COURSE DESCRIPTION: Fourier Series and Integral, SDOF solutions in the time and frequency domains under several types of dynamic loads, numerical integration of the governing equations, MDOF solutions by modal analysis, approximate solutions for natural frequency of MDOF and continuous systems.

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: CVNG 3005  
COURSE TITLE: FOUNDATION ENGINEERING  
NUMBER OF CREDITS: E3  
PREREQUISITES: CVNG 2008 SOIL MECHANICS; CVNG 2009 SOIL MECHANICS II  
COURSE DESCRIPTION: Site investigations, bearing capacity and settlement, design of spread footings and rafts, pile foundations, sheet pile walls.

LEVEL: 3  
SEMESTER: 2  
COURSE CODE: CVNG 3006  
COURSE TITLE: ENVIRONMENTAL GEOTECHNICS  
NUMBER OF CREDITS: E3  
PREREQUISITES: CVNG 3005 FOUNDATION ENGINEERING  
COURSE DESCRIPTION: Geotechnical aspects of environmental control - Expansive soils, identification and classification, design of buildings and pavements. Landslides, geotech investigations, stability analysis, stabilisation techniques. Earthquakes, liquefaction of sands, effect on retaining structures and earthdams. Land-use planning.

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: CVNG 3007  
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 faecal wastes, control of leachates, recycling, environmental impact assessment, soil conservation systems and mitigation of forest destruction.

LEVEL: 3  
SEMESTER: 2  
COURSE CODE: CVNG 3008  
COURSE TITLE: ENVIRONMENTAL ENGINEERING II  
NUMBER OF CREDITS: E3  
PREREQUISITES: CVNG 2005 MECHANICS OF FLUIDS II; CVNG 3007 ENVIRONMENTAL ENGINEERING I  
COURSE DESCRIPTION: Water supply systems, wastewater collection and disposal systems, hydraulics of treatment plants, pumping stations, urban storm water drainage systems, industrial wastewater and pollutants, treatment systems for industrial and agricultural waste water, solid waste collection systems disaster mitigation, environmental engineering in the built environment.

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: CVNG 3009  
COURSE TITLE: HIGHWAY ENGINEERING  
NUMBER OF CREDITS: E3  
PREREQUISITES: MATH 2230, MATH 2240, CVNG 2003, CVNG 2009)  
COURSE DESCRIPTION: The topics covered in the unit will include: Road classification and hierarchy; highway traffic characteristics, forecasting and land use, capacity, intersection analysis; Geometric design of highway segments for flat and mountainous terrains; health and safety risk assessment; sustainable highways, economic analysis of highway projects; Pavement materials, flexible and rigid highway pavement design; quality control; maintenance intervention and management.
LEVEL: 3
SEMESTER: 2
COURSE CODE: CVNG 3010
COURSE TITLE: TRANSPORTATION ENGINEERING
NUMBER OF CREDITS: E3
PREREQUISITE: CVNG 3009 HIGHWAY ENGINEERING
COURSE DESCRIPTION: Transport policy, economics and mathematics; design operation and management of air, land and sea transportation systems; Transportation planning, Intelligent Transportation Systems (ITS), architecture design and management; Road safety management systems; managing the environmental impact of transportation.

LEVEL: 3
SEMESTER: 2
COURSE CODE: CVNG 3011
COURSE TITLE: PAVEMENT DESIGN & MANAGEMENT
NUMBER OF CREDITS: E3
PREREQUISITE: CVNG 3009 HIGHWAY ENGINEERING
COURSE DESCRIPTION: Roads and highways pavement design, airport runway design, seaports and special pavements, pavement management systems, road rehabilitation and maintenance.

LEVEL: 3
SEMESTER: 2
COURSE CODE: CVNG 3013
COURSE TITLE: COASTAL ENGINEERING
NUMBER OF CREDITS: E3
PREREQUISITE: CVNG 2005 MECHANICS OF FLUIDS II
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.

LEVEL: 3
SEMESTER: YEAR-LONG
COURSE CODE: CVNG 3014
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 judgement 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.

LEVEL: 3
SEMESTER: YEAR-LONG
COURSE CODE: CVNG 3015
COURSE TITLE: SPECIAL INVESTIGATIVE PROJECT
NUMBER OF CREDITS: C6
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 is carried out year-long, 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.
LEVEL: 3  
SEMESTER: 1  
COURSE CODE: CVNG 3016  
COURSE TITLE: DESIGN OF ENVIRONMENTAL SYSTEMS  
NUMBER OF CREDITS: C2  
PREREQUISITES: CVNG 2001 STRUCTURAL MECHANICS; CVNG 2006 STRUCTURAL DESIGN 1  
COURSE DESCRIPTION: Environmental and hydraulic design of water treatment systems; design of domestic wastewater collection and treatment systems; functional design of advanced wastewater treatment systems; design of industrial water and wastewater treatment systems; structural design of water and wastewater treatment systems and vessels; structural design of conduits, and supports; earthquake, hurricane and hazard-resistant design procedures and typical details for hydraulic structures, conduits and supports. (Coursework)

LEVEL: 3  
SEMESTER: 2  
COURSE CODE: CVNG 3017  
COURSE TITLE: OFFSHORE GEOTECHNICAL ENGINEERING  
NUMBER OF CREDITS: E3  
PREREQUISITES: CVNG 2008 SOIL MECHANICS I; CVNG 2009 SOIL MECHANICS II  
COURSE DESCRIPTION: Introduction to offshore structures, codes of practice, companies, geohazards, risk analysis, health and safety, quality assurance and control, installation; offshore project management, deep water, offshore site investigations, geophysical methods; offshore soils, in-situ testing, geological aspects; development of design stratigraphies, assignment of engineering parameters, shallow gas, soil behaviour under cyclic loading; pile capacity, pile axial and lateral response, tension piles, pile driving, jackups, gravity platforms; seabed bearing structures, seafloor stability, scour, liquefaction, suction caissons, pipelines, cables, trenching, anchor piles, seismic analysis, model testing; awareness of FE, research, de-commissioning.

LEVEL: 3  
SEMESTER: YEAR-LONG  
COURSE CODE: CVNG 3020  
COURSE TITLE: DESIGN PROJECT ENVIRONMENTAL  
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 Environmental 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 judgement 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 & Environmental Engineering works and projects in the provision of buildings, lifeline facilities and Environmental 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.

LEVEL: 3  
SEMESTER: YEAR-LONG  
COURSE CODE: CVNG 3021  
COURSE TITLE: SPECIAL INVESTIGATIVE PROJECT ENVIRONMENTAL  
NUMBER OF CREDITS: C6  
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 is carried out year-long, 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.
DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING

LEVEL: 1  
SEMESTER: 1  
COURSE CODE: ECNG 1000  
COURSE TITLE: ELECTRICAL CIRCUITS  
NUMBER OF CREDITS: 3  
PREREQUISITES: NONE  
COURSE DESCRIPTION: This course introduces students to the fundamental building blocks of electrical circuit theory. These include the basic electrical circuit analysis tools required to analyse the behaviour and functional as well as performance characteristics of electrical subsystems containing resistors, inductors and capacitors. These tools are applied to obtain both the full dynamic performance of circuits and the steady state performance of sinusoidal systems. Topics include: concepts of basic electrical quantities such as electric charge, current, voltage, power and energy; network theorems such as Thevenin’s theorem, Norton’s theorem, superposition and maximum power transfer; Laplace transform and the Laplace model; steady state and dynamic responses of simple networks; ac steady state analysis and the complex power model.

LEVEL: 1  
SEMESTER: 2  
COURSE CODE: ECNG 1006  
COURSE TITLE: LABORATORY & PROJECT DESIGN I  
NUMBER OF CREDITS: 3  
PREREQUISITES: NONE  
COURSE DESCRIPTION: This course is the first in a series of three Laboratory and Project Design courses. It consists of laboratory exercises to develop models for, and demonstrate the behaviour of energy storage devices operating under various conditions. The properties of energy storage devices would be utilised in a design project which is of use to industry. Students would be exposed to the recommended approach and procedure required to execute a design from a design brief, utilising project planning, time management and safe operating procedures. This course also includes a group project which aims to build team skills.

LEVEL: 1  
SEMESTER: 2  
COURSE CODE: ECNG 1007  
COURSE TITLE: ELECTRICAL ENGINEERING TECHNOLOGY  
NUMBER OF CREDITS: 3  
PREREQUISITES: NONE  
COURSE DESCRIPTION: This course targets students in engineering disciplines other than electrical engineering. It seeks to make the student competent in the fundamental theory of electric circuit analysis and to introduce them to the design and operation of electrical equipment such as transformers and motors. At the end of the course, the student should be able to perform analysis using fundamental electrical theorems, model simple electrical systems and calculate kW and kVA requirements of loads, understand the fundamentals of generation and distribution of electrical power, analyse and design simple signal phase and three-phase distribution systems and perform basic performance calculations on the transformer and the induction motor.

LEVEL: 1  
SEMESTER: 2  
COURSE CODE: ECNG 1009  
COURSE TITLE: INTRODUCTION TO PROGRAMMING  
NUMBER OF CREDITS: 3  
PREREQUISITES: NONE  
COURSE DESCRIPTION: This course introduces students to the field of computing for the purpose of problem solving. Basic concepts of computer architecture and operating systems are discussed leading to compliers and interpreters. Students will be able to describe and analyse data structures, such as those created using arrays, lists, and pointers. This course also involves knowledge of the concepts of loops and iterative techniques, and recursion, in algorithms which include character codes and mathematical operations such as base conversions, masking and base arithmetic. The uses of algorithms are introduced for basic problem solving such as brute force/exhaustive methods, greedy methods and divide and conquer. Students are introduced to programming in C/C++ and the visual studio environment and would also be introduced to the concept of database systems.
LEVEL: 1  
SEMESTER: 1  
COURSE CODE: ECNG 1010  
COURSE TITLE: COMMUNICATION SKILLS FOR ENGINEERS  
NUMBER OF CREDITS: 2  
PREREQUISITES: NONE  
COURSE DESCRIPTION: Course participants will explore a range of communication principles and conventions and their application to a variety of communicative situations as they may arise in the praxis of engineering. These situations include written and oral communication for industry and research and development. ECNG 1010 responds to the needs of industry by providing learning opportunities for students to hone their writing and oral communication skills, specific to the demands of the engineering profession. The course aims to develop two broad sets of communication competencies - technical writing and oral presentation skills.

LEVEL: 1  
SEMESTER: 2  
COURSE CODE: ECNG 1013  
COURSE TITLE: INTRODUCTION TO THERMODYNAMICS  
NUMBER OF CREDITS: 2  
PREREQUISITES: NONE  
COURSE DESCRIPTION: Thermodynamics is the study of energy and its transformation from one form to another. This is a common phenomenon in many engineering systems as well as in everyday life, rendering thermodynamics as the underlying science of most engineering fields. Students will learn the different forms of energy and their qualitative nature as well as the laws governing energy transformation. Students will apply this knowledge to solve problems such as relate to internal combustion engines, steam turbine power plants and refrigeration. They will also explore performance matters.

LEVEL: 1  
SEMESTER: 2  
COURSE CODE: ECNG 1014  
COURSE TITLE: DIGITAL ELECTRONICS  
NUMBER OF CREDITS: 3  
PREREQUISITES: NONE  
COURSE DESCRIPTION: The present century is the century of information technology. So what is really the backbone of this technology? The development of this technology was made possible because of tremendous achievements in semiconductor devices. Information (audio, image, and data) are processed by complex digital systems and presented in a suitable way to users. In order to understand how these complex digital systems are designed, we must go back to digital logic, which is the branch of electronics dealing with the transformation and processing of discrete values (0 or 1). It started fifty years ago with Boolean’s Algebra, which fostered later the development of combinational and sequential logic. From these concepts semiconductor manufacturers have designed different integrated circuits characterised by the type of technology (Bipolar, MOS, ECL, …) and the level of integration that ranges from SSI (small-scale integration, 10 transistor/cm²) to ULSI (ultra large-scale integration, 1 billion transistors/cm²). This course covers the fundamental concepts of digital logic and their applications.
LEVEL: 1
SEMESTER: 2
COURSE CODE: ECNG 1015
COURSE TITLE: INTRODUCTION TO ELECTRICAL ENERGY SYSTEMS
NUMBER OF CREDITS: 3
PREREQUISITES: NONE
COURSE DESCRIPTION: This course presents an introduction to Electrical Energy Systems. It is divided into two sections, introduction to the electromechanical energy conversion process and the analysis of three-phase electrical systems. In the first section, electromagnetic systems are analyzed utilizing the law of conservation of energy to develop mathematical models to represent energy conversions from electrical to magnetic and magnetic to mechanical. These mathematical models are used to develop equivalent circuits to represent the electrical, magnetic and mechanical systems. In the second section on three-phase electromagnetic systems, the analysis of these systems are performed by utilizing their electric and magnetic equivalent circuits to produce the vector voltage and current phasors associated with the electromagnetic system. These vector voltage and current phasors are used to analyse the system and deduce and improve its performance.

LEVEL: 1
SEMESTER: 2
COURSE CODE: ECNG 1016
COURSE TITLE: MATHEMATICS FOR ELECTRICAL ENGINEERS I
NUMBER OF CREDITS: 1
PREREQUISITES: NONE
COURSE DESCRIPTION: ECNG 1016 introduces students to the theory and application of the Laplace Transform. The Laplace transform is an essential mathematical tool of an electrical engineer used for analysing certain systems of differential equations which, because of the nature of their forcing functions, cannot always be resolved by methods previously considered in ENGR 1180. Laplace transforms are used extensively in ECNG 2011 Signals and Systems to model linear systems. Students are therefore required to pass ECNG 1016 before they can attempt ECNG 2011.

LEVEL: 2
SEMESTER: 2
COURSE CODE: ECNG 2000
COURSE TITLE: ELECTROMECANICAL ENERGY CONVERSION SYSTEMS
NUMBER OF CREDITS: 3
PREREQUISITES: ECNG 1000 ELECTRICAL CIRCUITS AND ECNG 1015 INTRODUCTION TO ELECTRICAL ENERGY SYSTEMS
COURSE DESCRIPTION: This course provides an introduction to the more common types of electrical machines for students, who, as engineers, will treat with electrical machines as a critical element of a system or subsystems. Electronic and mechanical drive systems, control systems and power systems depend on the functioning characteristics of electrical machines. This course will provide the depth necessary for students requiring a comprehensive understanding of the steady-state behaviour of the basic electrical machines. The principles of operation, steady state analysis and application of four machines, in particular, will be discussed. These are transformers, three-phase induction motors, synchronous machines and DC machines. Great emphasis will be placed on problem solving and students are strongly advised to budget adequate time for this activity, throughout the semester.

NOTE: Offered as a Level 3 course in Semester I to students of Department of Mechanical and Manufacturing Engineering

LEVEL: 2
SEMESTER: 2
COURSE CODE: ECNG 2001
COURSE TITLE: COMMUNICATION SYSTEMS I
NUMBER OF CREDITS: 3
PREREQUISITES: ECNG 2011 SIGNALS AND SYSTEMS & ECNG 2013 MATHEMATICS FOR ELECTRICAL ENGINEERS II
COURSE DESCRIPTION: This is the introductory course in Communications in the Department. It establishes the technical foundation for the topic by introducing the fundamentals of communications and exploring the common principles that underpin communications systems. The course provides a detailed treatment of amplitude modulation (AM) techniques (such as conventional AM, double-sideband suppressed carrier AM, and single-sideband AM) as well as that of angle modulation techniques (i.e., frequency modulation and phase modulation) in the presence of additive white Gaussian noise. Once these communication principles are well established, the course illustrates their application to a representative set of analog communication systems.
LEVEL: 2
SEMESTER: 1
COURSE CODE: ECNG 2004
COURSE TITLE: LABORATORY & PROJECT DESIGN II
NUMBER OF CREDITS: 3
PREREQUISITES: NONE
COURSE DESCRIPTION: This course is the second in a series of Laboratory and Project Design courses. It consists of laboratory exercises to demonstrate the principles presented in ECNG 1014 Digital Electronics and ECNG 2012 Electronics and Instrumentation. The knowledge gained in these two courses, together with the principles demonstrated in the laboratory exercises would then be utilised in a project to design and fabricate an electronic system to meet quality, safety, and environmental standards, and take industry performance parameter requirements and legal issues into consideration.

LEVEL: 2
SEMESTER: 2
COURSE CODE: ECNG 2005
COURSE TITLE: LABORATORY & PROJECT DESIGN III
NUMBER OF CREDITS: 3
PREREQUISITES: NONE
COURSE DESCRIPTION: This course is the last in a series of Laboratory and Project Design courses. It consists of laboratory exercises to demonstrate the principles presented in Communication Systems (ECNG 2001, Introduction to Microprocessors (ECNG 2006) and Control Systems (ECNG 2009). The knowledge gained in these courses, together with the principles demonstrated in the laboratory exercises would then be utilised in a project to design and fabricate a system to solve an industrial problem. The project must meet quality, safety, and environmental standards, and take industry performance parameter requirements and legal issues into consideration, while utilising project planning and time management techniques. This course also includes a group project, which builds team skills. This project aims to meet a socioeconomic need of a particular community.

LEVEL: 2
SEMESTER: 2
COURSE CODE: ECNG 2006
COURSE TITLE: INTRODUCTION TO MICROPROCESSORS
NUMBER OF CREDITS: 3
PREREQUISITES: ECNG 1009 INTRODUCTION TO PROGRAMMING & ECNG 1014 DIGITAL ELECTRONICS
COURSE DESCRIPTION: Microprocessors have been one of the most widely used tools for incorporating flexibility and intelligence into automated devices. Their general-purpose nature, speed and size have made them one of the most common components in Electrical Engineering. It is therefore necessary to develop a good understanding of their operation and how they can be used as building blocks for automated systems and control applications. This course explores the inner workings of a microprocessor from the programmer’s perspective, as well as treating with external hardware issues such as interfacing, and selection criteria for microprocessors. Exercises and examples are based on the PIC 16F877 microcontroller. The syllabus follows: Microprocessor architecture (PIC16F877); Microprocessor development and support systems (MPLAB); Binary, integer and floating point arithmetic operations; (PIC16Cxxx) assembly language programming; Interfacing (PIC16F877); I/O ports, Timers, Interrupts, A/D conversion, PWM; System Issues; Serial/Parallel Communication.

LEVEL: 2
SEMESTER: 1
COURSE CODE: ECNG 2007
COURSE TITLE: COMPUTER SYSTEMS & SOFTWARE DESIGN
NUMBER OF CREDITS: 3
PREREQUISITE: ECNG 1009 INTRODUCTION TO PROGRAMMING
COURSE DESCRIPTION: This course emphasises both computer systems as well as software design. For the computer systems component, there will be theoretical sessions within the classroom environment. The Software design component of the course would be delivered by short theory based sessions that would be supplemented by practical laboratory sessions and group project. The software design component aims to instil rudimentary skills that are necessary by any software developer. These practical sessions will show how to use the IDE and debugger and give the student practical skills in writing a programme. These skills would be developed around the C/C++ programming languages as they give the student an understanding of algorithmic processes which are a fundamental building block for any programming language.
LEVEL: 2
SEMESTER: 2
COURSE CODE: ECNG 2009
COURSE TITLE: CONTROL SYSTEMS
NUMBER OF CREDITS: 3
PREREQUISITE: ECNG 2011 SIGNALS & SYSTEMS
COURSE DESCRIPTION: The area of automatic control involves the use of procedures and strategies for forcing dynamic systems to behave in a specified fashion. We are all directly engaged in the control of dynamic systems on a continual basis – consciously or otherwise. For example, driving requires control of both direction and speed of an automobile; effective walking and running requires control of direction, speed and balance; our body systems control body parameters such as heart-rate, blood-pressure, temperature etc. with little conscious intervention. This course uses what is termed the “classical or frequency domain” approach to control systems design. The techniques borrow heavily from the telecommunications industry of the early 1920’s when engineers like Bode and others developed frequency response methods for solving problems encountered in the design of equalisers and amplifiers for long distance communication over the transatlantic cable. This course emphasises industrial application of theoretical concepts. Students require a good grasp of signals and systems theory as well as mathematics to successfully navigate this course.

LEVEL: 2
SEMESTER: 1
COURSE CODE: ECNG 2011
COURSE TITLE: SIGNALS & SYSTEMS
NUMBER OF CREDITS: 3
PREREQUISITE: ECNG 1016 MATHEMATICS FOR ELECTRICAL ENGINEERS I
COURSE DESCRIPTION: ECNG 2011 is concerned with predicting and analysing the response of linear time-invariant (LTI) systems when certain signals, such as the unit impulse, the unit step and the sinusoid, are furnished as inputs. Transfer function models of LTI systems will be developed and analysed using a number of powerful techniques based on the Laplace Transform and the Fourier Transform. These techniques will also be used extensively in other engineering courses, for example telecommunications, control systems and signal processing. To enhance the learning experience, MATLAB will be used to explore some of the concepts discussed and to verify some of the predictions.

LEVEL: 2
SEMESTER: 1
COURSE CODE: ECNG 2012
COURSE TITLE: ELECTRONICS & INSTRUMENTATION
NUMBER OF CREDITS: 3
PREREQUISITES: NONE
COURSE DESCRIPTION: The course treats with analog electronics at an intermediate level. An increased emphasis is placed in design using discrete and integrated circuits and the concept of feedback is introduced. The main topics considered are feedback amplifiers, power supplies, active filters, oscillators, waveform generators and non-linear systems and A/D-D/A converters and instrumentation systems.

LEVEL: 2
SEMESTER: 1
COURSE CODE: ECNG 2013
COURSE TITLE: MATHEMATICS FOR ELECTRICAL ENGINEERING II
NUMBER OF CREDITS: 3
PREREQUISITES: ENGR 1180 ENGINEERING MATHEMATICS I
COURSE DESCRIPTION: ECNG 2013 is the third part of a required three-part sequence of mathematics courses offered to students of the Department of Electrical and Computer Engineering. The other courses, offered in the first year are ENGR 1180 – Engineering Mathematics I and ECNG 1016 – Mathematics for Electrical Engineering I. This course, ECNG 2013, introduces students to the techniques of multivariable/vector calculus and partial differential equations that are required by engineers to model physical situations such as electrostatic field theory and acoustics. The techniques of the Fourier series are also considered as they are necessary tools of an engineer for analyzing certain systems of differential equations which, because of the nature of their forcing functions, cannot always be resolved by methods previously considered in ENGR 1180. Methods from the theory of probability and statistics are introduced as these are required to model phenomena such as noise and other stochastic processes. Students will also be introduced to the fundamentals of discrete mathematics.
LEVEL: 3  
SEMESTER: 1  
COURSE CODE: ECNG 3001  
COURSE TITLE: COMMUNICATION SYSTEMS II  
NUMBER OF CREDITS: 3  
PREREQUISITE: ECNG 2001 COMMUNICATION SYSTEMS I  
COURSE DESCRIPTION: ECNG 3001 explores the key principles which underpin the coding and communication of digital information; and examines contemporary techniques and technologies used for the transmission of such information over various media. Standard performance metrics are derived for digital communications in the presence of noise. The course covers basic theoretical tools required for the modeling, analysis and design of digital communication systems and treats concisely with digital communications link design. It is assessed through a mix of formative and summative exercises. The formative exercises comprise an oral presentation and design project linked to four (4) Matlab simulations of essential components in the communications signal processing chain. A final examination provides summative assessment. Analysis features strongly in all assessments.

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: ECNG 3002  
COURSE TITLE: DATA COMMUNICATION SYSTEMS  
NUMBER OF CREDITS: 3  
PREREQUISITE: NONE  
COURSE DESCRIPTION: ECNG 3002 explores the organization and operation of contemporary data networks by presenting fundamental principles and applying these to the architecture of the Internet. It takes a top down approach, starting with the structure and communication requirements of familiar network applications. Network architecture, including the OSI and Internet protocol suite, is introduced. Once this is established the top down approach continues by exploring the functions, implementation and performance of the Application, Transport, Network, Data Link and Physical Layers of the Internet protocol suite. Given the accessibility of the subject matter, the 30% coursework component includes hands on exercises where real network data is captured and analyzed. A final exam worth 70% rounds off the assessment.

LEVEL: 3  
SEMESTER: 2  
COURSE CODE: ECNG 3003  
COURSE TITLE: TELECOMMUNICATION NETWORKS  
NUMBER OF CREDITS: 3  
PREREQUISITES: ECNG 3001 and ECNG 3002 COURSE DESCRIPTION: ECNG 3003 is the capstone undergraduate course in Communication Systems. It utilizes a generic model of network architecture as the conceptual framework within which telecommunication network design is explored; and a contemporary technology is used as a demonstrative focal point. Building on the fundamentals of communications, ECNG 3003 treats with key physical channels and enabling technologies. Account is taken of the theoretical as well as practical performance limits in the time and frequency domains; and associated compensation mechanisms are presented. Broadband standards are compared according to both qualitative features and quantitative measures. The course comprises a 40% network simulation challenge comprising basic business planning and market modeling; along with network design and simulation.

LEVEL: 3  
SEMESTER: 2  
COURSE CODE: ECNG 3004  
COURSE TITLE: CONTROL & INSTRUMENTATION II  
NUMBER OF CREDITS: 3  
PREREQUISITE: ECNG 3032 CONTROL & INSTRUMENTATION I  
COURSE DESCRIPTION: This course seeks to equip the student with the knowledge and basic skills required for an engineer in the area of control and instrumentation. Particular emphasis is paid to developing skills necessary to design and implement computer systems for automation and control and, in particular, programmable logic controllers or PLCs. The course is significant because of the importance of automation, control and instrumentation (collectively called instrumentation in the region) to the industrial processes which are the flagships of the Caribbean economies and to the burgeoning group of small manufacturing concerns. The course introduces the student to common process and manufacturing subsystems and control components; it also looks at new trends which include, for example, Distributed Control Systems in manufacturing and process plants.
LEVEL: 3  
SEMESTER: 1  
COURSE CODE: ECNG 3006  
COURSE TITLE: MICROPROCESSOR SYSTEMS - DESIGN & APPLICATIONS  
NUMBER OF CREDITS: 3  
PREREQUISITE: ECNG 2006 INTRODUCTION TO MICROPROCESSORS  
COURSE DESCRIPTION: This elective course builds upon the knowledge acquired in ECNG 2006. Currently, it specifically treats microprocessor systems design and application with respect to real-time operating systems and its principles. It discusses microC/OS RTOS and its functions in detail. The laboratory exercises are based on the examples for microC/OS. Relevant discussion is carried out for interfacing devices like keypads, LCDs, seven-segment displays and ADC/DACs.

The course includes a project requiring students to build and test a microprocessor application based on RTOS. Students will be required to describe scheduling algorithms as well as analyse some issues and the performance of schedules. They will also be required to define and classify the different classifications of real-time systems according to their timing attributes.

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: ECNG 3008  
COURSE TITLE: POWER ELECTRONICS CIRCUITS  
NUMBER OF CREDITS: 3  
PREREQUISITE: ECNG 2000 ELECTROMECHANICAL ENERGY CONVERSION SYSTEMS  
COURSE DESCRIPTION: This course applies solid-state electronics, for the control and conversion of electric power, utilising techniques for switching on and off of power semiconductor devices. It is divided into four sections; ac to dc converters, ac to ac controllers, dc to dc converters and dc to ac converters. Students will perform circuit analysis on the standard topologies for ac to dc converters, ac to ac controllers, dc to dc converters and dc to ac converters, and utilise the results from these analyses to produce the corresponding output voltage and current waveforms based on the supplied input. Analyses would then be performed on these waveforms to determine the performance parameters of these systems.

LEVEL: 3  
SEMESTER: 2  
COURSE CODE: ECNG 3010  
COURSE TITLE: ELECTRICAL MACHINES & DRIVE SYSTEMS  
NUMBER OF CREDITS: 3  
PREREQUISITE: ECNG 2000 ELECTROMECHANICAL ENERGY CONVERSION SYSTEMS  
COURSE DESCRIPTION: A modern electric drive system consists of a motor, an electric converter, and a controller that are integrated to perform a mechanical manoeuvre for a given load. This course covers the basic theory of control of the DC motor, the induction motor and the synchronous motor. Additionally, the course expands on the analysis and study of the synchronous generators. Power electronic converters are discussed in some detail and their performances and applications with different motors are studied. This course is designed for engineers intending to work in any area of engineering where electrical motors and machinery are operated, maintained or specified. This course is an elective 3-credit course intended for students in the third year of the B. Sc. Degree programme in Electrical and Computer Engineering. The course comprises of 30 one-hour lectures and 6 hours of tutorials. Great emphasis will be placed on problem solving and students are strongly advised to budget adequate time for this activity, throughout the semester.

LEVEL: 3  
SEMESTER: 2  
COURSE CODE: ECNG 3012  
COURSE TITLE: POWER SYSTEMS ANALYSIS  
NUMBER OF CREDITS: 3  
PREREQUISITES: ECNG 3015 INDUSTRIAL & COMMERCIAL ELECTRICAL SYSTEMS  
COURSE DESCRIPTION: This course is an elective 3-credit course intended for students in the third year of the B. Sc. 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. The course comprises of 30 one-hour lectures, 6 hours of tutorials and 4 computer exercises. Great emphasis will be placed on problem solving and students are strongly advised to budget adequate time for this activity, throughout the semester.
LEVEL: 3
SEMESTER: 2
COURSE CODE: ECNG 3013
COURSE TITLE: ELECTRICAL TRANSMISSION & DISTRIBUTION SYSTEMS
NUMBER OF CREDITS: 3
PREREQUISITES: ECNG 3015 INDUSTRIAL & COMMERCIAL ELECTRICAL SYSTEMS
COURSE DESCRIPTION: This is a 3 credit mandatory course for the students who opt for the Energy Systems option. The current energy systems offering focuses on the generation of the electricity and the general health of the system. This course addresses the void existing in the engineering analysis and the application of technology to the transmission and distribution area. The course is divided into 33 lecture and 6 tutorial one hour sessions. There will also be three research papers/projects and a mid-semester exam.

LEVEL: 3
SEMESTER: 2
COURSE CODE: ECNG 3016
COURSE TITLE: ADVANCED DIGITAL ELECTRONICS
NUMBER OF CREDITS: 3
PREREQUISITES: NONE
COURSE DESCRIPTION: This course is designed for final year BSc Electrical and Computer Engineering students. Our aim is to present methods and design considerations of digital systems and their implementation on FPGAs. There are many different types of digital ICs, including “jelly-bean logic” (small components containing a few simple, fixed logical functions), memory devices, and microprocessors (µPs). Of particular interest are FPGAs, because their functionality can be customised in the field, they can contain millions of logic gates and can be used to implement extremely large and complex functions that previously could be realised only using ASICs (application-specific integrated circuits). FPGAs are the target ICs Technology for this course. We will analyse some major design issues and applications targeting FPGAs.

LEVEL: 3
SEMESTER: 2
COURSE CODE: ECNG 3019
COURSE TITLE: ADVANCED CONTROL SYSTEMS DESIGN
NUMBER OF CREDITS: 3
PREREQUISITE: ECNG 2009 CONTROL SYSTEMS
COURSE DESCRIPTION: This course delivers an overview of the control problem and discrete time. It includes treatment of system modelling, state space methods; feedback designs, performance criteria, stability considerations; optimal discrete time control, microprocessor implementation of digital controllers; real time control systems; computers in industrial control; distributed data processing and control.
LEVEL: 3  
SEMESTER: YEAR-LONG  
COURSE CODE: ECNG 3020  
COURSE TITLE: SPECIAL PROJECT  
NUMBER OF CREDITS: 6  
PREREQUISITES: NONE  
COURSE DESCRIPTION: The ECNG 3020-Special Project is regarded as the capstone course of the entire BSc Electrical and Computer Engineering Programme. ECNG 3020 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. ECNG 3020 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  
Communication  
ECNG 3020 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.

LEVEL: 3  
SEMESTER: I  
COURSE CODE: ECNG 3021  
COURSE TITLE: INTRODUCTION TO ENGINEERING MANAGEMENT & ACCOUNTING SYSTEMS  
NUMBER OF CREDITS: 3  
PREREQUISITES: NONE  
COURSE DESCRIPTION: This course provides final year Electrical and Computer Engineering students with a background in management and accounting skills to equip them to function in the business world. It will provide 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 Organisational Theory  
Project Management, Production Planning and Control Techniques.  
Introduction to Business Law

LEVEL: 3  
SEMESTER: 2  
COURSE CODE: ECNG 3022  
COURSE TITLE: ELECTROMAGNETIC FIELD THEORY  
NUMBER OF CREDITS: 3  
PREREQUISITE: ECNG 2013 MATHEMATICS FOR ELECTRICAL ENGINEERS II  
COURSE DESCRIPTION: ECNG3022 encompasses the study of electromagnetic phenomena and applications under static and dynamic conditions. Example applications include optical and wireless communications, electrical machines and drives, electromagnetic compatibility, EM safety, biotechnology and high-speed microelectronics. While the evaluation of electric and magnetic fields is of utmost importance for efficient design of electromagnetic systems, in real-world applications, complex geometries and system assemblies limit the applicability of analytical solutions. ECNG3022 leverages analytical and computer-aided techniques which can be utilized for analysis and design of complex electromagnetic systems. The course is assessed through 60% final exam and 40% coursework, comprising of various problem-based analysis and design activities which draw upon the concepts introduced in the course.

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: ECNG 3023  
COURSE TITLE: INTRODUCTION TO SOFTWARE ENGINEERING  
NUMBER OF CREDITS: 3  
PREREQUISITE: ECNG 2007 COMPUTER SYSTEMS AND SOFTWARE DESIGN  
COURSE DESCRIPTION: This course introduces the concepts and techniques associated with the engineering of software systems. These concepts and techniques will be used to design and develop software to meet specified requirements and quality standards within the framework of time and cost. Historically, software applications have been developed as problem based solutions. While this method is sufficient for small, one-of-a-kind projects, it is very difficult to manage when applied to large projects which can have from thousands to millions of lines of code. The study of how software can be developed in an efficient, cost-effective manner has grown tremendously in importance. Software engineering processes improve the productivity of developers and the quality of the products. The IEEE Computer Society defines software engineering as the application of a systematic, disciplined, and quantifiable approach to the development, operation and maintenance of software; that is the application of engineering to software.
LEVEL: 3  
SEMESTER: 2  
COURSE CODE: ECNG 3024  
COURSE TITLE: NETWORK SYNTHESIS  
NUMBER OF CREDITS: 3  
PREREQUISITE: NONE  
COURSE DESCRIPTION: This course involves the design of active filters. It focuses principally on implementation using op amps and treats with a wide range of filter types such as low pass, high pass multiple feedback and voltage controlled voltage service. Consideration is given to sensitivity issues.

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: ECNG 3025  
COURSE TITLE: DISCRETE SIGNAL PROCESSING  
NUMBER OF CREDITS: 3  
PREREQUISITES: NONE  
COURSE DESCRIPTION: In this course, we will examine the techniques of discrete-time signal processing and digital signal processing, investigate the development of digital FIR and IIR filters, study the Discrete-time Fourier Transform and in particular, a numerical, efficient version called the Fast Fourier Transform (FFT) and use the FFT to carry out spectral analysis of some sample signals. We will also examine some Digital Signal Processors which are specialised microprocessors created for the sole purpose of performing numerical calculations.

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: ECNG 3029  
COURSE TITLE: ROBOTIC TECHNOLOGY & APPLICATIONS  
NUMBER OF CREDITS: 3  
PREREQUISITES: NONE  
COURSE DESCRIPTION: This optional final year course targets students who wish to investigate and/or utilise robotic technology in their capstone project. The effective application of robots requires an understanding of, robotic manipulator dynamics, as well as ongoing developments in Robotics research. Students will be exposed to simulated, experimental, and existing robot systems. At the conclusion of the course, students will be able to identify, analyse, recommend, and justify specifications for such systems. Topics discussed include: common robotic terminology and configurations; kinematics and dynamics of 6R manipulators, and differential drive platforms; research paradigms in human interaction, control and programming of robots; robot-related social, economic and technological developments.

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: ECNG 3031  
COURSE TITLE: ENGINEERING & TECHNOLOGY FOR ACOUSTICS & MUSIC  
NUMBER OF CREDITS: 3  
PREREQUISITES: NONE  
COURSE DESCRIPTION: This course seeks to explore and present the principles and interrelationships of Acoustics, Music, Sound Technology and Engineering. The course treats with the principles, theories and parameters used to describe the nature and sources of sound and its propagation through space. It also looks at psycho-acoustic effects – how sound is actually perceived by humans. Signals and systems techniques are used to characterise music technology and the acoustic space. The latter addresses room characteristics, sound reinforcement system design and recording techniques to optimise the listening experience.

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: ECNG 3032  
COURSE TITLE: CONTROL & INSTRUMENTATION I  
NUMBER OF CREDITS: 4  
PREREQUISITE: ECNG 2009 CONTROL SYSTEMS  
COURSE DESCRIPTION: This course attempts to cross that bridge between control systems theory and control systems practice. The department considers it significant because of the importance of automation, control and instrumentation (collectively called instrumentation in the region) to the industrial processes which are the flagships of the Caribbean economies and to the burgeoning group of small manufacturing concerns. The instrumentation area is also of particular importance in supporting regional manufacturers who compete internationally; this competition requires greater focus on quality assurance and control which, in turn requires ever competent expertise in instrumentation technology.

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: ECNG 3033  
COURSE TITLE: COMMUNICATION SKILLS II  
NUMBER OF CREDITS: 3  
PREREQUISITE: ECNG 1010 COMMUNICATION SKILLS I  
COURSE DESCRIPTION: This course focuses on Oral Communication in professional contexts. Course participants will explore a range of oral communication principles and conventions. Most importantly, it will provide a forum for practicing spoken Standard English. The course is practical and students will be evaluated on their ability to appropriately and effectively communicate in a variety of speaking situations as they may arise in the engineering profession.
LEVEL: 3
SEMESTER: 1
COURSE CODE: ECNG 3034
COURSE TITLE: EMBEDDED SYSTEMS PRODUCT DEVELOPMENT
NUMBER OF CREDITS: 3
PREREQUISITE: NONE
COURSE DESCRIPTION: This course is the capstone course for the Computer Systems Engineering (CSE) option. Students will work in teams, creating and integrating electrical/electronic hardware, low and high-level software, instrument and communication networks, and multiple processes, to transform a conceptualized embedded system into a market-ready product. Product ideas may originate both within and outside of the Department ideally consisting of a preliminary prototype, and associated documentation. The focus of the course is on the systems, procedures, and issues involved when creating a business case for a commercially viable product. At the end of the course, originator and students may exercise the right to commercialize their product, in a manner consistent with UWI policies on ownership and intellectual property.

Department of Geomatics Engineering and Land Management

LEVEL: 1
SEMESTER: 1
COURSE CODE: GEOM 1001
COURSE TITLE: MATHEMATICS FOR GEOMATICS ENGINEERING
NUMBER OF CREDITS: 3
PREREQUISITE: NONE
COURSE DESCRIPTION: Trigonometric functions of acute angles, applications of right angled triangles, trigonometric functions of any angle, radians and arc length, trigonometric identities (Pythagorean, sum, cofunction, double angle, half angle); Inverses of trigonometric functions, solving trigonometric equations, law of sines, law of cosines, polar coordinates and graphs, three dimensional coordinate systems; Vectors, dot product, cross product, equations of lines and planes; Systems of equations in two and three variables, matrices and systems of equations, matrix operations; Inverses of matrices, determinants and Cramer’s rule, linear transformations and their matrix representations, examples of linear transformations - reflections, projections and rotations; Conic sections – parabola, ellipse and hyperbola. Cylinders and quadric surfaces, cylindrical and spherical coordinates; Derivatives and rates of change, differentiation formulae, derivatives of trigonometric functions, chain rule; Natural logarithms and exponentials and their derivatives, rates of change; Related rates, linear approximations, anti-derivatives, the definite integral; Fundamental Theorem of Calculus, indefinite integrals, substitution rule; Functions of several variables, partial derivatives, tangent planes and linear approximations, chain rule for partial derivatives

LEVEL: 1
SEMESTER: 1
COURSE CODE: GEOM 1010
COURSE TITLE: SURVEYING I
NUMBER OF CREDITS: 3
PREREQUISITE: NONE
LEVEL: 1  
SEMESTER: 1  
COURSE CODE: GEOM 1011  
COURSE TITLE: SURVEYING PRACTICE  
NUMBER OF CREDITS: 3  
PREREQUISITE: NONE  
COURSE DESCRIPTION: Hands-on field experience in the practical aspects of surveying; measuring, booking, reporting. Conventional distance measurement, height measurement, angular measurement. Tests and adjustment of basic survey instruments. Level circuit including adjustment of results. Traverse circuit including adjustment of results. Distance measurement: optical and electronic. Intersection and resection.

LEVEL: 1  
SEMESTER: 2  
COURSE CODE: GEOM 1015  
COURSE TITLE: SURVEYING II  
NUMBER OF CREDITS: 3  
PREREQUISITE: GEOM 1010  
COURSE DESCRIPTION: Topographical surveying including organisation and execution of projects, specification and representation of data in different formats. Route surveys including setting out. Vertical and transition curves and slope stakes. Project execution processes for all types of land surveys. Introduction to the theory of adjustments computation. Coordinate systems, 2-D coordinate transformation, GNSS principles, measurement techniques and data reduction.

LEVEL: 1  
SEMESTER: 2  
COURSE CODE: GEOM 1020  
COURSE TITLE: PHOTOGRAMMETRY  
NUMBER OF CREDITS: 3  
PREREQUISITE: NONE  

LEVEL: 1  
SEMESTER: 2  
COURSE CODE: GEOM 1030  
COURSE TITLE: GEODESY  
NUMBER OF CREDITS: 3  
PREREQUISITES: NONE  

LEVEL: 1  
SEMESTER: 2  
COURSE CODE: GEOM 1040  
COURSE TITLE: STATISTICS FOR SURVEYING  
NUMBER OF CREDITS: 3  
PREREQUISITE: NONE  

LEVEL: 1  
SEMESTER: 2  
COURSE CODE: GEOM 1045  
COURSE TITLE: COMMUNICATION SKILL  
NUMBER OF CREDITS: 3  
PREREQUISITE: NONE  
COURSE DESCRIPTION: Critical and creative thinking, elements of communication, written communication: technical reports, proposals, technical descriptions, technical instructions, oral communication: oral presentations, group dynamics and team building, visual aids, technology and communication: formatting reports, electronic documentation, visual aids, information retrieval and citations, ethics: Plagiarism, decision-making, rules of professional conduct. (100% Coursework)
LEVEL: 1
SEMESTER: 2
COURSE CODE: GEOM 1050
COURSE TITLE: SURVEYING PROJECT
NUMBER OF CREDITS: 3
PREREQUISITE: GEOM 1010
COURSE DESCRIPTION: Topographic survey of selected site including all planimetric and hypsometric information. Plan preparation. Computer Aided Design (CAD), Production of topographic maps and thematic plans, compilations and reports.

LEVEL: 2
SEMESTER: 1
COURSE CODE: GEOM 2000
COURSE TITLE: HEALTH AND SAFETY SEMINARS
NUMBER OF CREDITS: 0
PREREQUISITE: NONE

LEVEL: 2
SEMESTER: 2
COURSE CODE: GEOM 2001
COURSE TITLE: NUMERICAL METHODS FOR GEOMATICS ENGINEERING
NUMBER OF CREDITS: 3
PREREQUISITES: GEOM 2001
COURSE DESCRIPTION: Numerical methods and use of the computer in numerical work; Solution of equations in one variable; Polynomials and interpolation using Lagrange and differencing methods; Curve fitting using cubic splines; Fourier methods in frequency response of time series analysis.; Discrete and fast Fourier transforms.; Numerical differentiation and integration.; Solution of ordinary differential equations using Euler and Runge-Kutta for initial value problems. Extend to consider second order ODE's and coupled first order.; Solution of systems of linear equations through elimination and iterative methods; LU factorisation and Cholesky applied to least squares adjustment.; LU factorisation applied to matrix inversion and assessment of system condition.
LEVEL: 2
SEMESTER: 2
COURSE CODE: GEOM 2017
COURSE TITLE: GEOINFORMATICS FOR CIVIL & ENVIRONMENTAL ENGINEERS
NUMBER OF CREDITS: 3
PREREQUISITE: NONE
COURSE DESCRIPTION: The principles of Geoinformatics techniques and their applications for typical problems in Civil and Environmental Engineering. Basics of aerial and satellite imageries; extraction of graphical and numerical data. Integrated approach for addressing Civil and Environmental Engineering problems using Geoinformatics.

LEVEL: 2
SEMESTER: 1
COURSE CODE: GEOM 2020
COURSE TITLE: DIGITAL PHOTOGRAMMETRY
NUMBER OF CREDITS: 3
PREREQUISITE: GEOM 1020

LEVEL: 2
SEMESTER: 2
COURSE CODE: GEOM 2025
COURSE TITLE: REMOTE SENSING
NUMBER OF CREDITS: 3
PREREQUISITE: NONE

LEVEL: 2
SEMESTER: 2
COURSE CODE: GEOM 2030
COURSE TITLE: ADJUSTMENT COMPUTATIONS
NUMBER OF CREDITS: 3
PREREQUISITES: GEOM 1040
LEVEL: 2
SEMESTER: 2
COURSE CODE: GEOM 2048
COURSE TITLE: INTRODUCTION TO PLANNING
NUMBER OF CREDITS: 3
PREREQUISITES: NONE

LEVEL: 2
SEMESTER: 2
COURSE CODE: GEOM 2050
COURSE TITLE: MAPPING PROJECT
NUMBER OF CREDITS: 3
PREREQUISITES: GEOM 1050; GEOM 2020
COURSE DESCRIPTION: Field-to-finish practical experience in the process of topographic mapping of a selected area using photogrammetry. Provision of control. Field completion and verification. Production of machine plot, computation and report.

LEVEL: 3
SEMESTER: 1
COURSE CODE: GEOM 3010
COURSE TITLE: CADASTRAL SYSTEMS
NUMBER OF CREDITS: 3
PREREQUISITE: GEOM 2045

LEVEL: 3
SEMESTER: 2
COURSE CODE: GEOM 3015
COURSE TITLE: PROFESSIONAL PRACTICE
NUMBER OF CREDITS: 3
PREREQUISITE:
COURSE DESCRIPTION: Professional negligence and liability; misrepresentation; Law of Evidence; surveyor as a professional witness. Professional ethics and conduct. Practice of land surveying and mapping in the State and private sectors.

LEVEL: 3
SEMESTER: 2
COURSE CODE: GEOM 3020
COURSE TITLE: PROFESSIONAL INTERNSHIP
NUMBER OF CREDITS: 3
PREREQUISITE: NONE
COURSE DESCRIPTION: The internship serves as a way to gain insight into respective industries that are in line with current studies Geomatics and geoinformatics. It should provide students with the opportunity to independently apply and further develop the theoretical and methodological knowledge and understandings gained in their course of study. It should be used by students to put diverse scientific knowledge and methods into practice. Possible fields of work are concentrated in the areas of conceptual, evaluation, management and advisory tasks, in particular, fields of study offered at the department.

LEVEL: 3
SEMESTER: 2
COURSE CODE: GEOM 3025
COURSE TITLE: ENGINEERING SURVEYING
NUMBER OF CREDITS: 3
PREREQUISITE: NONE

LEVEL: 3
SEMESTER: 2
COURSE CODE: GEOM 3030
COURSE TITLE: GLOBAL NAVIGATION SATELLITE SYSTEMS
NUMBER OF CREDITS: 3
PREREQUISITE: GEOM 2035
LAND MANAGEMENT (VALUATION)

COURSE DESCRIPTIONS

LEVEL: 1
SEMESTER: 1
COURSE CODE: LMGV 1000
COURSE TITLE: LAND ECONOMY
NUMBER OF CREDITS: 3
PREREQUISITES: NONE

LEVEL: 1
SEMESTER: 1
COURSE CODE: LMGV 1003
COURSE TITLE: SURVEYING PRACTICAL
NUMBER OF CREDITS: 1
PREREQUISITES: NONE
COURSE DESCRIPTION: Practical application of the use of theodolites, total stations, chains, levels, GPS equipment.

LEVEL: 1
SEMESTER: 2
COURSE CODE: LMGV 1004
COURSE TITLE: VALUATION METHODS I
NUMBER OF CREDITS: 3
PREREQUISITES: NONE

LEVEL: 1
SEMESTER: 2
COURSE CODE: LMGV 1005
COURSE TITLE: VALUATION PROJECT I
NUMBER OF CREDITS: 3
PREREQUISITE: LMGV 1000
COURSE DESCRIPTION: Conduct of valuations. The practical application is provided by actual case studies and field trips to ensure students can apply the theoretical concepts taught to property valuations in the field.

LEVEL: 2
SEMESTER: 2
COURSE CODE: LMGV 2002
COURSE TITLE: VALUATION METHODS II
NUMBER OF CREDITS: 3
PREREQUISITE: LMGV 1004
COURSE DESCRIPTION: The Comparison Method of Valuation; The Contractors Method; Leasehold Interests; Investment Appraisals; Residual Valuations in detail; Residual Cash Flows; Development Appraisal.

LEVEL: 2
SEMESTER: 2
COURSE CODE: LMGV 2003
COURSE TITLE: VALUATION PROJECT II
NUMBER OF CREDITS: 3
PREREQUISITE: LMGV 1005
COURSE DESCRIPTION: Conduct of valuations. The practical application is provided by actual case studies and field trips to ensure students can apply the theoretical concepts taught to property valuations in the field.

LEVEL: 3
SEMESTER: 1
COURSE CODE: LMGV 3000
COURSE TITLE: APPLIED VALUATION
NUMBER OF CREDITS: 3
PREREQUISITE: LMGV 2002

LEVEL: 3
SEMESTER: 2
COURSE CODE: LMGV 3002
COURSE TITLE: ESTATE AND LAND MANAGEMENT
NUMBER OF CREDITS: 3
PREREQUISITES: NONE
LEVEL: 3
SEMESTER: 1
COURSE CODE: LMGV 3005
COURSE TITLE: INTRODUCTION TO QUANTITY SURVEYING
NUMBER OF CREDITS: 3
PREREQUISITES: NONE

LEVEL: 3
SEMESTER: YEAR-LONG
COURSE CODE: LMGV 3050
COURSE TITLE: LAND MANAGEMENT RESEARCH PROJECT
NUMBER OF CREDITS: 6
PREREQUISITES: NONE
COURSE DESCRIPTION: Research project generally involving literature review, data acquisition, processing, analysis and conclusions in respect of identified property valuation problems of interest to the region or individual states. (Coursework-100%)

LEVEL: 3
SEMESTER: 2
COURSE CODE: LMGV 3060
COURSE TITLE: INTRODUCTION TO LAND ADMINISTRATION
NUMBER OF CREDITS: 3
PREREQUISITES: NONE
LEVEL: 1
SEMESTER: 1
COURSE CODE: MENG 1010
COURSE TITLE: STATICS & STRENGTH OF MATERIALS
NUMBER OF CREDITS: 3
PREREQUISITES: NONE

LEVEL: 1
SEMESTER: 2
COURSE CODE: MENG 1004
COURSE TITLE: ENGINEERING DYNAMICS
NUMBER OF CREDITS: 3
PREREQUISITES: NONE

LEVEL: 1
SEMESTER: 1
COURSE CODE: MENG 1011
COURSE TITLE: ENGINEERING FLUID MECHANICS
NUMBER OF CREDITS: 2
PREREQUISITES: NONE
COURSE DESCRIPTION: Mechanics deals with force, energy, motion and material properties. The study of mechanics of fluids (liquids and gases) is called Fluid Mechanics. You will learn fluid properties, fluid static, fluids in motion, conservation equations, flow through pipes, characteristics and selection of pump.

LEVEL: 1
SEMESTER: 1
COURSE CODE: MENG 1012
COURSE TITLE: SCIENCE OF MATERIALS C
NUMBER OF CREDITS: 2
PREREQUISITES: NONE

LEVEL: 1
SEMESTER: 2
COURSE CODE: MENG 1013
COURSE TITLE: COMMUNICATION SKILLS
NUMBER OF CREDITS: 1
PREREQUISITES: NONE
COURSE DESCRIPTION: Course participants will explore a range of communication principles and conventions and their application to a variety of communicative situations as they may arise in the engineering. These situations include written and oral communication for industry, and research development.
LEVEL: 2  
SEMESTER: 2  
COURSE CODE: IENG 2000  
COURSE TITLE: WORK STUDY & ERGONOMICS  
NUMBER OF CREDITS: 3  
PREREQUISITES: NONE  
COURSE DESCRIPTION: Productivity; method study; work measurement - rating, allowances, standard time, PMTS; work sampling; fatigue and boredom; job enlargement; working conditions and influence on output; work place design.

LEVEL: 2  
SEMESTER: 1  
COURSE CODE: IENG 2002  
COURSE TITLE: OPERATIONS RESEARCH I  
NUMBER OF CREDITS: 2  
PREREQUISITES: NONE  
COURSE DESCRIPTION: Operations research methodology; Linear programming: applications, graphical methods, simplex and dual simplex algorithms, sensitivity analysis and duality; Integer programming applications, cutting plane algorithm; Transportation and assignment models; Decision theory, Expected Monetary value and Expected Opportunity Loss models: Decision making under uncertain condition(optimistic, pessimistic, Savage, Laplace and Hurwicz criteria).

LEVEL: 2  
SEMESTER: 2  
COURSE CODE: IENG 2004  
COURSE TITLE: INDUSTRIAL DATABASE SYSTEMS & DESIGN  
NUMBER OF CREDITS: 3  
PREREQUISITE: ENGR 1001  
COURSE DESCRIPTION: Introduction to Information Systems; data requirements; Industrial Database Applications; conceptual database design; Database and Systems Planning; database design techniques and methods; Relational Database Design; Relational and Distributed Systems; database systems implementation and maintenance; Introduction to HTML, XML and Web Applications.

LEVEL: 2  
SEMESTER: 1  
COURSE CODE: MENG 2009  
COURSE TITLE: INDUSTRIAL INSTRUMENTATION  
NUMBER OF CREDITS: 2  
PREREQUISITES: NONE  
COURSE DESCRIPTION: Introduction and overview: analogue & digital Instruments; threshold sensors; pulse train sensors; shaft encoders. Displacement measurement: resolution; pulse timing & pulse counting methods; LVDT. Temperature measurement: resistance thermometers; thermisters; thermocouples. Force measurement: strain gauges; Wheatstone bridge. Pressure measurement: u-tube manometer; mechanical sensors; strain gauge transducer. Flow measurement: differential pressure & orifice plates; characteristics of flow & Reynolds number; differential pressure transducer; Venturi meter. Signal conditioning: pre-conditioning; concepts of differential & instrumentation amplifiers; error specifications & components; offset & bias currents; effect of noise; signal/noise ratios; filters; Butterworth filter data; sample & hold; analogue multiplexers; analogue to digital conversion. Electrical measurement & calibration. International conventions & standards.

LEVEL: 2  
SEMESTER: 2  
COURSE CODE: IENG 2006  
COURSE TITLE: ENGINEERING ECONOMICS, ACCOUNTING AND FINANCIAL MANAGEMENT  
NUMBER OF CREDITS: 4  
COURSE DESCRIPTION: Basic accounting concepts and policies; analysis of financial statements; management accounting; cost-volume-profit relationship; cost analysis and estimating; techno-economic evaluation of capital investment projects; capital budgeting techniques; manufacturing systems economics; capital structure/leverage; financial planning and control with budgeting; financial planning for initial capitalisation, working capital management, valuation of securities, multi-national financial management topics.

LEVEL: 2  
SEMESTER: 2  
COURSE CODE: IENG 2007  
COURSE TITLE: OPERATIONS RESEARCH II  
NUMBER OF CREDITS: 2  
PREREQUISITE: IENG 2002  
COURSE DESCRIPTION: Non-linear programming: classical optimization method, D-Rule, Lagrange methods, Kuhn Tucker conditions, Decision trees, Markov processes; Network models; shortest route and minimal spanning tree methods; Deterministic dynamic programming model. Queueing models. Games theory and Simulation.
LEVEL: 2  
SEMESTER: 2  
COURSE CODE: MENG 2012  
COURSE TITLE: HEAT TRANSFER  
NUMBER OF CREDITS: 3  
PREREQUISITES: NONE  
COURSE DESCRIPTION: Steady and unsteady state heat conduction. Analytical, graphical and numerical solutions, convection - forced and free convection on flat plates and in pipe flow; Radiation - properties, shape factor and exchange between surfaces, Introduction to heat exchangers; combined mode of heat transfer. Introduction to mass transfer.

LEVEL: 2  
SEMESTER: 1  
COURSE CODE: MENG 2010  
COURSE TITLE: STRENGTH OF MATERIALS I  
NUMBER OF CREDITS: 3  
PREREQUISITES: MENG 1010  

LEVEL: 2  
SEMESTER: 2  
COURSE CODE: MENG 2003  
COURSE TITLE: MECHANICAL VIBRATIONS  
NUMBER OF CREDITS: 3  
PREREQUISITES: MENG 1004  

LEVEL: 2  
SEMESTER: 1  
COURSE CODE: MENG 2004  
COURSE TITLE: MECHANICS OF MACHINES  
NUMBER OF CREDITS: 3  
PREREQUISITE: MENG 1004  

LEVEL: 2  
SEMESTER: 1  
COURSE CODE: MENG 2011  
COURSE TITLE: MACHINE DESIGN 1  
NUMBER OF CREDITS: 3  
PREREQUISITES: MENG 1008; MENG 1009; MENG 1010  

LEVEL: 2  
SEMESTER: 2  
COURSE CODE: MENG 2013  
COURSE TITLE: MACHINE DESIGN II  
NUMBER OF CREDITS: 3  
PREREQUISITE: MENG 2011  

LEVEL: 2  
SEMESTER: 2  
COURSE CODE: MENG 2015  
COURSE TITLE: CONTROL SYSTEMS TECHNOLOGY  
NUMBER OF CREDITS: 3  
PREREQUISITE: ECNG 1007  
COURSE DESCRIPTION: Mathematical modeling of systems: governing equations of common systems; Laplace transforms and standard forms of equations of different orders; block diagrams and signal flow graphs; deriving transfer function of a DC electric motor in particular. System response: deriving time response by taking inverse Laplace transforms; standard time responses for first and second order systems. System stability and Root Locus: Routh Hurwitz stability criterion; Root Locus and its use in determining key system parameters. Frequency domain system analysis: Bode plots; Nyquist diagrams; Phase and gain margins; Relationship of frequency analysis to time response. Controller system design: PID controller design; Lag and lead compensators.

NOTE: Offered in Year two for students now entering Year 2 and in Year 3 for students entering Year 3 for academic year 2013-2014 only.
LEVEL: 2
SEMESTER: 1
COURSE CODE: MENG 2007
COURSE TITLE: ENGINEERING THERMODYNAMICS II
NUMBER OF CREDITS: 3
PREREQUISITES: MENG 1001
COURSE DESCRIPTION: Non-reactive and reactive mixtures, psychrometry, one-dimensional compressible fluid flow; vapour and gas power cycles; reciprocating engines and machine systems; refrigeration and heat pump cycles.

LEVEL: 2
SEMESTER: 2
COURSE CODE: MENG 2008
COURSE TITLE: MANUFACTURING TECHNOLOGY
NUMBER OF CREDITS: 3
PREREQUISITE: NONE

LEVEL: 3
SEMESTER: 1
COURSE CODE: IENG 3000
COURSE TITLE: INDUSTRIAL MANAGEMENT
NUMBER OF CREDITS: 3
PREREQUISITES: NONE

LEVEL: 3
SEMESTER: 2
COURSE CODE: IENG 3001
COURSE TITLE: PRODUCTION PLANNING & CONTROL
NUMBER OF CREDITS: 3
PREREQUISITES: NONE
COURSE DESCRIPTION: Production systems; forecasting; resource planning; production planning; aggregate planning; master schedule; requirements planning systems; production scheduling; progress control; integrated production control systems.

LEVEL: 3
SEMESTER: 2
COURSE CODE: IENG 3002
COURSE TITLE: PLANT LAYOUT & MATERIALS HANDLING
NUMBER OF CREDITS: 2
PREREQUISITES: NONE
COURSE DESCRIPTION: Plant location; plant layout - types, layout planning and evaluation of layouts; plant services; principles of materials handling system design; techniques for analysis and solution of plant location, plant layout and material handling problems. Materials handling equipment. Warehousing - principles, design and operations.

LEVEL: 3
SEMESTER: 2
COURSE CODE: IENG 3003
COURSE TITLE: BEHAVIOURAL SCIENCE IN MANAGEMENT
NUMBER OF CREDITS: 2
PREREQUISITES: NONE

LEVEL: 3
SEMESTER: 1
COURSE CODE: IENG 3005
COURSE TITLE: QUALITY CONTROL & RELIABILITY ENGINEERING
NUMBER OF CREDITS: 2
PREREQUISITE: MATH 2250
COURSE DESCRIPTION: Inspection; Statistical quality control; Control charts for variables and attributes; Process capability analysis; Sampling inspection, OC curves, Sampling plans for attributes and variables; Product reliability; System reliability; Equipment survival; Reliability prediction methods; Redundancy and maintainability of equipment.
LEVEL: 3
SEMESTER: 2
COURSE CODE: IENG 3006
COURSE TITLE: AUTOMATION
NUMBER OF CREDITS: 2
PREREQUISITES: NONE

LEVEL: 3
SEMESTER: 2
COURSE CODE: IENG 3009
COURSE TITLE: INDUSTRIAL DATABASE DESIGN
NUMBER OF CREDITS: 3
PREREQUISITES:
COURSE DESCRIPTION: Production systems and data requirements; evolution of database systems and technology; database applications and systems development; conceptual database design: principles and modelling; systems planning and database design; data element design; relational database design; introduction to E-business, E-commerce, and enterprise resources planning systems; introduction to HTML, XML and Web applications.

LEVEL: 3
SEMESTER: YEAR LONG
COURSE CODE: IENG 3012
COURSE TITLE: INDUSTRIAL PROJECT
NUMBER OF CREDITS: 6
PREREQUISITES: NONE
COURSE DESCRIPTION: Special project in the field of Industrial Engineering will be undertaken by all students under the supervision and direction of academic staff in the Department. Examination will be by coursework - a presentation and project report.

LEVEL: 3
SEMESTER: 2
COURSE CODE: IENG 3013
COURSE TITLE: SIMULATION OF INDUSTRIAL & BUSINESS PROCESSES
NUMBER OF CREDITS: 3
PREREQUISITES:
COURSE DESCRIPTION: Overview of simulation systems; components of simulation models; simulation processes; modelling methodologies and techniques; computer interfacing and networking fundamentals; system dynamics approach to modelling and decision support; simulation applications in manufacturing and service operations.

LEVEL: 3
SEMESTER: 1
COURSE CODE: IENG 3015
COURSE TITLE: ENTERPRISE INFORMATION SYSTEMS
NUMBER OF CREDITS: 3
PREREQUISITE: IENG 2004
COURSE DESCRIPTION: Organisation dynamics; Enterprise resource planning; data sources and data quality requirements; design, development and deployment of data warehouses; web-enabled data management and e-commerce; Knowledge management; strategic implications of EIS.

LEVEL: 3
SEMESTER: 1
COURSE CODE: IENG 3016
COURSE TITLE: APPLIED PROJECT MANAGEMENT
NUMBER OF CREDITS: 3
PREREQUISITES: NONE
COURSE DESCRIPTION: Definitions and feasibility of projects; project management processes; project management knowledge areas; project management information systems; team communication and conflict resolution; experimental/action-learning workshop.

LEVEL: 3
SEMESTER: 1
COURSE CODE: IENG 3017
COURSE TITLE: INDUSTRIAL DESIGN OF PRODUCTS AND SERVICES
NUMBER OF CREDITS: 3
PREREQUISITES: NONE
COURSE DESCRIPTION: Combine design principles, (engineering and industrial), innovation and project management to aid in decision-making. Understanding of the practical and theoretical aspects of the creation of a product, methods used in form design, form factors and the appearance of the product.

LEVEL: 3
SEMESTER: 1
COURSE CODE: MENG 3000
COURSE TITLE: ENGINEERING MANAGEMENT I
NUMBER OF CREDITS: 3
PREREQUISITES: NONE
LEVEL: 3
SEMESTER: 2
COURSE CODE: MENG 3001
COURSE TITLE: ENGINEERING MANAGEMENT II
NUMBER OF CREDITS: 2
PREREQUISITES: NONE
COURSE DESCRIPTION: Strategic management of technological innovation and new venture formation. The Engineering manager and the legal environment (legal forms of association, contracts, torts, company law, intellectual property).

LEVEL: 3
SEMESTER: 2
COURSE CODE: MENG 3002
COURSE TITLE: POST-HARVEST TECHNOLOGY
NUMBER OF CREDITS: 2
PREREQUISITES: NONE
COURSE DESCRIPTION: An introduction to post-harvest physiology, physical properties of plant material; materials handling, cleaning, grading and packaging. Quality assurance, food safety principles and storage requirements for fruits, vegetables, root crops and cut flowers. Pre-cooling, modified and controlled atmosphere storage; freezing and heat loads for perishables; packing-house layout and design; drying and drying systems, processing of durable Caribbean crops, e.g., root crops, coconuts, cocoa, nutmeg; milling and mixing.

LEVEL: 3
SEMESTER: 1
COURSE CODE: MENG 3004
COURSE TITLE: SOIL & WATER ENGINEERING
NUMBER OF CREDITS: 2
PREREQUISITES: NONE

LEVEL: 3
SEMESTER: 2
COURSE CODE: MENG 3006
COURSE TITLE: PRODUCTION MANAGEMENT
NUMBER OF CREDITS: 3
PREREQUISITES: NONE
COURSE DESCRIPTION: Operations strategy; product-process-capacity planning; forecasting and investment analysis; operations layout; materials management - inventory, JIT, MRP; shop-planning and scheduling; quality assurance/quality control; project management.

LEVEL: 3
SEMESTER: 2
COURSE CODE: MENG 3007
COURSE TITLE: DRAINAGE & IRRIGATION ENGINEERING
NUMBER OF CREDITS: 2
PREREQUISITES: NONE

LEVEL: 3
SEMESTER: 2
COURSE CODE: MENG 3008
COURSE TITLE: FIELD MACHINERY & EQUIPMENT
NUMBER OF CREDITS: 2
PREREQUISITES: NONE

LEVEL: 3
SEMESTER: 1
COURSE CODE: MENG 3013
COURSE TITLE: PRODUCT DESIGN & DEVELOPMENT
NUMBER OF CREDITS: 3
PREREQUISITES: NONE
COURSE DESCRIPTION: Synthesis of materials, design and processes into final products/components. Emphasis will be placed on the following:- sheet metal products, case or moulded metal products, plastics, composites, machined products. Special machining processes. Generation of forms, tooling design, use of jigs and fixtures. Assembly processes, costing.
LEVEL: 3
SEMESTER: 2
COURSE CODE: MENG 3014
COURSE TITLE: COMPUTER-AIDED DESIGN & MANUFACTURE
NUMBER OF CREDITS: 2
PREREQUISITES: NONE
COURSE DESCRIPTION: Review of the role and elements of computer-aided design. Development of integrated databases for design and manufacture. Solid and surface modelling techniques for design and manufacture. Generation of tool path data from solid and surface models. Numerical Control technology: manual part programming, computer-assisted part programming. CAI applications for tool path generation, e.g.: SMARTCAM.

LEVEL: 3
SEMESTER: 1
COURSE CODE: MENG 3015
COURSE TITLE: MATERIALS TECHNOLOGY
NUMBER OF CREDITS: 2
PREREQUISITES: NONE
COURSE DESCRIPTION: Basic background to the relationship between structure and properties of engineering materials with respect to selection of materials for design, processing and fabrication, the behaviour of materials in service and methods of evaluating performance. Topics include: metal alloy systems, metal structure texture and strengthening mechanisms; non-metallic materials, destructive and non-destructive testing, failure analysis, corrosion and use of standard specifications.

LEVEL: 3
SEMESTER: 1
COURSE CODE: MENG 3016
COURSE TITLE: MAINTENANCE AND SAFETY ENGINEERING
NUMBER OF CREDITS: 3
PREREQUISITES: NONE

LEVEL: 3
SEMESTER: 2
COURSE CODE: MENG 3017
COURSE TITLE: FINITE ELEMENT METHODS IN ENGINEERING PRACTICE
NUMBER OF CREDITS: 3
PREREQUISITES: MENG 1011; MATH 2230, MENG 2010, MENG 2012
LEVEL: 3  
SEMESTER: YEAR LONG  
COURSE CODE: MENG 3019  
COURSE TITLE: MECHANICAL ENGINEERING PROJECT  
NUMBER OF CREDITS: 6  
PREREQUISITES: NONE  
COURSE DESCRIPTION: Special projects in Mechanical Engineering will be undertaken by all students under the supervision and direction of academic staff of the Department. Examination will be by coursework - a presentation and project report.

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: MENG 3020  
COURSE TITLE: ELEMENTS OF FOOD ENGINEERING  
NUMBER OF CREDITS: 2  
PREREQUISITES: NONE  
COURSE DESCRIPTION: Heat and mass balances in food process operations, heat transfer and thermal properties of foods, heat exchange equipment for food processing; psychrometric, moisture equilibrium and drying characteristics of crops, thin layer drying. Freezing of foods (meats), thermal processing, evaporation and an introduction to food rheology.

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: MENG 3022  
COURSE TITLE: ENERGY ENGINEERING  
NUMBER OF CREDITS: 2  
PREREQUISITES: MENG 2007, MENG 2012  
COURSE DESCRIPTION: Role of energy in society, energy use data, resources, environmental effects. Review of Thermodynamics, irreversibility, entropy generation, exergy analyses and 2nd law efficiency. Principles and applications of cogeneration. Economic analyses of investments. Applications of optimization principle to energy systems.

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: MENG 3025  
COURSE TITLE: POWER PLANT ENGINEERING I  
NUMBER OF CREDITS: 2  
PREREQUISITE: MENG 2007  
COURSE DESCRIPTION: Power Plant Engineering I is an advanced applications course which covers the thermodynamic design, performance analysis and optimization of the Steam Power Plant and its major components:
- Steam Generating Plant (Boilers, Superheaters, Reheaters, Economizers, Air Pre-Heaters etc).
- Steam Turbine Design, Operations and Technology.
- Balance of Plant (Condensers, Feedwater Heaters, Circulating Cooling Water Systems, Cooling Towers, Evaporators, Water Treatment )

LEVEL: 3  
SEMESTER: 2  
COURSE CODE: MENG 3026  
COURSE TITLE: RENEWABLE ENERGY  
NUMBER OF CREDITS: 2  
PREREQUISITE: MENG 2012  
LEVEL: 3
SEMESTER: 2
COURSE CODE: MENG 3028
COURSE TITLE: POWER PLANT ENGINEERING II
NUMBER OF CREDITS: 2
PREREQUISITE: MENG 3025
COURSE DESCRIPTION: Power Plant Engineering II is an advanced applications course which covers the thermodynamic design, performance analysis and optimization of the following types of Thermal Power Plants
- Gas Turbine
- Reciprocating Internal Combustion Engines.
- Combined Cycle and Cogeneration Systems

LEVEL: 3
SEMESTER: 2
COURSE CODE: MENG 3027
COURSE TITLE: TRACTION & POWER HYDRAULICS
NUMBER OF CREDITS: 2
PREREQUISITES: NONE
COURSE DESCRIPTION: Terra-mechanics, mechanized field operations and fluid power applications. Traction theory, performance parameters and stability of 2WD, 4WD and track-type tractors. Soil and tool interactions, tillage and bulldozing, machine-tool selection and power calculations; Power take-off and fluid power (Power hydraulics) system design and calculations.

LEVEL: 3
SEMESTER: 2
COURSE CODE: MENG 3029
COURSE TITLE: ENVIRONMENTAL CONTROL ENGINEERING II
NUMBER OF CREDITS: 2
PREREQUISITE: MENG 3023

LEVEL: 3
SEMESTER: 2
COURSE CODE: MENG 3030
COURSE TITLE: BASIC ENGINEERING INFRASTRUCTURE
NUMBER OF CREDITS: 2
PREREQUISITES: NONE
COURSE DESCRIPTION: Layout, economic feasibility, structural design and environmental requirements of small and/or commercial food production buildings and structures. Local water supplies: planning water supply works like pipelines, design of ponds and boreholes, access road construction.

OTHER COURSES

COMPUTER SCIENCE COURSES

LEVEL:
SEMESTER:
COURSE CODE: COMP 3100
COURSE TITLE: OPERATING SYSTEMS
NUMBER OF CREDITS: 4
PREREQUISITES:
FACULTY OF ENGINEERING

COURSES

LEVEL: 1
SEMESTER: 1
COURSE CODE: ENGR 1000
COURSE TITLE: INTRODUCTION TO ENGINEERING
NUMBER OF CREDITS: 3 CREDITS
PREREQUISITES:
COURSE DESCRIPTION: An introduction to the following: historical development of engineering; formation of the engineer; role and functions of engineers and professional organisations; creative and critical thinking; technical communications; ethics; liability; safety; legal forms of association; contracts; company law; intellectual property; engineering economics and business operations; infrastructure; energy systems and economics; environment and sustainable development; approaches to design.

LEVEL: 1
SEMESTER: 1
COURSE CODE: ENGR 1001
COURSE TITLE: INFORMATION TECHNOLOGY FOR ENGINEERS
NUMBER OF CREDITS: 3
PREREQUISITES:

LEVEL: 3
SEMESTER: 2
COURSE CODE: ENGR 3000
COURSE TITLE: THE TECHNOLOGY OF THE STEELPAN
NUMBER OF CREDITS: 3
PREREQUISITES:
COURSE DESCRIPTION: This course attempts to summarise and present, in a formal fashion, current knowledge on various technological aspects of the steelpan musical instrument. The major technologies that impact on the instrument are acoustics, mechanical vibrations, metallurgy, physical structure and signal analysis. However, no special prerequisite knowledge is required in any of these areas. The course starts off with an overview of the very subjective area of the perception of music. This is essential as it provides a reference point for later discussions. Other topics include the manufacturing process, including a discussion on the types of metallurgical properties required for different instrument characteristics, the modal properties of the instrument and the dynamics of the stick impact. The course ends with some consideration of significant recent developments.

LEVEL: 3
SEMESTER: 2
COURSE CODE: ENGR 3001
COURSE TITLE: NATURAL HAZARDS & DISASTER MANAGEMENT IN THE CARIBBEAN
NUMBER OF CREDITS: 3
PREREQUISITES:
COURSE DESCRIPTION: Definitions and concepts, characteristics of natural hazards in the Caribbean, economic, social and environmental impacts; techniques for identification, mapping and prediction, vulnerability and risk assessment, the disaster management cycle, structural and non-structural mitigation, emergency planning, recovery and reconstruction, disaster management and development planning, disaster management and agriculture, tourism, public health, public policy and legislation, sociology of disasters, disaster education.

LEVEL: 3
SEMESTER: 1
COURSE CODE: FOST 3000
COURSE TITLE: PRINCIPLES OF FOOD SCIENCE
NO. OF CREDITS: 3
PREREQUISITES:
SYLLABUS: The basic chemistry of carbohydrates, proteins, lipids, vitamins, salt, preservatives and antioxidants, enzymes, additives and water in relation to food preservation and processing.
SEMESTER: 2  
COURSE CODE: FOST 3001  
COURSE TITLE: PRINCIPLES OF FOOD PROCESSING  
NO. OF CREDITS: 3  
PREREQUISITES:  
SYLLABUS: Introduction to basic concepts and operations used to accomplish food preservation.

MATHEMATICS COURSES

LEVEL: 1  
SEMESTER: 1  
COURSE CODE: ENGR 1180  
COURSE TITLE: ENGINEERING MATHEMATICS I  
NUMBER OF CREDITS: 3  
PREREQUISITES:  

LEVEL: 2  
SEMESTER: 1  
COURSE CODE: MATH 2230  
COURSE TITLE: ENGINEERING MATHEMATICS II  
NUMBER OF CREDITS: 3  
PREREQUISITES:  
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.

LEVEL: 2  
SEMESTER: 2  
COURSE CODE: MATH 2240  
COURSE TITLE: STATISTICS  
NUMBER OF CREDITS: 2  
PREREQUISITES:  
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.
LEVEL: 2  
SEMESTER: 2  
COURSE CODE: MATH 2250  
COURSE TITLE: INDUSTRIAL STATISTICS  
NUMBER OF CREDITS: 3  
PREREQUISITES:  
COURSE DESCRIPTION: Statistics and probability; frequency distributions, 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; distribution of sample means; point estimates; confidence intervals; statistical inference - tests of significance. Regression analysis; analysis of multiple regression; non-parametric statistical methods; analysis of variance; design of experiments; randomised block design and analysis.

LEVEL: 3  
SEMESTER: 1  
COURSE CODE: MATH 3530  
COURSE TITLE: MATHEMATICS III  
NUMBER OF CREDITS: 3  
PREREQUISITES:  
COURSE DESCRIPTION: Linear algebra: systems of equations, vector spaces, determinants, eigenvalues, similarity, positive definite matrices, singular value decomposition. Optimisation and mathematical programming, calculus of variations.

LANGUAGES COURSE DESCRIPTIONS  
COURSES WITH 2 CREDIT WEIGHTING  

FRENCH  
LEVEL: I  
SEMESTER: ALL  
COURSE CODE: FREN 1001  
COURSE TITLE: FRENCH 1A  
NUMBER OF CREDITS: 2  
PREREQUISITES: None  
COURSE DESCRIPTION: A four skill (listening, speaking, reading and writing) course that introduces students to the French language and to some of its cultural aspects. Students will develop an initial ability to communicate in the target language in basic situations relating to their personal lives. Students will be introduced to the concept of learner autonomy in language learning.  
ASSESSMENT:  
100% in course testing  
Test 1: 40% of the overall mark  
Test 2: 60% of the overall mark
LEVEL I
SEMESTER: ALL
COURSE CODE: FREN 1005
COURSE TITLE: FRENCH 3A
CREDITS: 2
PRE-REQUISITES: FREN 1004 OR EQUIVALENT
COURSE DESCRIPTION: A four skill (listening, speaking, reading and writing) course that builds on the work done in French 2B. Students will start showing a degree of fluency in the four different skills. Students will demonstrate more of the behaviours and attitudes of independent learners.
ASSESSMENT:
100% in course testing
Test 1: 40%  Test 2: 60%

SPANISH
LEVEL I
SEMESTER: ALL
COURSE CODE: SPAN 1101
COURSE TITLE: SPANISH IA
NUMBER OF CREDITS: 2
PRE-REQUISITES: NONE
COURSE DESCRIPTION: A four skill (listening, speaking, reading and writing) course that introduces students to the Spanish language and to some of its cultural aspects. Students will develop an initial ability to communicate in the target language in situations relating to their personal lives. Students will be introduced to the concept of learner autonomy in language learning.
ASSESSMENT:
100% in course testing
Test 1: 40%  Test 2: 60%
LEVEL: I
SEMESTER: ALL
COURSE CODE: SPAN 1105
COURSE TITLE: SPANISH 3A
CREDITS: 2
PRE-REQUISITES: SPAN 1104 OR EQUIVALENT
COURSE DESCRIPTION: A four skill (listening, speaking, reading and writing) course that builds on the work done in Spanish 2B. Students will start showing a degree of fluency in the four different skills. Students will demonstrate more of the behaviours and attitudes of independent learners.
ASSESSMENT:
100% in course testing
Test 1: 40%  Test 2: 60%

LEVEL: I
SEMESTER: ALL
COURSE CODE: SPAN 1106
COURSE TITLE: SPANISH 3B
CREDITS: 2
PRE-REQUISITES: SPAN 1105 OR EQUIVALENT
COURSE DESCRIPTION: A four skill (listening, speaking, reading and writing) course that builds on the work done in Spanish 3A. Students will be able to demonstrate increased ease when interacting whether orally or in writing. Students will demonstrate more of the behaviours and attitudes of independent learners.
ASSESSMENT:
100% in course testing
Test 1: 40%  Test 2: 60%