This booklet gives information on Courses offered in the Faculty of Science and Technology at the Cave Hill Campus of the University of the West Indies (Barbados). For courses offered at the other Campuses, please see Faculty booklets for the Mona (Jamaica) and St. Augustine (Trinidad & Tobago) and the Open Campus.

This Guide is intended for students entering the Faculty of Science and Technology from academic year 2016 - 2017. Continuing students must refer to Faculty Regulations that govern their year of entry - available on the Faculty website.

THE UNIVERSITY RESERVES THE RIGHT TO MAKE SUCH CHANGES TO THE CONTENTS OF THIS PUBLICATION AS MAY BE DEEMED NECESSARY.

Disclaimer:

The information in this booklet is accurate at the time of printing. Subsequent publications may therefore reflect updated information. Students should consult their Dean where clarification is required.
Table of Contents
INTRODUCTION TO THE FACULTY ............................................................................ 8
STAFF OF THE FACULTY OF SCIENCE & TECHNOLOGY........................................ 9
FACULTY OFFICE & OFFICERS .............................................................................. 9
CENTRE FOR RESOURCE MANAGEMENT AND ENVIRONMENTAL STUDIES (CERMES)................................. 10
DEPARTMENT OF BIOLOGICAL AND CHEMICAL SCIENCES ..................................... 11
  BIOLOGICAL SCIENCES ..................................................................................... 11
  CHEMICAL SCIENCES ..................................................................................... 13
  ENVIRONMENTAL SCIENCE ............................................................................ 14
DEPARTMENT OF COMPUTER SCIENCE, MATHEMATICS & PHYSICS ..................... 14
  COMPUTER SCIENCE ...................................................................................... 14
  MATHEMATICS ............................................................................................... 16
  PHYSICS & ELECTRONICS .............................................................................. 16
THE CARIBBEAN INSTITUTE FOR METEOROLOGY & HYDROLOGY (CIMH) .............. 18
  PRINCIPAL OFFICERS OF THE UNIVERSITY OF THE WEST INDIES ...................... 20
STUDENT AFFAIRS ............................................................................................... 21
APPLICATION PROCEDURE .................................................................................. 22
INTERNATIONAL EXCHANGE/STUDY ABROAD PROGRAMME ................................ 23
UNIVERSITY REGULATIONS ON PLAGIARISM ..................................................... 24
PRIZES AWARDED ANNUALLY IN THE FACULTY OF SCIENCE AND TECHNOLOGY ....... 28
  THE GRAHAM GOODING BIOLOGY PRIZE ....................................................... 28
  R. L. SEALE & CO. LTD. PRIZE IN CHEMISTRY ............................................... 28
  SYSTEMS CONSULTING LTD. (SCL) PRIZES ................................................... 28
  SYSTEMS CONSULTING LTD. (SCL) PRIZE IN MATHEMATICS ......................... 28
  MOORE PARAGON PRIZE IN PHYSICS ............................................................ 29
  MOORE PARAGON PRIZE IN ELECTRONICS ................................................... 29
  FACULTY PRIZE .............................................................................................. 29
  DEAN'S PRIZES, FACULTY OF SCIENCE AND TECHNOLOGY ............................ 29
  THE PFIZER CARIBBEAN SCIENCE PRIZE ...................................................... 30
  LOUIS CHINNERY ECOLOGY PRIZE ............................................................... 30
GLOSSARY TO THE REGULATIONS ...................................................................... 31
FACULTY REGULATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE .................. 33
# Table of Contents

A. QUALIFICATION FOR ADMISSION ................................................................. 33
B. OUTLINE OF THE DEGREE PROGRAMME .................................................. 33
C. REGISTRATION .......................................................................................... 35
D. PROGRESS THROUGH THE PROGRAMME ................................................ 36
E. EXAMINATIONS ......................................................................................... 36
F. GPA AND CLASS OF DEGREE ................................................................. 37
G. LEAVE OF ABSENCE AND VOLUNTARY WITHDRAWAL ....................... 38
H. TIME LIMITS FOR COMPLETION & ENFORCED WITHDRAWALS .......... 38
I. EXEMPTIONS AND TRANSFERS .............................................................. 40
J. AEGROTAT DEGREE ................................................................................ 41

INDEX TO THE REGULATIONS .................................................................... 42

APPENDIX I .................................................................................................. 45
   (a) LIST OF APPROVED SCIENCE CAPE / GCE A-LEVEL SUBJECTS .......... 45
   (b) LIST OF APPROVED SCIENCE CSEC GENERAL PROFICIENCY/GCE O-LEVEL SUBJECTS: ............. 45

APPENDIX II .................................................................................................. 46
   LIST OF MAJORS IN THE UWI SCIENCE FACULTIES: .............................. 46

APPENDIX III .................................................................................................. 46
   FOUNDATION COURSES ........................................................................ 46

APPENDIX IV .................................................................................................. 48
   FST CREDIT DEFINITION ........................................................................ 48

APPENDIX V .................................................................................................. 48
   GRADING SYSTEM .................................................................................... 48

APPENDIX VI .................................................................................................. 49
   OPTIONS IN CONJUNCTION WITH OTHER FACULTIES ........................... 49

A. PROGRAMMES WITH THE FACULTY OF SOCIAL SCIENCES .................. 49
   COMPUTER SCIENCE AND ACCOUNTING: ........................................... 50
   COMPUTER SCIENCE WITH ACCOUNTING ............................................ 51
   COMPUTER SCIENCE AND ECONOMICS ............................................ 52
   COMPUTER SCIENCE WITH ECONOMICS ......................................... 53
   COMPUTER SCIENCE AND MANAGEMENT ......................................... 54
   COMPUTER SCIENCE WITH MANAGEMENT ....................................... 55
   INFORMATION TECHNOLOGY AND ACCOUNTING ............................ 56
INFORMATION TECHNOLOGY WITH ACCOUNTING ........................................... 57
INFORMATION TECHNOLOGY AND ECONOMICS .......................................... 58
INFORMATION TECHNOLOGY WITH ECONOMICS ......................................... 59
INFORMATION TECHNOLOGY AND MANAGEMENT .......................................... 60
INFORMATION TECHNOLOGY WITH MANAGEMENT ......................................... 61
MATHEMATICS AND ACCOUNTING ............................................................... 62
MATHEMATICS WITH ACCOUNTING ............................................................. 63
MATHEMATICS AND ECONOMICS ................................................................. 64
MATHEMATICS WITH ECONOMICS ............................................................... 65
SCIENCE AND MANAGEMENT .................................................................... 66
SCIENCE WITH MANAGEMENT ................................................................. 67
B. PROGRAMMES WITH THE FACULTY OF HUMANITIES & EDUCATION .......... 68
SCIENCE AND PSYCHOLOGY ...................................................................... 68
SCIENCE WITH PSYCHOLOGY ................................................................... 69
SCIENCE WITH SPANISH ........................................................................... 70
SCIENCE WITH EDUCATION ......................................................................... 71
COURSES BY SEMESTER: BIOLOGICAL AND CHEMICAL SCIENCES ................. 73
BIOLOGICAL SCIENCES .............................................................................. 75
MAJOR IN BIOCHEMISTRY .............................................................. 75
MINOR IN BIOCHEMISTRY ............................................................... 76
MAJOR IN BIOLOGY ................................................................. 77
MINOR IN BIOLOGY ............................................................... 78
DOUBLE MAJOR IN BIOLOGICAL SCIENCES ........................................... 79
MAJOR IN ECOLOGY ................................................................. 80
MINOR IN ECOLOGY ............................................................... 81
MAJOR IN MICROBIOLOGY .............................................................. 82
MINOR IN MICROBIOLOGY .............................................................. 82
CHEMICAL SCIENCES ............................................................................... 84
MAJOR IN CHEMISTRY ................................................................. 84
MINOR IN CHEMISTRY ............................................................... 84
DOUBLE MAJOR IN CHEMISTRY .......................................................... 85
ENVIRONMENTAL SCIENCE ...................................................................... 85
INTRODUCTION TO THE FACULTY

The University of the West Indies is a regional and international institution primarily serving the needs of the Commonwealth Caribbean. Established in 1948 at Mona, Jamaica, as a college in special relationship with the University of London, it received full university status in 1962, as an independent degree granting institution. In 1960, a second campus was established at St Augustine, Trinidad, and in 1963 teaching started in Barbados, first at a temporary site at the Bridgetown Port and then at the Cave Hill Campus. Sciences have been taught at the Cave Hill Campus of the University of the West Indies from its inception. The Faculty was formerly known as the Faculty of Natural Sciences and later the Faculty of Pure and Applied Sciences before deciding that the name Faculty of Science and Technology best represented the degrees being offered. Our full-time Academic Staff are mainly Caribbean nationals but we are also very much an international Faculty with about one third of our lecturers drawn from countries far and wide. Our degree programmes are well-respected regionally and internationally with many of our graduates working or pursuing further studies overseas.

The Faculty comprises three sections:-

• Department of Biological & Chemical Sciences – undergraduate & graduate programmes
• Department of Computer Science, Mathematics & Physics – undergraduate & graduate programmes
• Centre for Resource Management and Environmental Studies (CERMES) – graduate programmes

In the undergraduate BSc programme, courses are offered in all major scientific disciplines, with first year courses also taught at Tertiary Level Colleges in Antigua and St. Lucia. Students may Major in one or two disciplines and current enrollment in the Faculty is just over one thousand undergraduates, most of whom are full-time students. Science graduates may register for the research degrees of M.Phil. and Ph.D. under the supervision of a member of the Academic Staff. The Faculty also offers MSc. programmes in various fields. CERMES offers an MSc. in Natural Resource and Environmental Management.

The Department of Computer Science and Mathematics offers a series of taught Masters programmes from the discipline of Computer Sciences, as well as the MSc. in Renewable Energy Management. A new MSc. in Biosafety will begin this academic year and will be offered by the Department of Biological and Chemical Sciences.

The research interests in the Faculty are diverse, addressing both fundamental questions in Science as well as finding scientific solutions to real life problems facing Caribbean people. Faculty members also constitute an unmatched source of expertise to Governments, Non-Governmental Organisations and the Private Sector in providing technical advice. The Sports Agronomy Research Unit (SARU), within the Department of Biological & Chemical Sciences, conducts basic and contract research and provides consultancy services in the area of living grass surfaces for sporting and recreational activities. It complements the UWI Centre for Cricket Excellence. Through collaboration with the Caribbean Institute for Meteorology and Hydrology, the Faculty offers a Major in Meteorology within the BSc degree.
STAFF OF THE FACULTY OF SCIENCE & TECHNOLOGY

FACULTY OFFICE & OFFICERS

Tel: (246) 417-4310 - 12
Fax: (246) 417-4579
Website: http://www.cavehill.uwi.edu/fst
Email: fst@cavehill.uwi.edu

1. Dean
   Colin Depradine
   B. Eng. (University College London),
   MSc. (Imperial College London), Ph.D. (UWI)

2. Deputy Dean
   Adrian Als
   BSc, MPhil (UWI)
   Ph.D. (Sheffield Hallam)

3. Deputy Dean
   Jeanese Badenock
   Outreach & Research
   BSc (UWI) PhD (Dartmouth)

Administrative Assistant
   Kay Browne
   BSc, MSc (UWI)
   417-4311

Project Officer
   Natasha Corbin
   (Projects) BSc,
   MSc (UWI)
   417-4739

Stenographer/Clerk
   Gloria Harper
   BSc (UWI)
   417-4312

Secretary
   Shana Odle
   417-4310

Office Assistant
   Anthony Howell
   417-4916

I.T Technician
   Maurice Beckles
   BSc, MSc (UWI)
   417-4914

Mechanical Workshop
   Glendon Pile
   417-4914
Environmental Science Technician
Grantley Forde 417-4914
Damian Greaves 417-4914
BSc (UWI)

Electronics Workshop
Andrew Phillips 417-4314
BSc (UWI)

Electronics Workshop
Brian Haynes 417-4314
BSc (UWI)

CENTRE FOR RESOURCE MANAGEMENT AND ENVIRONMENTAL STUDIES
(CERMES)

Tel: (246) 417-4339/4316
Fax: (246) 424-4204
Website: http://cavehill.uwi.edu/cermes
E-Mail: nrm@cavehill.uwi.edu

Director: Adrian Cashman
BSc (KCL), MSc, DIC (ICL),
MSc. (York), Ph.D. (Sheffield)
417-4829

Administrative Assistant: Jennifer Hurley 417-4339/4316

Secretary: Lisa-Ann Rollins 417-4316/17

Professor of Marine Ecology and Fisheries
Hazel Oxenford 417-4571
BSc (Exeter), PhD (UWI)

Emeritus Professor
Robin Mahon
BSc (UWI), MSc., PhD (Guelph)

Senior Lecturer
Leonard Nurse
Senior Lecturer
Patrick McConney
BSc. (Bangor), M. ES. (Dalhousie),
PhD (UBC)
417-4725

Lecturer
Janice Cumberbatch
BSc (UWI), MSc (York),
PhD (UWI)
417-4569

DEPARTMENT OF BIOLOGICAL AND CHEMICAL SCIENCES

Tel: (246) 417-4323
Fax: (246) 417-4325
E-Mail: bcs@cavehill.uwi.edu

Senior Research Fellow in Sports Agronomy & Head of Department
Francis Lopez
BSc, PhD (UWI)

Administrative Assistant
Shirley Jones
Cynthia Spooner
Pauline Moore
Toni Russell

BIOLOGICAL SCIENCES

Professor of Plant Biology
C. M. Sean Carrington
BSc (Edin.), DPhil (York-UK)
417-4330

Professor of Conservation
Julia A. Horrocks
Ecology

BSc. (Reading), PhD. (UWI)
417-4320

Lecturer

Angela Alleyne
BSc, MPhil, PhD (UWI)
417-4808

Lecturer

Shane Austin (From Semester 2)
BSc (UWI), MSc (McGill)

Lecturer

Angela Fields
BSc, PhD (UWI)
417-4361

Lecturer

Bidyut Mohapatra
BSc (OUAT), MSc (Calcutta)
PhD (Kochi)
417-4349

Lecturer

Marilaine Mota-Meira
Ing. (Curitiba) MSc, PhD (Laval)
417-4859

Lecturer

Thea Scantlebury-Manning
BSc, PhD (Concordia)
417-4356

Lecturer

Henri Valles
BSc (Oviedo), MSc (UWI-CERMES)
PhD (McGill).
417-4328

Lecturer

Suzanne Workman
BSc (Manch.), MPhil, PhD (UWI)
417-4663

Senior Research Fellow in Sports Agronomy

Francis Lopez
BSc, PhD (UWI)
417-4345
CHEMICAL SCIENCES

Professor of Theoretical and Computational Chemistry
Sean McDowell
BSc (UWI), PhD (Cantab)
417-4352

Professor of Organic Chemistry
Winston Tinto
BSc, PhD (UWI), CSci, CChem, FRSC
417-4357/4329

Senior Lecturer
Sergei M. Kulikov
MS (Novosibirsk State U.), PhD,
DSc (Russ. Acad. Sci.)
417-4351

Senior Lecturer
Avril Williams
BSc, PhD (UWI)
417-4342

Lecturer
Jeanese Badenock
BSc (UWI),
PhD (Darmouth)
417-4336

Lecturer
Leah Garner-O’Neale
BSc, PhD (UWI)
417-4343

Lecturer
Srinivasa Popuri
BSc (Nagarjuna), MSc (DAVV),
PhD (SVU)
417-4340

Lecturer
Emma Smith
BSc (Liverpool), MSc (Heriot-Watt),
PhD (Plymouth)
417-4838
ENVIRONMENTAL SCIENCE

Lecturer in Geology  
Steven Corder  
BSc (Open U.), M.RES, PhD (Lanc.)  
417-4321

Lecturer in Atmospheric Science  
Isabelle Gouirand  
Lic, PhD (Aix-Marseille I)  
417-4837

Lecturer in Renewable Energy  
Thomas Rogers  
B.Eng. (Warwick),  
MSc (Loughborough)  
PhD (Nottingham)  
417-4158

DEPARTMENT OF COMPUTER SCIENCE, MATHEMATICS & PHYSICS

Tel: (246) 417-4365  
Fax: (246) 438-9198  
E-Mail: cmp@cavehill.uwi.edu

Senior Lecturer in Physics  
& Head of Department  
Sodha, J anak  
BSc, MSc, PhD (Manch.)

Administrative Assistant  
Wavney Weekes

Stenographer/Clerk  
Geniveve Harris

Stenographer/Clerk  
Deidre Jemmott

Stenographer/Clerk  
Tanya Taylor

COMPUTER SCIENCE

Lecturer  
Adrian Als  
BSc, MPhil (UWI), PhD  
(Sheffield Hallam)
Lecturer  
John Charley  
BSc (UWI), Dip. Trop. Met. (Miami)  
Adv. Dip. (Comp. Sci), MPhil,  
PhD (UWI)  
417-4368

Lecturer  
Dwaine Clarke  
SB, MEng, PhD (MIT)  
417-4333

Senior Lecturer  
Colin Depradine  
BEng. (UCL), MSc (ICL), PhD (UWI)  
417-4375

Lecturer  
Thomas Edward  
BSc, PhD (UWI)  
417-4792

Lecturer  
Jeffery Elcock  
BSc (UWI), MSc. (Oxon.)  
Ph.D. (UWI)  
417-4380

Lecturer  
Curtis Gittens  
BSc (UWI), MSc, PhD (W. Ont.)  
417-4473

Lecturer  
Mechelle Gittens  
BSc (UWI), MSc, PhD (W. Ont.)  
417-4465

Lecturer  
Hussein Thompson  
BSc, PhD (UWI)  
417-4558

Lecturer  
Paul Walcott  

MATHMATICS

Professor of Mathematical Statistics
Smail Mahdi
BSc, MSc (Constantine),
PhD (Montreal)
417-4367

Professor of Mathematics
Jayaram Chillumuntala
MSc (Andra), PhD (Madras)
417-4462

Lecturer
Peter Chami
BSc, PhD (UWI)
417-4369

Lecturer
Bernd Sing
Dipl.-PHYS (Tübingen), PhD (Bielefeld)
417-4737

PHYSICS & ELECTRONICS

Professor of Theoretical Physics
Tane Ray
BSc, (Illinois), PhD (Boston)
417-4377

Emeritus Professor of Physics
L. Leo Moseley
BSc, MSc (UWI), PhD (Wales)
417-4373

Senior Lecturer
Janak Sodha
BSc, MSc, PhD (Manch.)
417-4573
<table>
<thead>
<tr>
<th>Lecturer</th>
<th>Name</th>
<th>Qualifications</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sujit Bag</td>
<td>B.Tech. (IIT Kharagpur), PhD (Leic.)</td>
<td></td>
<td>417-4851</td>
</tr>
<tr>
<td>Carlos Hunte</td>
<td>BSc, MPhil., PhD (UWI)</td>
<td></td>
<td>417-4382</td>
</tr>
<tr>
<td>Ramon Sargeant</td>
<td>BSc, MPhil (UWI), MSc, PhD (King's Col)</td>
<td></td>
<td>417-4374</td>
</tr>
</tbody>
</table>
THE CARIBBEAN INSTITUTE FOR METEOROLOGY & HYDROLOGY (CIMH)

Is an Affiliate Institution whose Faculty members teach our degree programme in Meteorology

Tel: (246) 425-1362
Fax: (246) 424-4733
Website: http://www.cimb.edu.bb

Director
David Farrell
BSc (W. Ont.), MSc, PhD (Manitoba)
425-1367

Senior Lecturer
Adrian Trotman
BSc (UWI), MSc (Reading),
MPhil. (UWI)
425-1362

Lecturer
Shawn Boyce
BSc (UWI), MSc (Newcastle)
425-1362

Lecturer
Kathy-Ann Caesar
BSc (SUNY) MSc (Texas A & M)
425-1362

Lecturer
Jonathan Cox
BSc (Cardiff), PhD (Salford-Manchester)
425-1362

Lecturer
Margarette Mayers-Als
BSc, MPhil (UWI)
425-1362

Lecturer
Lawrence Pologne
BSc (UWI), MSc (Florida State)
425-1362

Lecturer
Andrea Sealy
BSc (Jackson State),
MSc (Penn. State), PhD (Howard)
Lecturer  Cédric Van Meerbeeck  
MSc (Ghent), PhD (Amsterdam)  
425-1362

Lecturer  Ashford Reyes  
BSc (UWI), PhD (Howard)  
425-1362
PRINCIPAL OFFICERS OF THE UNIVERSITY OF THE WEST INDIES

Visitor
Her Majesty the Queen

Chancellor
Professor The Honourable Sir George Alleyne
OCC, MBBS UCWI, MD Lond, FRCP, FACP (Hons.), Hon. DSc UWI

Vice-Chancellor
Professor Sir Hilary Beckles
BA, PhD Hull, Hon DLitt, Hull, Hon DLitt Knust

CHAIRMEN, CAMPUS COUNCILS

Sir Paul Altman
GCM, BCh, JP, BBA Mia, Hon. LLD UWI

Dr. Marshal Hall
CD, BSc Col, Ph.D. Wis

Mr. Ewart Williams
BSc, MSc UWI

Sir K. Dwight Venner
KBE, CBE, BSc, MSc, UWI

PRO-VICE CHANCELLORS

Professor Alan Cobley
BA Manc, MA York, UK, PhD Lond

Professor Dale Webber
BSc UWI, PhD UWI

Professor Andrew Downes
BSc (Hons), MSc UWI, PhD Manc

Professor V. Eudine Barriteau - Cave Hill
BSc UWI, MPA NYC, PhD Howard

Professor Archibald McDonald - Mona
MBBS, DM (Surg) UWI, FRCSEd, FACS

Professor Clement Sankat - St. Augustine
BSc, MSc UWI, PhD Guelph, MASAE, MAPETT, FIAgreE

Dr. Luz Longsworth - Open Campus
BA, MBA UWI, MA Queens, DBA. Bath

DEPUTY CAMPUS PRINCIPALS

Professor R Clive Landis- Cave Hill
BSc Birmingham, MSc Loyola, PhD Loyola

Professor Ishenkumba Kahwa - Mona
BSc, MSc Dar, PhD Louisiana State

Professor Rhoda Reddock - St. Augustine
BSc UWI, MSc ISS The Hague, PhD Amsterdam

Professor Julie Meeks Gardner - Open Campus
BA, Dip Nutrition, PhD UWI

University Registrar
Mr. C. William Iton
BSc UWI, LLM Essex

University Bursar
Mr. Archibald Campbell
BSc MSc UWI, FAC

University Librarian
Mrs. Karen Lequay
BSc UWI, MSc Soton, MSc Lough

PUBLIC ORATORS

Dr. Jennifer Obidah-Alleyne - Cave Hill
BA Hunter Col, MA Yale, PhD U of California, Berkley

Dr. Michael Bucknor - Mona
BA, PhD UWI

Dr. Brian Cockburn - St. Augustine
BSc, PhD UWI

Dr. Francis Severin - Open Campus
BA, MSc, PhD UWI
## STUDENT AFFAIRS

**Tel:** (246) 417-4119  
**Fax:** (246) 438-9145

### Admissions:
- **Assistant Registrar**  
  Mr. David Marshall BSc, MSc  
  Tel: 417-4119
- **Administrative Assistant**  
  Mrs. Deborah Knight  
  Tel: 417-4122
- **Administrative Assistant (Ag.)**  
  Mrs. Carol Jordan BSc, MSc  
  Tel: 417-4862
- **Science & Technology Faculty Clerk**  
  Mrs. Denise Greenidge BSc  
  Tel: 417-4471
- **Secretary**  
  Ms. Kathy-Ann Watson  
  Tel: 417-4120
- **Summer School Representative**  
  Mrs. Nidra Grant  
  Tel: 417-4114

### Examinations:
- **Senior Assistant Registrar**  
  Miss. Betty Thorpe BSc, MSc, ACIS  
  Tel: 417-4133
- **Administrative Assistant**  
  Mrs. Eudine Spooner  
  Tel: 417-4139
- **Administrative Assistant**  
  Ms. Ingrid Lashley  
  Tel: 417-4135
- **Stenographer/Clerk**  
  Mrs. Ann Arthur  
  Tel: 417-4137

### Records:
- **Administrative Assistant**  
  Miss Nakita Squires, BSc  
  Tel: 417-4140
- **Stenographer/Clerk**  
  Ms. Esther Layne, BSc  
  Tel: 417-4142

  *(Transcripts & Academic Records)*

### School for Graduate Studies and Research:
- **Senior Assistant Registrar**  
  Mrs. Gail Carter-Payne  
  Tel: 417-4902
- **Administrative Assistant**  
  Mrs. Fay Williams, BSc  
  Tel: 417-4907
- **Administrative Assistant**  
  Ms. Maria Dodson, BSc  
  Tel: 417-4910
- **Science & Technology Faculty Clerk**  
  Miss Tara Moseley, BSc  
  Tel: 417-4905
APPLICATION PROCEDURE

Applications for entry to all Faculties must be received on or before January 10 of the year in which the applicant wishes to enter and should be accompanied by:

Certified evidence of all examinations passed;
• A signed statement from parent/guardian agreeing that the applicant shall become an undergraduate in the Faculty*
• A signed statement from parent/guardian or from a responsible individual or authority that funds will be available for the payment of fees*
• The relevant application fee.

Students are encouraged to apply on-line at [www.cavehill.uwi.edu/apply](http://www.cavehill.uwi.edu/apply). Application forms may also be obtained from the Student Affairs Section at Cave Hill or other campuses of the UWI. * Not applicable for Mature students

Table 1:
Minimum CAPE (or equivalent) qualifications for entry to 3-Year BSc Science Programmes

<table>
<thead>
<tr>
<th>BSc Major in</th>
<th>Required CAPE Passes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry</td>
<td>Biology &amp; Chemistry</td>
</tr>
<tr>
<td>Biology ¹</td>
<td>Biology &amp; Chemistry</td>
</tr>
<tr>
<td>Ecology</td>
<td>Biology &amp; Chemistry</td>
</tr>
<tr>
<td>Microbiology</td>
<td>Biology &amp; Chemistry</td>
</tr>
<tr>
<td>Chemistry ¹</td>
<td>Chemistry &amp; another subject</td>
</tr>
<tr>
<td>Computer Science ¹</td>
<td>Mathematics &amp; another subject</td>
</tr>
<tr>
<td>Information Technology (IT)</td>
<td>Mathematics &amp; another subject</td>
</tr>
<tr>
<td>Mathematics ¹</td>
<td>Mathematics &amp; another subject</td>
</tr>
<tr>
<td>Electronics</td>
<td>Mathematics &amp; Physics or another subject</td>
</tr>
<tr>
<td>Physics</td>
<td>Mathematics &amp; Physics or another subject</td>
</tr>
<tr>
<td>Meteorology</td>
<td>Mathematics &amp; Physics</td>
</tr>
<tr>
<td>Engineering Physics</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSc Options ²</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Science (or IT) &amp; Accounting</td>
<td>Mathematics &amp; another subject</td>
</tr>
<tr>
<td>Computer Science (or IT) &amp; Management</td>
<td>Mathematics &amp; another subject</td>
</tr>
<tr>
<td>Mathematics &amp; Economics</td>
<td>Mathematics &amp; another subject</td>
</tr>
<tr>
<td>Mathematics &amp; Accounting</td>
<td>Mathematics &amp; another subject</td>
</tr>
<tr>
<td>Science &amp; Management</td>
<td>Mathematics &amp; requirements as for the Science Major</td>
</tr>
<tr>
<td>Science &amp; Psychology</td>
<td>Requirements as for the Science Major</td>
</tr>
</tbody>
</table>

¹ Double Major also offered
² Numbers taking these Options are restricted
INTERNATIONAL EXCHANGE/STUDY ABROAD PROGRAMME

The exchange programme allows students to spend one or two semesters abroad at overseas universities in order to broaden their experience, understanding and perception. Such exchanges typically take place in Year 2 of the BSc degree and the application deadline is December 1st of the year prior to the exchange. UWI students, while at exchange Universities, continue as regular full-time students of the University of the West Indies. They pay UWI tuition and other fees and pursue matching and approved courses for credit. Credits earned abroad are transferred to UWI and applied to regular Faculty degree requirements in accordance with Regulation 38. For study abroad the requirements may vary. Interested students are advised to consult the International Exchange/Study Abroad brochure available from the Admissions Section of Student Affairs. This contains a current list of Universities with which UWI has entered into cooperative arrangements for study exchanges. Programmes of study must be pre-approved by the Dean.
UNIVERSITY REGULATIONS ON PLAGIARISM
(First Degrees, Diplomas and Certificates)

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
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.

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.

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.

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.

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.

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.

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.

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.
PRIZES AWARDED ANNUALLY IN THE FACULTY OF SCIENCE AND TECHNOLOGY

THE GRAHAM GOODING BIOLOGY PRIZE
The prize consists of a commemorative scroll and voucher for BDS $600.00 to be spent on books related to the Biological Sciences. It will be awarded to the best student majoring in the Biological Sciences (Biochemistry, Biology, Ecology, Microbiology) based on the student's performance (minimum B+ average) in the courses comprising the Biological major.

R. L. SEALE & CO. LTD. PRIZE IN CHEMISTRY
This prize consists of a book voucher of BDS $600.00 and a commemorative scroll. It is awarded to the best student (who meets the standard) on the basis of performance in Chemistry courses during the final two years of the programme.

SYSTEMS CONSULTING LTD. (SCL) PRIZES
in (a) Computer Science
(b) Computer Science and Accounting or Computer Science and Management

These prizes consist of a cash voucher of BDS $1500 to be spent on computer-related materials. Students must have completed Year 1 of the Science and Technology Programme; and have fulfilled the Year 1 requirements for the major in Computer Science or Computer Science and Accounting or Computer Science and Management and have attained the highest average grade which must be at least B+.

None of these courses should have been repeated.

SCL will offer each Prize winner a three-month paid work attachment at SCL after graduation.

SYSTEMS CONSULTING LTD. (SCL) PRIZE IN MATHEMATICS

The prize consists of a voucher of BDS $500 to be spent on books on Mathematics and related fields. Students must be graduating in the current year, have majored in Mathematics and have attained the highest average marks in the Mathematics courses relevant to the major with an overall average grade of at least B+.

None of the courses should have been repeated.
MOORE PARAGON PRIZE IN PHYSICS

The prize consists of a voucher for books and/or student materials, of a value of BDS $500. The prize will be awarded annually to the student who obtains the highest average marks in the First Year courses offered in Physics, provided that the student obtains, at least a B+ average and continues within the degree programme in the Faculty of Science and Technology, Cave Hill.

None of the courses should have been repeated.

MOORE PARAGON PRIZE IN ELECTRONICS

This prize consists of a voucher for books and/or student materials of a value of BDS $500. The prize will be awarded annually to the student who obtains the highest average marks in the First Year courses offered in Electronics, provided that the student obtains, at least a B+ average and continues within the degree programme in the Faculty of Science and Technology, Cave Hill.

None of these courses should have been repeated.

FACULTY PRIZE

This prize consists of a voucher of BDS $ 500 to be spent on books. It is awarded to the Part I/Level I student with the best academic performance.

DEAN’S PRIZES, FACULTY OF SCIENCE AND TECHNOLOGY

There shall be two (2) Prizes awarded annually, called the Dean’s Prizes, Faculty of Science and Technology. The Prizes shall be awarded to two (2) students registered in the Faculty of Science and Technology who:

• have obtained at least an A average grade over 64 credits in the Faculty of Science and Technology courses at Levels II/III
• should be nominated by their Department and interviewed by an Interdisciplinary panel. The names shall be inscribed on an appropriate plaque to be displayed in the Faculty Office.

The value of the Prizes shall be:

FIRST PRIZE (Bds) $900.00
SECOND PRIZE (Bds) $500.00
THE PFIZER CARIBBEAN SCIENCE PRIZE

Valued at BDS $1000, it is open to undergraduate students registered for a major in Biology, Chemistry or their sub-disciplines in the Department of Biological and Chemical Sciences.

LOUIS CHINNERY ECOLOGY PRIZE

A commemorative scroll and a voucher for BDS $900.00 to be used in the purchase of books related to the Biological/Ecological/Environmental Sciences. Awarded to the best student majoring in Ecology with a minimum B+.
## Glossary to the Regulations

<table>
<thead>
<tr>
<th>TERM</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-requisites</td>
<td>Two courses of which credit may be granted for only one. Bodies on the basis of criteria such as method of enquiry, axioms, areas of application.</td>
</tr>
<tr>
<td>Course</td>
<td>A body of knowledge circumscribed by a syllabus to be imparted to students by sundry teaching methods and usually followed by an examination.</td>
</tr>
<tr>
<td>Credit</td>
<td>A measure of the workload required of students. 1 Credit Hour = 1 hour lecture/tutorial/problem class per week OR 2 hours laboratory session per week, for a Semester.</td>
</tr>
<tr>
<td>Cumulative GPA</td>
<td>Grade point average obtained by dividing the total grade point earned by the total quality hours for which the student has registered for any period of time excluding courses taken on a Pass/Fail basis, audited courses, courses taken for Preliminary credit, incomplete and in-progress courses.</td>
</tr>
<tr>
<td>Discipline</td>
<td>A body of knowledge encapsulated in a set of courses distinguishable from other such bodies on the basis of criteria such as method of enquiry, axioms, areas of application.</td>
</tr>
<tr>
<td>Elective</td>
<td>A course within a programme taken by choice of the student.</td>
</tr>
<tr>
<td>Faculty Courses</td>
<td>All courses except Foundation and Co-curricular courses.</td>
</tr>
<tr>
<td>Foundation Courses</td>
<td>Broad-based courses, three of which must be taken, and which provide a general foundation of knowledge.</td>
</tr>
<tr>
<td>Honours GPA</td>
<td>Weighted grade point average used to determine the class of degree. This GPA is computed on the basis of all courses done in the Advanced Part (Levels 2 &amp; 3) of the degree programme, weighted with respect to credits and to earned quality hours.</td>
</tr>
<tr>
<td>In-Faculty Courses</td>
<td>All Faculty courses originating in the Science Faculties.</td>
</tr>
<tr>
<td>Level</td>
<td>A measure of the standard of a course, designated at UWI by the first digit in the course number.</td>
</tr>
</tbody>
</table>
Major 30 credits (minimum) from prescribed courses at Levels 2 & 3 (as defined).

Marginal Failure A score for the overall examination of a course which is not more than 5 marks below the minimum pass mark for that course.

Minor 15 credits (minimum) of prescribed courses at Levels 2 & 3 (as defined).

Option A prescribed programme, comprising in-Faculty and, in some cases, out-of-Faculty courses, leading to a specific degree.

Out-of-Faculty Courses All Faculty courses originating in Faculties other than the Science Faculties.

Preliminary Course A Level 0 course used to satisfy entry requirements but does not contribute towards the requirements for the award of the degree.

Pre-requisite A course which must be passed before another course for which it is required may be pursued.

Programme A selection of courses (designed to achieve pedagogical goals) the taking of which is governed by certain regulations and the satisfactory completion of which (determined by such regulations) makes a candidate eligible for the award of a degree/diploma/certificate.

Science Faculties The Faculties of Science and Technology at Cave Hill, Mona and St. Augustine.

Semester GPA Grade point average (GPA) computed on the basis of all courses done in a semester, without reference to weighting except in terms of credits. (The terms Grade Point, GPA, Quality Hours and Quality Points are defined in The UWI Grade Point Average Regulations Booklet).

Subject An area of study traditionally assigned to the purview of a department.

Supplemental Examination A re-sit of an examination of a course which is not more than 5 marks below the minimum pass mark for that course.

Supplementary Oral An oral examination, offered on recommendation of Department and Faculty, to candidates who have registered a marginal failure in a Level 2 or 3 course.
FACULTY REGULATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE

All students of the University are subject to the University Regulations for Students approved by the Senate of the UWI.

Where there is conflict between the regulations of any Faculty and the University Regulations, the University Regulations shall apply.

A. QUALIFICATION FOR ADMISSION

1. In order to be admitted to the three-year degree programme, candidates must satisfy the University requirements for Matriculation (see The UWI University Regulations for Students) and have passed Mathematics and two approved science subjects [Appendix I(b)] at CSEC General Proficiency level at Grades I, II or, since 1998, Grade III (or equivalent qualification) and (a) Have obtained passes in four Units at CAPE, at least two Units in one subject, all at Grade V or better (or equivalent qualification). One of the CAPE subjects must be an Approved Science subject [see Appendix I(a)]. or (b) Have an approved Associate Degree with a GPA of 2.5 (or equivalent qualification) or higher, from a Tertiary Level Institution. (N.B. Candidates must also satisfy Departmental Requirements).

2. In order to be admitted to the four-year degree programme, candidates must satisfy the University requirements for Matriculation (see The UWI University Regulations for Students) and have passed Elementary Mathematics at CSEC General Proficiency level at Grades I, II or, since 1998, Grade III (or equivalent qualification) plus at least two of the disciplines listed in Appendix I(b).

B. OUTLINE OF THE DEGREE PROGRAMME

3. The degree of B.Sc. is awarded on the basis of a programme of studies comprising combinations of courses in Science disciplines, together with certain Foundation courses. Approved Out-of-Faculty (see Glossary) courses may be included.

4. The Science Faculties offer the following Bachelors degrees in Science (the terms Major, Minor, Option etc., are defined in the Glossary):
(a) **A degree with a single Major** (30 credits minimum from Levels 2 and 3) or a **double Major** in one or two Science disciplines (2 x 30 credits minimum or 1 x 60 credits minimum, from Levels 2 and 3). (See Appendix II for a list of Science Majors offered).

(b) **A degree** with a **single Major** in a Science discipline **plus**
   (i) one or two Minors from other distinct Science disciplines (each with 15 credits minimum from Levels 2 and 3)
   (ii) a Major, or one or two Minors, from other Faculties. Out-of-Faculty Majors and Minors are governed by the regulations of the Faculty of origin. Only certain such combinations are allowed and these are considered Option. (See Appendix VI).

5. The following types of courses, which may consist of both theoretical and practical parts, are offered by the University:
   (a) Courses taught by the Science Faculties (**in-Faculty courses**) include Preliminary (Level 0) and Levels 1, 2 and 3 courses. (Preliminary courses may be used to satisfy entry requirements of Regulation 1 above, but do not contribute towards the requirements for the award of a degree.)
   (b) Service courses, which provide students with basic techniques and skills needed for dealing with the academic programme.
   (c) Approved **Out-of-Faculty courses** which may contribute toward the requirements for the award of a degree.
   (d) **Foundation courses** (see Appendix III) which are given throughout the University to augment the general education of students.
   (e) Co-curricular activities approved for credit by Academic Board. A maximum of **three** credits of co-curricular activities may be included as part of the credits required for the award of a degree, but shall not be taken into account in the determination of the Cumulative GPA or the class of degree. They may not be substituted for Foundation Courses. Co-curricular credits gained in excess of **three** will be entered on the student’s transcript but will not contribute toward the requirements for the degree.

6. Courses normally extend over not more than one semester, but in special cases may extend over two semesters. The contact hours for a course are expressed in terms of Credit Hours (credits) and the credit-rating of a course is determined by the Faculty which administers the course. (See Appendix IV).

7. In order to be eligible for award of the degree, candidates **must**:
   (a) have been in satisfactory attendance for a period equivalent to at least **six** semesters of full-time study from entry into Level 1;

   and
(b) have passed courses totaling a minimum of 93 credits from Level 1, 2 and 3 Faculty and Foundation courses for the degree as follows:

- Level 1: 24 credits
- Level 2 and Level 3: 60 credits
- Foundation courses: 9 credits

Total: 93 credits

(i) A minimum of 15 credits at Level 1 and 30 credits at Levels 2 and 3 must be taken from in-Faculty courses.

(ii) Specific Options, or Cross-Faculty programmes, may require more than 93 credits (see Appendix VI)

(c) have a Degree GPA of at least 2.00.

C. REGISTRATION

8. A student pursuing a degree in the Faculty may register full-time or part-time. A student who is in full-time employment may pursue a degree on a part-time basis only.

9. Students must register for courses at the beginning of the academic year. Time limits governing changes in registration are as outlined in the student handbooks for each Campus. A student is deemed to be registered for a course only after his/her financial obligations to the University have been fulfilled.

10. Registration for any course (except audited courses) automatically implies entry for the associated examinations. A student who fails to attend the examinations without having previously withdrawn from the course (see Reg.9), or without having tendered evidence of illness at the time of the examinations, certified by a medical practitioner recognized by the University, will be deemed to have failed the course. Medical certificates must reach the Campus Registrar no later than seven days after the date of the examination concerned.

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

   (b) Likewise, students may not register for Preliminary courses in a subject which overlaps substantially with any CAPE/GCE A-Level courses (or equivalent) previously passed.
D. PROGRESS THROUGH THE PROGRAMME

12. Students admitted into the four-year degree programme (Reg.2) who have already obtained one CAPE/GCE A-level pass (or equivalent) in an approved science subject, may be permitted to register for up to 9 credits of Level 1 courses.

13. (a) Full-time Part I students are required to register for a minimum of twelve credits from Faculty courses and Foundation course, per semester. A student registering for less than twelve credits will be deemed to be a part-time student.

(b) In order to register for Level 2 courses, a student must normally pass a minimum of 18 credits in Level 1 Faculty courses. At least 12 of these credits must be from in-Faculty courses.

(c) A student must not register for less than two courses in any one semester, except with the permission of the Dean.

(d) The normal load for a full-time student is 15 course credits per semester, plus one Foundation course ie: 33 credits over Semester I & II.

14. The maximum number of credits for which a student may register in any one semester is 18 credits, if full-time, and 11 credits, if part-time.

15. (a) Students must make a final declaration of their proposed major(s) and/or minor(s) by the end of the registration period of the semester in which they intend to graduate.

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

E. EXAMINATIONS

16. In order to pass a course, a student must have been in satisfactory attendance at the course and must have satisfied the examiners in the associated examinations.

17. The examination associated with each course shall be conducted mainly by means of written and/or practical papers, normally taken at the end of the semester in which the candidate has registered for the courses concerned. However, oral examinations as well as performance in course work in the form of essays, in-course tests, research papers, projects, or continuous assessment of theoretical and/or practical work may contribute towards the final grade awarded in a course.

18. (a) When practical papers and/or practical coursework contribute towards an examination, candidates must satisfy the examiners in both the theoretical and practical aspects of the course. On the basis of performance in the practical component of the course, a candidate may, on the recommendation of the Department
concerned, be exempted from the practical part of the examination.

(b) To obtain a pass in Computer Science and Mathematics courses, candidates must pass both coursework and final examination.

19. A candidate who marginally fails the examination associated with a Preliminary or Level 1 course may, if recommended by the relevant Department, be granted permission by the Board of Examiners to sit a Supplemental Examination. Such permission will be given on the basis of the performance of the candidate in the courses concerned.

20. A finalist who marginally fails a course needed for graduation, having satisfied the Departmental requirements, may, at the discretion of the Faculty Board of Examiners, be offered a Supplementary Oral. Any candidate who satisfies the examiners in a Supplementary Oral will be given the minimum passing grade in the course. No more than two Supplementary Orals may be gained. However, a third oral examination may be granted to final year students in circumstances when passing a single course is all that is required. A Supplemental Oral precludes the student requesting a Remark.

21. A candidate who fails the examination associated with a course may be given permission to repeat the course and the examination on a subsequent occasion.

In the event that such a candidate has satisfied the examiners in the coursework, the candidate may, on the recommendation of the relevant Department, be exempted from the coursework passed. If such a recommendation has been made, the candidate may apply to the Dean for permission to take the examination without attending the course (Exam Only).

22. The Academic Board of a candidate's Campus on the recommendation of the Faculty Board concerned, may debar the candidate from writing the examination associated with a course if the candidate has not attended and/or performed satisfactorily in the course. The grade for such a candidate will be recorded as Absent Fail.

F. GPA* AND CLASS OF DEGREE

23. (a) A Semester grade point average which includes all approved courses for which the student is registered in a semester, whether passed or failed, will be calculated for the determination of academic standing.

(b) A Cumulative grade point average which includes all courses completed excluding those taken on a Pass/Fail basis, audited courses, Preliminary courses and courses designated I or IP will be calculated and recorded on the student’s transcript.
An **Degree grade point average** including all Level 2 and 3 courses, whether passed or failed, will be calculated for determination of the class of the degree. (See Appendix V for the relationship between marks, grade point average and class of degree).

24. All courses included in the computation of the grade point averages in Regulation 23, are weighted according to their credit rating.

25. All courses included in the computation of grade point averages in Regulation 23, are weighted according to their credit rating.

**G. LEAVE OF ABSENCE AND VOLUNTARY WITHDRAWAL**

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

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

(c) Leave of Absence will not be granted for more than **four** consecutive semesters.

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

27. A student who registers for no courses in two successive semesters without having obtained Leave of Absence will be deemed to have withdrawn from the Faculty.

28. A student who voluntarily withdraws from the university and who applies for re-admission within **five** years shall be granted exemption and credit for all courses previously passed unless the Department concerned declares that the material covered in a course has become outdated. All grades previously obtained except those for courses declared outdated shall be used in the determination of the GPA of such a student.

**H. TIME LIMITS FOR COMPLETION & ENFORCED WITHDRAWALS**

29. For the purposes of Regulations 29 & 30 below, any semester in which a student is registered part-time or any registration for the maximum number of credits for Summer school will be counted as half of a semester of full-time study. After the total of equivalent full-time study has been obtained in this way, it will be rounded down to a whole number.

30. (a) A student whose Semester Grade Point Average is less than **2.00**, will be deemed to be performing
unsatisfactorily and will be placed on Warning.

(b) A student on Warning, whose Semester grade point average is less than 2.00, will be Required To Withdraw from the Faculty.

31. (a) Students admitted to the programme under Reg.1 shall complete the requirements for the degree in a minimum of six or a maximum of ten semesters of full-time study.

(b) Students admitted to the programme under Reg.2 shall complete the requirements for the degree in a minimum of eight or a maximum of twelve semesters of full-time study.

(c) Students who cannot complete the programme within the maximum periods given in (a) and (b) above will normally be Required To Withdraw from the Faculty at the end of the academic year in which the maximum is reached.

32. In the event that a student has exhausted the maximum periods mentioned in Reg.30 above, but still requires for the completion of the degree programme,

Either:

(a) passes in courses totaling no more than six credits,

or:

(b) passes in Foundation courses only,

the Faculty Board may at its discretion recommend to Academic Board an extension of the period of study by one or two semesters.

33. For the purposes of Regulations 28 to 31 above, any semester for which a student has obtained Leave of Absence from the Faculty shall not be counted (see Reg.25).

34. Notwithstanding Regulations 28 to 32 above, Academic Board may, on the recommendation of the Faculty Board, require the student to Withdraw from the Faculty at the end of any semester on grounds of persistent neglect of work and/or repeated failure in examinations.

35. A student Required To Withdraw from one Faculty:

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

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

(c) may not register in the ensuing Academic Year, for any courses in the Faculty from which (s)he had been Required To Withdraw.

(d) if readmitted and Required To Withdraw for a second time, will not be considered for readmission until a
minimum period of five years has elapsed.

36. A student who was Required To Withdraw for reasons of failure to progress may be readmitted to the Faculty on the following conditions:

(a) A minimum of one year has passed since the date of withdrawal

(b) The Faculty is satisfied that the circumstances attending the reasons for the withdrawal have altered substantially.

(c) All grades previously obtained, except for courses to be repeated (having been deemed outdated), shall continue to apply for the purpose of determining the student's GPA.

(d) Subject to The UWI Grade Point Average Regulation 11, courses pursued at an institution other than the UWI during the period of withdrawal may be eligible for credit.

(e) Courses pursued in The UWI Summer School during the period of withdrawal shall be included in all relevant grade point average calculations if the student re-enters the UWI.

I. EXEMPTIONS AND TRANSFERS

37. Holders of degrees from approved universities, or candidates who have partially fulfilled the requirements of such degrees, may apply to the Board for Undergraduate Studies, through the Faculty Board of the candidate’s campus, for exemption from Level 1 courses. Each such application will be considered on its own merit.

38. Students on transfer between different BSc degree programmes or from other programmes of study within the University may, on the basis of passes already obtained, and on the recommendation of the Departments concerned, be exempted from some or all of the Level 1 courses, and some of the Level 2 and/or Level 3 courses. Students exempted from all Level 1 courses may complete the degree programme in a minimum of four or a maximum of eight semesters of full-time study from the time of transfer. Students exempted from all Level 1 courses and some Level 2 and/or Level 3 courses may complete the degree programme in a minimum of two semesters of full-time study from the time of transfer.

39. (a) A student who wishes to take academic courses as an exchange/transfer student at an institution other than the UWI and to apply those credits toward the degree must obtain written approval in advance from the Dean. Failure to obtain written approval in advance may preclude the acceptance of the credits.

(b) A student must have a minimum GPA of 3.00 by the end of Semester II to be approved as an exchange/transfer student in the following academic year.

(c) Where the course to be taken is to be substituted for a UWI course, the content of the course must be
certified by the relevant Department as being equivalent to the UWI course. Course outlines and syllabuses must be provided by the student in order to permit the evaluation of the course content.

(d) A student may not take courses for degree credit at an institution other than the UWI during the semester in which he or she completes or is expected by the Faculty to complete the requirements for graduation from the UWI.

J. AEGROTAT DEGREE

40. (a) A candidate who, by reason of illness, was prevented from attending examinations or part of the examinations associated with a Level 2 or 3 course in the year of anticipated graduation may apply to the Board for Undergraduate Studies through the University Registrar, for an Aegrotat pass in the course. Such an application will be granted only if all the following conditions are satisfied:

(i) The appropriate Head of Department reports that, on the basis of the candidate's performance during the period preceding the examinations, the candidate was expected to pass the examinations concerned and has satisfactorily completed any associated course work.

(ii) The application reaches the University Registrar not later than 30 days after the date of the last paper in the examination concerned.

(iii) The application is accompanied by a medical certificate attesting to the illness and issued by a medical practitioner recognized for this purpose by the University.

(b) No grade will be awarded in respect of an Aegrotat pass, and a candidate having been awarded an Aegrotat pass will not be allowed to re-enter the examination for the course concerned on a subsequent occasion. An Aegrotat pass may not be used to satisfy a pre-requisite for other Level 2 and/or Level 3 courses.

(c) A student who, having satisfactorily completed the degree programme, includes Aegrotat passes in courses counted for the degree programme, will be eligible for the award of an Aegrotat degree if both of the following conditions are satisfied:

(i) The courses in which Aegrotat passes have been granted (and which need to be counted toward the award of the degree) are equivalent to no more than 24 credits.

(ii) No more than 12 credits mentioned in (i) above arise from courses making up the candidate's major.

(iii) The Aegrotat degree will be awarded without Honours.
# INDEX TO THE REGULATIONS

<table>
<thead>
<tr>
<th>Topic</th>
<th>Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absence</td>
<td>16, 22, 25, 26</td>
</tr>
<tr>
<td>Admission requirements</td>
<td>1, 2</td>
</tr>
<tr>
<td>Advanced part</td>
<td>13b</td>
</tr>
<tr>
<td>Aegrogat degree</td>
<td>40</td>
</tr>
<tr>
<td>Approved Science subject</td>
<td>1, 2, Appendix I</td>
</tr>
<tr>
<td>Associate degree</td>
<td>2</td>
</tr>
<tr>
<td>Attendance</td>
<td>7a, 16, 22</td>
</tr>
<tr>
<td>Audited courses</td>
<td>10</td>
</tr>
<tr>
<td>Change of major</td>
<td>15a</td>
</tr>
<tr>
<td>Change of minor</td>
<td>15a</td>
</tr>
<tr>
<td>Change of registration</td>
<td>9a</td>
</tr>
<tr>
<td>Co-curricular credits</td>
<td>5</td>
</tr>
<tr>
<td>Contact hours</td>
<td>6</td>
</tr>
<tr>
<td>Course length</td>
<td>6</td>
</tr>
<tr>
<td>Course load</td>
<td>13, 14</td>
</tr>
<tr>
<td>Courses, at other institutions</td>
<td>36d, 39</td>
</tr>
<tr>
<td>Courses, maximum</td>
<td>14</td>
</tr>
<tr>
<td>Courses, minimum</td>
<td>13</td>
</tr>
<tr>
<td>Coursework</td>
<td>21a</td>
</tr>
<tr>
<td>Credit</td>
<td>Appendix IV</td>
</tr>
<tr>
<td>Credit, maximum</td>
<td>14</td>
</tr>
<tr>
<td>Credit, minimum</td>
<td>13</td>
</tr>
<tr>
<td>Credits, co-curricular</td>
<td>5</td>
</tr>
<tr>
<td>Credits, in-Faculty</td>
<td>7bi</td>
</tr>
<tr>
<td>Credits, required</td>
<td>7b</td>
</tr>
<tr>
<td>Debarred from exams</td>
<td>22</td>
</tr>
<tr>
<td>Declaration of major</td>
<td>15a</td>
</tr>
<tr>
<td>Deemed to have withdrawn</td>
<td>26</td>
</tr>
<tr>
<td>Degree length</td>
<td>7a, 31</td>
</tr>
<tr>
<td>Degree requirements</td>
<td>7, 15b</td>
</tr>
<tr>
<td>Topic</td>
<td>Pages</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Employment</td>
<td>8</td>
</tr>
<tr>
<td>Equivalent courses</td>
<td>11, 12c</td>
</tr>
<tr>
<td>Exchange</td>
<td>36d, 39</td>
</tr>
<tr>
<td>Exemptions</td>
<td>7biii, 13d, 18, 21a, 37, 38</td>
</tr>
<tr>
<td>Extension</td>
<td>32</td>
</tr>
<tr>
<td>Financial obligations</td>
<td>9</td>
</tr>
<tr>
<td>Foundation course</td>
<td>5, 7b</td>
</tr>
<tr>
<td>Four-year degree</td>
<td>1, 12a</td>
</tr>
<tr>
<td>Full-time</td>
<td>8, 13, 14, 28, 31</td>
</tr>
<tr>
<td>GPA</td>
<td>2, 5, 23, 24, 30, 39a</td>
</tr>
<tr>
<td>GPA, Cumulative</td>
<td>7c, 23b</td>
</tr>
<tr>
<td>GPA, Honours</td>
<td>23c</td>
</tr>
<tr>
<td>GPA, Semester</td>
<td>23a</td>
</tr>
<tr>
<td>Illness</td>
<td>10, 40</td>
</tr>
<tr>
<td>In-Faculty courses</td>
<td>7bii</td>
</tr>
<tr>
<td>Leave of absence</td>
<td>25, 33</td>
</tr>
<tr>
<td>Level II</td>
<td>13b</td>
</tr>
<tr>
<td>Major</td>
<td>4, 15a, Appendix II</td>
</tr>
<tr>
<td>Matriculation</td>
<td>1, 2</td>
</tr>
<tr>
<td>Medical certificates</td>
<td>10, 40</td>
</tr>
<tr>
<td>Minor</td>
<td>4, 15a</td>
</tr>
<tr>
<td>Option</td>
<td>4, 7bii</td>
</tr>
<tr>
<td>Oral exam</td>
<td>20</td>
</tr>
<tr>
<td>Out-of-faculty course</td>
<td>4bii, 5, 7bii</td>
</tr>
<tr>
<td>Overlap</td>
<td>12c</td>
</tr>
<tr>
<td>Part-time</td>
<td>8, 14, 28</td>
</tr>
<tr>
<td>Performance, unsatisfactory</td>
<td>22, 29, 30a, 34</td>
</tr>
<tr>
<td>Persistent neglect</td>
<td>34</td>
</tr>
<tr>
<td>Practical</td>
<td>18, 21a</td>
</tr>
<tr>
<td>Preliminary</td>
<td>5a</td>
</tr>
<tr>
<td>Re-admission</td>
<td>27, 35d</td>
</tr>
<tr>
<td>Re-entry</td>
<td>27, 35d</td>
</tr>
<tr>
<td>Repeating a course</td>
<td>11, 12c, 21</td>
</tr>
<tr>
<td>Required to withdraw</td>
<td>29, 30, 31, 34, 35, 36</td>
</tr>
<tr>
<td>Topic</td>
<td>Page(s)</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Service course</td>
<td>5</td>
</tr>
<tr>
<td>Summer school</td>
<td>21b, 36e</td>
</tr>
<tr>
<td>Supplemental exam</td>
<td>19, 21</td>
</tr>
<tr>
<td>Three-year degree</td>
<td>2, 12b</td>
</tr>
<tr>
<td>Time limit</td>
<td>31, 32</td>
</tr>
<tr>
<td>Transfer</td>
<td>35, 35, 37, 38, 39</td>
</tr>
<tr>
<td>Unsatisfactory performance</td>
<td>22, 29, 30a, 34</td>
</tr>
<tr>
<td>Voluntary withdrawal</td>
<td>25, 27</td>
</tr>
<tr>
<td>Warning</td>
<td>30</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>25, 26, 27, 28, 29, 30, 31, 32</td>
</tr>
</tbody>
</table>
**APPENDIX I**

**(a) LIST OF APPROVED SCIENCE CAPE / GCE A-LEVEL SUBJECTS**

Applied Mathematics *
Biology
Botany
Chemistry
Computer Science
Environmental Science
Further Mathematics *
Geography
Geology
Physics
Pure & Applied Mathematics
Pure Mathematics*
Zoology

* The following cannot be counted together:
(i) Further Mathematics with Applied Mathematics CAPE/GCE A-Level;
(ii) Mathematics (Pure and Applied) with Pure Mathematics or Applied Mathematics at CAPE/GCE A-Level.

**(b) LIST OF APPROVED SCIENCE CSEC GENERAL PROFICIENCY/GCE O-LEVEL SUBJECTS:**

Additional Mathematics
Biology
Chemistry
Computer Science
Geography
Information Technology (General)
Integrated Science
Physics
APPENDIX II

LIST OF MAJORS IN THE UWI SCIENCE FACULTIES:

Agriculture
Alternative Energy
Applied Chemistry
Biochemistry *
Biology *
Biotechnology
Botany
Chemistry *
Computer Science *
Earth Science
Ecology *

Electronics *
Environmental Biology
Experimental Biology
Food Chemistry
Geology
Information Technology *
Mathematics *
Meteorology *
Microbiology *
Molecular Biology
Physics *
Zoology

* Offered at Cave Hill

APPENDIX III

FOUNDATION COURSES

FOUN 0100 – Fundamentals of Written English
1 FOUN 1001 – English for Academic Purposes
1 FOUN 1008 – Rhetoric II: Writing for Special Purposes
1 FOUN 1101 – Caribbean Civilization
1 FOUN 1210 – Science, Medicine & Technology in Society
1 FOUN 1301 – Law, Governance, Economy & Society

1 Both courses cannot be taken - students must choose one or the other
2 Not normally available to Science Faculty Students

*A student may substitute one of these with a Level I Foreign Language course.

FOUN 0100 FUNDAMENTALS OF WRITTEN ENGLISH (0 Credits)

This course is required for all students entering the University who are not exempted from the Proficiency Test or have not taken it or failed it.
**FOUN 1001 ENGLISH FOR ACADEMIC PURPOSES (3 Credits)**
This course is designed to: equip students with the study and research skills they will need in order to get the maximum benefit from all their courses at the University; to familiarize them with the linguistic situation in the Caribbean and break down certain misconceptions they usually have about it and to introduce students to the rhetorical modes of discourse.
(Cannot be taken with FOUN1008)

**FOUN 1008 RHETORIC II; WRITING FOR SPECIAL PURPOSES (3 Credits)**
This course is designed to equip students across the disciplines (particularly the Social Sciences, Law, Science and Technology) with skills in business, technical and scientific writing.
(Cannot be taken with FOUN1001)

**FOUN 1101 CARIBBEAN CIVILIZATION (3 Credits)**
This course is designed to develop an awareness of the main process of cultural development in Caribbean societies, highlighting the factors, the problematics and the creative output that have fed the emergence of Caribbean identities; to develop a perception of the Caribbean as wider than island nations or linguistic blocs; to stimulate students' interest in, and commitment to Caribbean civilization and to further their self-determination.

**FOUN 1210 SCIENCE, MEDICINE AND TECHNOLOGY IN SOCIETY (3 Credits)**
The overall aim of the course is to develop the ability of the student to engage in an informed manner in public discourse on matters pertaining to the impact of science, medicine and technology on society. The course will help students to appreciate the essential characteristics of the scientific method as a mode of enquiry into nature and to understand why it provides the foundations of the technological world.
(Students in the Faculty of Science and Technology cannot take this course)

**FOUN 1301 LAW, GOVERNANCE, ECONOMY AND SOCIETY (3 Credits)**
This is a multi-disciplinary course of the Faculty of Social Sciences which is designed mainly for non-Social Sciences students. The course will introduce students to some of the major institutions in Caribbean society. It will expose them to both historical and contemporary aspects of Caribbean society, including Caribbean legal, political and economic systems. In addition, Caribbean culture and Caribbean social problems are discussed.
**APPENDIX IV**

**FST CREDIT DEFINITION**

The following credit definition is based on the approximate weekly contact hours for one-semester (twelve teaching weeks) courses. One credit is obtained for every hour of lecture/tutorial/problem class per week OR two hours laboratory sessions per week, for a semester. This means that 12 hours of lectures/tutorials/problem classes or 24 hours of practical classes amount to one credit. A normal full-time load in Part I is 12-15 credits per semester (excluding Foundation courses). A normal load for a student in Part II (Advanced) is 15 credits (five 3-credit courses) per semester (excluding Foundation courses).

**APPENDIX V**

**GRADING SYSTEM**

Table 1: Mark-to-Grade Conversion & Quality Points (GPA SYSTEM) Table 2: GPA to Honours Conversion

<table>
<thead>
<tr>
<th>Grade</th>
<th>Mark (%)</th>
<th>QP</th>
<th>Grade</th>
<th>Mark (%)</th>
<th>QP</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>90-100</td>
<td>4.30</td>
<td>C+</td>
<td>55-59</td>
<td>2.30</td>
</tr>
<tr>
<td>A</td>
<td>80-89</td>
<td>4.00</td>
<td>C</td>
<td>50-54</td>
<td>2.00</td>
</tr>
<tr>
<td>A-</td>
<td>75-79</td>
<td>3.70</td>
<td>F1</td>
<td>40-49</td>
<td>1.70</td>
</tr>
<tr>
<td>B+</td>
<td>70-74</td>
<td>3.30</td>
<td>F2</td>
<td>30-39</td>
<td>1.30</td>
</tr>
<tr>
<td>B</td>
<td>65-69</td>
<td>3.00</td>
<td>F3</td>
<td>0-29</td>
<td>0.00</td>
</tr>
<tr>
<td>B-</td>
<td>60-64</td>
<td>2.70</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: GPA to Honours Conversion

<table>
<thead>
<tr>
<th>Class of Honours</th>
<th>Cumulative GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>3.60 and above</td>
</tr>
<tr>
<td>Upper Second</td>
<td>3.00 - 3.59</td>
</tr>
<tr>
<td>Lower Second</td>
<td>2.50 - 2.99</td>
</tr>
<tr>
<td>Pass</td>
<td>2.00 - 2.49</td>
</tr>
</tbody>
</table>
APPENDIX VI

OPTIONS IN CONJUNCTION WITH OTHER FACULTIES

A. Programmes with the Faculty of Social Sciences
B. Programmes with the Faculty of Humanities & Education

A. PROGRAMMES WITH THE FACULTY OF SOCIAL SCIENCES

Under an agreement with the Faculty of Social Sciences, a limited number of students will be allowed to pursue the following cross-Faculty programmes, subject to timetable restrictions:-

- Computer Science & Accounting
- Computer Science with Accounting
- Computer Science & Economics
- Computer Science with Economics
- Computer Science & Management
- Computer Science with Management
- Information Technology & Accounting
- Information Technology with Accounting
- Information Technology & Economics
- Information Technology with Economics
- Information Technology & Management
- Information Technology with Management
- Mathematics and Accounting
- Mathematics with Accounting
- Mathematics & Economics
- Mathematics with Economics
- Science Major & Management
- Science Major with Management
## COMPUTER SCIENCE AND ACCOUNTING:

### LEVEL I
- COMP1205 Computing I
- COMP1210 Computing II
- COMP1180 Mathematics for Computer Science I
- COMP1215 UNIX
- COMP1170 Entrepreneurship for Computer Scientists
- MATH1230 Introductory Applied Statistics I
- ACCT1002 Introduction to Financial Accounting
- ACCT1003 Cost and Management Accounting I
- ECON1001 Introduction to Microeconomics
- ECON1002 Introduction to Macroeconomics
- MGMT1001 Introduction to Management

### LEVEL II
- COMP2105 Discrete Mathematics
- COMP2115 Information Structures
- COMP2125 Computer Architecture
- COMP2145 Software Engineering I
- ACCT2014 Financial Accounting I
- ACCT2015 Financial Accounting II
- MGMT2023 Financial Management I

**AND Six (6) Credits from Level 2 Accounting Courses**

### LEVEL III
- COMP3100 Operating Systems
- COMP3180 Algorithm Design and Analysis
- ACCT2017 Management Accounting I
- ACCT3043 Auditing I

**AND One Level III COMP course**

**AND One Level II/III COMP course**

**AND Either**
- ACCT3040 Accounting Theory
  - OR
  - ACCT3041 Advanced Financial Accounting

**AND Six (6) Credits from Level III Accounting Courses:**

### FOUNDATION COURSES
- FOUN1001 English For Academic Purposes
  - OR
  - FOUN1008 Rhetoric II: Writing for Special Purposes

**AND**
- FOUN1101 Caribbean Civilization
- FOUN1301 Law, Governance and Society

* A student may substitute one of these with a Level I Foreign Language course.
# COMPUTER SCIENCE WITH ACCOUNTING

## LEVEL I
- COMP1205 Computing I
- COMP1210 Computing II
- COMP1180 Mathematics for Computer Science I
- COMP1215 UNIX
- COMP1170 Entrepreneurship for Computer Scientists
- MATH1230 Introductory Applied Statistics I
- ACCT1002 Introduction to Financial Accounting
- ACCT1003 Cost & Management Accounting I
- ECON1001 Introduction to Microeconomics
- ECON1002 Introduction to Macroeconomics
- MGMT1001 Introduction to Management

## LEVEL II
- COMP2105 Discrete Mathematics
- COMP2115 Information Structures
- COMP2125 Computer Architecture
- COMP2145 Software Engineering I
- ACCT2014 Financial Accounting I
- ACCT2015 Financial Accounting II
- ACCT2017 Management Accounting I

## LEVEL III
- COMP3100 Operating Systems
- COMP 3180 Algorithm Design and Analysis
- ACCT3043 Auditing I

**AND** Either
- ACCT3040 Accounting Theory

**OR**
- ACCT3041 Advanced Financial Accounting

**AND** One Level III COMP Course

**AND** One Level II/III COMP Course

**AND** Thirteen (13) Level II/III Credits

**AND**

## FOUNDATION COURSES
- FOUN 1008 Rhetoric II: Special Purposes

**OR**
- FOUN 1001 English for Academic Purposes

**AND**
- *FOUN1101 Caribbean Civilization
- *FOUN1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.*
COMPUTER SCIENCE AND ECONOMICS

LEVEL I
COMP1205 Computing I
COMP1210 Computing II
COMP1180 Mathematics for Computer Science I
COMP1215 UNIX
COMP1170 Entrepreneurship for Computer Scientists
MATH1230 Introductory Applied Statistics I
ECON1001 Introduction to Microeconomics
ECON1002 Introduction to Macroeconomics

AND Six (6) Level I Credits

LEVEL II
COMP2105 Discrete Mathematics
COMP2115 Information Structures
COMP2125 Computer Architecture
COMP2145 Software Engineering I
ECON2000 Intermed. Microeconomics I
ECON2001 Intermed. Microeconomics II
ECON2002 Intermed. Macroeconomics I
ECON2003 Intermed. Macroeconomics II
ECON2026 Statistical Methods II

LEVEL III
COMP3100 Operating Systems
COMP3180 Algorithm Design and Analysis
ECON3049 Econometrics I

AND One Level III COMP course
AND One Level II/III COMP course
AND Four Level II/III ECON courses

AND

FOUNDATION COURSES
FOUN 1008 Rhetoric II: Special Purposes
OR
FOUN 1001 English for Acad. Purposes

AND

*FOUN 1101 Caribbean Civilization
*FOUN1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.
COMPUTER SCIENCE WITH ECONOMICS

LEVEL I
COMP1205 Computing I
COMP1210 Computing II
COMP1180 Mathematics for Computer Science I
COMP1215 UNIX
COMP1170 Entrepreneurship for Computer Scientists
MATH1230 Introductory Applied Statistics I
ECON1001 Introd. to Microeconomics
ECON1002 Introd. to Macroeconomics

AND Six (6) Level I Credits

LEVEL II
COMP2105 Discrete Mathematics
COMP2115 Information Structures
COMP2125 Computer Architecture
COMP2145 Software Engineering I
ECON2000 Intermed. Microeconomics I
ECON2001 Intermed. Microeconomics II
ECON2002 Intermed. Macroeconomics I
ECON2003 Intermed. Macroeconomics II

AND One Level II/III ECON course

LEVEL III
COMP3100 Operating Systems
COMP3180 Algorithm Design and Analysis

AND One Level III COMP course
AND One Level II/III COMP course
AND Thirteen (13) Level II/III credits

AND

FOUNDATION COURSES
FOUN 1008 Rhetoric II: Special Purposes
OR
FOUN 1001 English for Acad. Purposes

AND

*FOUN 1101 Caribbean Civilization
*FOUN1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.
COMPUTER SCIENCE AND MANAGEMENT

LEVEL I
COMP1205 Computing I
COMP1210 Computing II
COMP1180 Mathematics for Computer Science I
COMP1215 UNIX
COMP1170 Entrepreneurship for Computer Scientists
MATH1230 Introductory Applied Statistics I
ACCT1002 Introduction to Financial Accounting
ACCT1003 Cost and Management Accounting I
ECON1001 Introduction to Microeconomics
ECON1002 Introduction to Macroeconomics
MGMT1001 Introduction to Management

LEVEL II
COMP2105 Discrete Mathematics
COMP2115 Information Structures
COMP2125 Computer Architecture
COMP2145 Software Engineering I
MKTG2001 Principles of Marketing
MGMT2006 Information Systems I
MGMT2008 Organizational Behaviour
MGMT2020 Managerial Economics
MGMT2023 Financial Management I
MGMT2026 Production & Operations Management

LEVEL III
COMP3100 Operating Systems
COMP3180 Algorithm Design and Analysis
MGMT3017 Human Resources Management

AND One Level III COMP course
AND One Level II/III COMP course
AND Nine (9) Credits from LEVEL III Management Courses

AND
FOUNDATION COURSES
FOUN1001 English for Academic Purposes
OR
FOUN1008 Rhetoric II: Writing for Special Purposes

AND
*FOUN1101 Caribbean Civilization
*FOUN1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.
COMPUTER SCIENCE WITH MANAGEMENT

LEVEL I
COMP1205 Computing I
COMP1210 Computing II
COMP1180 Mathematics for Computer Science I
COMP1215 UNIX
COMP1170 Entrepreneurship for Computer Scientists
MATH1230 Introductory Applied Statistics I
ACCT1002 Introduction to Financial Accounting
ACCT1003 Cost & Management Accounting I
ECON1001 Introduction to Microeconomics
ECON1002 Introduction to Macroeconomics
MGMT1001 Introduction to Management

LEVEL II
COMP2105 Discrete Mathematics
COMP2115 Information Structures
COMP2125 Computer Architecture
COMP2145 Software Engineering I
MKTG2001 Principles of Marketing
MGMT2006 Management Information Systems I
MGMT2008 Organizational Behaviour
MGMT2023 Financial Management I

LEVEL III
COMP3100 Operating Systems
COMP3180 Algorithm Design and Analysis
MGMT3017 Human Resources Management

AND One Level III COMP course
AND One Level II/III COMP course
AND Thirteen (13) Level II/III credits

AND
FOUNDATION COURSES
FOUN 1008 Rhetoric II: Special Purposes
OR
FOUN 1001 English for Acad. Purposes

AND
*FOUN 1101 Caribbean Civilization
*FOUN1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.
INFORMATION TECHNOLOGY AND ACCOUNTING

LEVEL I
COMP1205 Computing I
COMP1210 Computing II
COMP1180 Mathematics for Computer Science I
COMP1215 UNIX
COMP1170 Entrepreneurship for Computer Scientists
MATH1230 Introductory Applied Statistics I
ACCT1002 Introduction to Financial Accounting
ACCT1003 Cost and Management Accounting I
ECON1001 Introduction to Microeconomics
ECON1002 Introduction to Macroeconomics
MGMT1001 Introduction to Management

LEVEL II
COMP2105 Discrete Mathematics
COMP2115 Information Structures
COMP2145 Software Engineering I
COMP2160 Object-Oriented Programming
ACCT2014 Financial Accounting I
ACCT2015 Financial Accounting II
MGMT2023 Financial Management I
FOUN1101 Caribbean Civilization

AND Six (6) Credits From Level II Accounting Courses

LEVEL III
FOUN1301 Law, Governance and Society
COMP3160 Database Management Studies
COMP3170 Web-Based Applications
ACCT2017 Management Accounting I
ACCT3043 Auditing I

AND Either
ACCT3040 Accounting Theory

OR
ACCT3041 Advanced Financial Accounting

AND One Level III COMP course
AND One Level II/III COMP course
AND Six (6) Credits from Level III Accounting Courses

AND
FOUNDATION COURSES
FOUN 1008 Rhetoric II: Special Purposes

OR
FOUN 1001 English for Acad. Purposes

AND
*FOUN 1101 Caribbean Civilization
*FOUN1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.
# INFORMATION TECHNOLOGY WITH ACCOUNTING

## LEVEL I
- **COMP1205** Computing I
- **COMP1210** Computing II
- **COMP1180** Mathematics for Computer Science I
- **COMP1215** UNIX
- **COMP1170** Entrepreneurship for Computer Scientists
- **MATH1230** Introductory Applied Statistics I
- **ACCT1002** Introduction to Financial Accounting
- **ACCT1003** Cost & Management Accounting I
- **ECON1001** Introduction to Microeconomics
- **ECON1002** Introduction to Macroeconomics
- **MGMT1001** Introduction to Management

## LEVEL II
- **COMP2105** Discrete Mathematics
- **COMP2115** Information Structures
- **COMP2145** Software Engineering I
- **COMP2160** Object-Oriented Programming
- **ACCT2014** Financial Accounting I
- **ACCT2015** Financial Accounting II
- **ACCT2017** Management Accounting I
- **FOUN1101** Caribbean Civilization

## LEVEL III
- **COMP3160** Database Management Studies
- **COMP3170** Web-Based Applications
- **ACCT3043** Auditing I

**AND One Level III COMP course**

**AND One Level II/III COMP course**

**AND Either**
- **ACCT3040** Accounting Theory
  **OR**
- **ACCT3041** Advanced Financial Accounting

**AND**

**Thirteen (13) Level II/III Credits**

**AND**

**FOUNDATION COURSES**
- **FOUN 1008** Rhetoric II: Special Purposes
  **OR**
- **FOUN 1001** English for Acad. Purposes

**AND**
- *FOUN 1101* Caribbean Civilization
- *FOUN1301* Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.*
## INFORMATION TECHNOLOGY AND ECONOMICS

<table>
<thead>
<tr>
<th>LEVEL I</th>
<th>LEVEL III</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP1205 Computing I</td>
<td>COMP3160 Database Management Systems</td>
</tr>
<tr>
<td>COMP1210 Computing II</td>
<td>COMP3170 Web-Based Applications</td>
</tr>
<tr>
<td>COMP1180 Mathematics for Computer Science I</td>
<td>ECON3049 Econometrics I</td>
</tr>
<tr>
<td>COMP1215 UNIX</td>
<td>AND One Level III COMP course</td>
</tr>
<tr>
<td>COMP1170 Entrepreneurship for Computer Scientists</td>
<td>AND One Level II/III COMP course</td>
</tr>
<tr>
<td>MATH1230 Introductory Applied Statistics I</td>
<td>AND Four Level II/III ECON courses</td>
</tr>
<tr>
<td>ECON1001 Introduction to Microeconomics</td>
<td></td>
</tr>
<tr>
<td>ECON1002 Introduction to Macroeconomics</td>
<td></td>
</tr>
</tbody>
</table>

**AND Six (6) Level I Credits**

<table>
<thead>
<tr>
<th>LEVEL II</th>
<th>LEVEL III</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP2105 Discrete Mathematics</td>
<td></td>
</tr>
</tbody>
</table>
| COMP2115 Information Structures | | *
| COMP2145 Software Engineering I | | *
| COMP2106 Object-Oriented Programming | | *
| ECON2000 Intermediate Microeconomics I | | *
| ECON2001 Intermediate Microeconomics II | | *
| ECON2002 Intermediate Macroeconomics I | | *
| ECON2003 Intermediate Macroeconomics II | | *
| ECON2026 Statistical Methods II | | *

**FOUNDATION COURSES**

<table>
<thead>
<tr>
<th>LEVEL II</th>
<th>LEVEL III</th>
</tr>
</thead>
</table>
| FOUN1001 English for Academic Purposes | | *
| FOUN1008 Rhetoric II: Special Purposes | | *
| *A student may substitute one of these with a Level I Foreign Language course. | | *
# INFORMATION TECHNOLOGY WITH ECONOMICS

## LEVEL 1
- COMP1205 Computing I
- COMP1210 Computing II
- COMP1180 Mathematics for Computer Science I
- COMP1215 UNIX
- COMP1170 Entrepreneurship for Computer Scientists
- MATH1230 Introductory Applied Statistics I
- ECON1001 Introduction to Microeconomics
- ECON1002 Introduction to Macroeconomics

**AND Six (6) Level I Credits**

## LEVEL II
- COMP2105 Discrete Mathematics
- COMP2115 Information Structures
- COMP2145 Software Engineering I
- COMP2106 Object-Oriented Programming
- ECON2000 Intermediate Microeconomics I
- ECON2001 Intermediate Microeconomics II
- ECON2002 Intermediate Macroeconomics I
- ECON2003 Intermediate Macroeconomics II

**AND One Level II/III ECON course**

## LEVEL III
- COMP3160 Database Management Systems
- COMP3170 Web-Based Applications

**AND One Level III COMP course**

**AND One Level II/III COMP course**

**AND Thirteen (13) Level II/III credits**

**AND FOUNDATION COURSES**
- FOUN1001 English for Academic Purposes
- FOUN1008 Rhetoric II: Special Purposes

**OR**
- FOUN1301 Law, Governance and Society

- *FOUN1101 Caribbean Civilization*
- *FOUN1301 Law, Governance and Society*

**AND One Level II/III ECON course**

*A student may substitute one of these with a Level I Foreign Language course.
INFORMATION TECHNOLOGY AND MANAGEMENT

LEVEL I
COMP1205 Computing I  
COMP1210 Computing II  
COMP1180 Mathematics for Computer Science I  
COMP1215 UNIX  
COMP1170 Entrepreneurship for Computer Scientists  
MATH1230 Introductory Applied Statistics I  
ACCT1002 Introduction to Financial Accounting  
ACCT1003 Cost and Management Accounting I  
ECON1001 Introduction to Microeconomics  
ECON1002 Introduction to Macroeconomics  
MGMT1001 Introduction to Management

LEVEL II
COMP2105 Discrete Mathematics  
COMP2115 Information Structures  
COMP2145 Software Engineering I  
COMP2160 Object-Oriented Programming  
MKTG2001 Principles of Marketing  
MGMT2006 Management Information Systems I  
MGMT2008 Organizational Behaviour  
MGMT2020 Managerial Economics  
MGMT2023 Financial Management I  
MGMT2026 Production & Operations Management

LEVEL III
COMP3160 Database Management Systems  
COMP3170 Web-Based Applications  
MGMT3017 Human Resources Management  
AND One Level III COMP course  
AND One Level II/III COMP course  
AND Nine (9) Credits from Level III Management Courses

FOUNDATION COURSES
FOUN1001 English for Academic Purposes  
OR  
FOUN1008 Rhetoric II: Writing for Special Purposes

AND
*FOUN1101 Caribbean Civilization  
*FOUN1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.
INFORMATION TECHNOLOGY WITH MANAGEMENT

LEVEL I
COMP1205 Computing I
COMP1210 Computing II
COMP1180 Mathematics for Computer Science I
COMP1215 UNIX
COMP1170 Entrepreneurship for Computer Scientists
MATH1230 Introductory Applied Statistics I
ACCT1002 Introduction to Financial Accounting
ACCT1003 Cost & Management Accounting I
ECON1001 Introduction to Microeconomics
ECON1002 Introduction to Macroeconomics
MGMT1001 Introduction to Management

LEVEL II
COMP2105 Discrete Mathematics
COMP2115 Information Structures
COMP2145 Software Engineering I
COMP2160 Object-Oriented Programming
MKTG2001 Principles of Marketing
MGMT2006 Management Inform. Systems I
MGMT2008 Organizational Behaviour
MGMT2023 Financial Management I

LEVEL III
COMP3160 Database Management Systems
COMP3170 Web-Based Applications
MGMT3017 Human Resources Management

AND One Level III COMP course

AND One Level II/III COMP course

AND Thirteen (13) Level II/III credits

AND

FOUNDATION COURSES
FOUN 1008 Rhetoric II: Special Purposes

OR
FOUN 1001 English for Academic Purposes

AND
*FOUN 1101 Caribbean Civilization
*FOUN 1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.
MATHEMATICS AND ACCOUNTING

LEVEL I
MATH1141 Introductory Linear Algebra and Analytical Geometry
MATH1190 Calculus A
MATH1195 Calculus B
MATH1152 Sets and Number Systems
MATH1235 Python Programming and Mathematical Software
MATH1230 Introductory Applied Statistics I
ACCT1002 Introduction to Financial Accounting
ACCT1003 Cost & Management Accounting I
ECON1001 Introduction to Microeconomics
ECON1002 Introduction to Macroeconomics
MGMT1001 Introduction to Management

LEVEL II
MATH2100 Abstract Algebra
MATH2110 Linear Algebra
MATH2120 Analysis & Methods I
MATH2130 Ordinary Differential Equations
ACCT2014 Financial Accounting I
ACCT2015 Financial Accounting II
MGMT2023 Financial Management I

AND Six (6) Credits From Level II Management/Accounting Courses

LEVEL III
ACCT2017 Management Accounting I
ACCT3043 Auditing I

AND Two Level III MATH courses

AND Two Level II/III MATH courses

AND Either
ACCT3040 Accounting Theory
OR
ACCT3041 Advanced Financial Accounting

AND Six (6) Credits From Level III Accounting Courses

AND

FOUNDATION COURSES
FOUN 1008 Rhetoric II: Special Purposes
OR
FOUN 1001 English for Academic Purposes

AND

*FOUN 1101 Caribbean Civilization
*FOUN1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.
MATHEMATICS WITH ACCOUNTING

LEVEL I
MATH 1141 Introductory Linear Algebra and Analytical Geometry
MATH 1190 Calculus A
MATH 1195 Calculus B
MATH 1152 Sets and Number Systems
MATH 1235 Python Programming and Mathematical Software
MATH 1230 Introductory Applied Statistics 1
ACCT 1002 Introduction to Financial Accounting
ACCT 1003 Cost & Management Accounting I
ECON 1001 Introduction to Microeconomics
ECON 1002 Introduction to Macroeconomics
MGMT 1001 Introduction to Management

LEVEL II
MATH 2100 Abstract Algebra
MATH 2110 Linear Algebra
MATH 2120 Analysis & Methods I
MATH 2130 Ord. Differential Equations
ACCT 2014 Financial Accounting I
ACCT 2015 Financial Accounting II
ACCT 2017 Management Accounting I

LEVEL III
ACCT 3043 Auditing I
AND Two Level III MATH courses
AND Two Level II/III MATH courses
AND Either
ACCT 3040 Accounting Theory
OR
ACCT 3041 Advance Financial Accounting
AND Thirteen (13) Level II/III credits

AND
FOUNDATION COURSES
FOUN 1008 Rhetoric II: Special Purposes
OR
FOUN 1001 English for Academic Purposes

AND
*FOUN 1101 Caribbean Civilization
*FOUN 1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.
MATHEMATICS AND ECONOMICS

LEVEL I
MATH 1141 Introductory Linear Algebra and Analytical Geometry
MATH 1190 Calculus A
MATH 1195 Calculus B
MATH 1152 Sets and Number Systems
MATH 1235 Python Programming and Mathematical Software
MATH 1230 Introductory Applied Statistics I
ECON 1001 Introduction to Microeconomics
ECON 1002 Introduction to Macroeconomics

LEVEL II
MATH 2100 Abstract Algebra
MATH 2110 Linear Algebra
MATH 2120 Analysis & Methods I
MATH 2130 Ord. Differential Equations
ECON 2000 Intermediate Microeconomics I
ECON 2001 Intermediate Microeconomics II
ECON 2002 Intermediate Macroeconomics I
ECON 2003 Intermediate Macroeconomics II
ECON 2026 Statistical Methods II

LEVEL III
ECON 3049 Econometrics I

AND Four Level II/III ECON courses
AND Two Level III MATH courses
AND Two Level II/III MATH courses

FOUNDATION COURSES
FOUN 1008 Rhetoric II: Special Purposes
OR
FOUN 1001 English for Acad. Purposes

AND
*FOUN 1101 Caribbean Civilization
*FOUN 1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.
MATHEMATICS WITH ECONOMICS

LEVEL I
MATH 1141 Introductory Linear Algebra and Analytical Geometry
MATH 1190 Calculus A
MATH 1195 Calculus B
MATH 1152 Sets and Number Systems
MATH 1235 Python Programming and Mathematical Software
MATH 1230 Introductory Applied Statistics 1
ECON 1001 Introduction to Microeconomics
ECON 1002 Introduction to Macroeconomics

LEVEL II
MATH 2100 Abstract Algebra
MATH 2110 Linear Algebra
MATH 2120 Analysis & Methods I
MATH 2130 Ord. Differential Equations
ECON 2000 Intermediate Microeconomics I
ECON 2001 Intermediate Microeconomics II
ECON 2002 Intermediate Macroeconomics I
ECON 2003 Intermediate Macroeconomics II
AND One Level II/III ECON course

LEVEL III
Two Level III MATH courses
AND Two Level II/III MATH courses
AND Thirteen (13) Level II/III credits

AND
FOUNDATION COURSES
FOUN 1008 Rhetoric II: Special Purposes
OR
FOUN 1001 English for Acad. Purposes
AND
*FOUN 1101 Caribbean Civilization
*FOUN 1301 Law, Governance and Society

AND
*A student may substitute one of these with a Level I Foreign Language course.
SCIENCE AND MANAGEMENT

LEVEL I

**Required Level 1 Courses for Science Major plus**

COMP1205 Computing I
MATH1152 Sets and Number Systems
MATH1230 Introductory Applied Statistics I
ACCT1002 Introduction to Financial Accounting
ACCT1003 Cost & Management Accounting I
ECON1001 Introduction to Microeconomics
ECON1002 Introduction to Macroeconomics
MGMT1001 Introduction to Management

LEVELS II & III

**Thirty-two (32) credits of required Level II/III Courses for Science Major**

**AND**

MKTG2001 Principles of Marketing
MGMT2006 Management Info. Systems I
MGMT2008 Organizational Behaviour
MGMT2020 Managerial Economics
MGMT2023 Financial Management I
MGMT2026 Production & Operations Management
MGMT3017 Human Resources Management

**AND Nine (9) Credits from LEVEL III Management Courses**

**AND FOUNDATION COURSES**

FOUN 1008 Rhetoric II: Special Purposes

**OR**

FOUN 1001 English for Acad. Purposes

**AND**

*FOUN 1101 Caribbean Civilization
*FOUN1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.*
SCIENCE WITH MANAGEMENT

LEVEL I

Required Level 1 Courses for Science Major

PLUS
COMP1205 Computing I
MATH1152 Sets and Number Systems
MATH1230 Introductory Applied Statistics I
ACCT1002 Introduction to Financial Accounting
ACCT1003 Cost & Management Accounting I
ECON1001 Introduction to Microeconomics
ECON1002 Introduction to Macroeconomics
MGMT1001 Introduction to Management

LEVELS II & III

Thirty-two (32) credits of required Level II/III Courses for Science Major

PLUS
MKTG2001 Principles of Marketing
MGMT2006 Management Information Systems I
MGMT2008 Organizational Behaviour
MGMT2023 Financial Management I
MGMT3017 Human Resources Management

AND Thirteen (13) Level II/III Credits

AND

FOUNDATION COURSES
FOUN 1008 Rhetoric II: Special Purposes
OR
FOUN 1001 English for Acad. Purposes

AND
*FOUN 1101 Caribbean Civilization
*FOUN1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.
B. PROGRAMMES WITH THE FACULTY OF HUMANITIES & EDUCATION

Under an agreement with the Faculty of Humanities & Education, a limited number of students will be allowed to pursue the following programmes, subject to timetable restrictions:

- Science Major & Psychology Major
- Science Major with Psychology Minor
- Science Major with Spanish Minor
- Science Major with Education Minor

The Psychology Major comprises 30 credits of specified advanced courses while the Psychology and Spanish Minor each comprise 15 credits of specified advanced courses. In addition, students must satisfy the requirements of their Science Major and complete a minimum total of 101 credits.

SCIENCE AND PSYCHOLOGY

LEVEL 1

Sixteen (16) credits from Level I Science Courses

PLUS
PSYC1003 Introduction to Psychology
PSYC1004 Introduction to Social Psychology
PSYC1012 Introduction to Developmental Psychology
PSYC1013 Introduction to Research Methods In Psychology
PSYC1015 Historical Issues in Psychology

LEVELS II & III

Thirty-two (32) credits of required Level II/III Courses for Science Major

PLUS
PSYC2002 Abnormal Psychology
PSYC2003 Physiological Psychology
PSYC2004 Personality Theory I
PSYC2008 Introduction to Cognitive Psychology
PSYC2014 Statistics And Research Design II
PSYC2022 Developmental Psychology II: From Conception to Adolescence
PSYC3017 Personality Theory II
PSYC3030 Introduction to Clinical Psychology
PSYC3011 Research Paper in Psychology** (6 credits)

AND

FOUNDATION COURSES
FOUN 1008 Rhetoric II: Special Purposes
OR
FOUN 1001 English for Acad. Purposes

AND
*FOUN 1101 Caribbean Civilization
*FOUN1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.

** Students registered for a Science Research Project course (eg: BIOC3950, BIOL3950, CHEM3500, CHEM3505, COMP 3910) must replace PSYC3011 by 6 credits from the electives listed above.

SCIENCE WITH PSYCHOLOGY

LEVEL I

Sixteen (16) credits from Level I Science Courses

PLUS
PSYC1003 Introduction to Psychology
PSYC1004 Introduction to Social Psychology
PSYC1013 Introduction to Research Methods in Psychology

LEVELS II & III

Thirty-two (32) credits of required Level II/III Courses for Science Major

PLUS
PSYC2003 Physiological Psychology
PSYC2004 Personality Theory I
PSYC2012 Developmental Psychology
PSYC2014 Statistics And Research Design II
PSYC3016 Research Project in Psychology (Minor) (3 Credits)
AND Thirteen (13) Level II/III credits

AND

FOUNDATION COURSES
FOUN 1008 Rhetoric II: Special Purposes

OR
FOUN 1001 English for Acad. Purposes

AND

*FOUN 1101 Caribbean Civilization
*FOUN 1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.

SCIENCE WITH SPANISH

LEVEL I

Twenty-Four (24) credits from Level I Science Courses

PLUS
SPAN1001 Spanish Language IA
SPAN1002 Spanish Language IB

LEVELS II & III

Thirty-two (32) credits of required Level II/III Courses for Science Major

PLUS
SPAN2001 Spanish Language IIA
SPAN2002 Spanish Language IIB
SPAN2214 Hispanic Culture
SPAN3502 International Business Spanish
SPAN3503 Spanish for Tourism

AND Thirteen (13) Level II/III credits

AND

FOUNDATION COURSES
FOUN 1008 Rhetoric II: Special Purposes
OR
FOUN 1001 English for Acad. Purposes

AND
*FOUN 1101 Caribbean Civilization
*FOUN1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.

SCIENCE WITH EDUCATION

LEVEL I

Twenty-Four (24) credits from Level I Science Courses

PLUS
EDPS1001 Introduction to Human Development

LEVELS II & III

Thirty-two (32) credits of required Level II/III Courses for the Science Major

PLUS
EDCU2101 Introduction to Curriculum, Theory, Planning & Practice
EDRS2201 Introduction to Research Methods in Education
EDSO3102 The Social Context of Education

AND One of the following:
EDMA2111 The Structure and Nature of Mathematics
EDSC2110 The Structure and Nature of Science

AND One of the following:
EDPH2016 Philosophy of Education
EDME2211 Testing, Measurement & Evaluation I
EDEA2304 Introduction to Educational Administration
EDSE2924 Introduction to Special Education
EDTK3304 Media & Technology in Education
EDTE3404 Issues in Teacher Education
AND Thirteen (13) Level II/III credits

AND
FOUNDATION COURSES
FOUN 1008 Rhetoric II: Special Purposes
OR
FOUN 1001 English for Acad. Purposes

AND
*FOUN 1101 Caribbean Civilization
*FOUN 1301 Law, Governance and Society

*A student may substitute one of these with a Level I Foreign Language course.
# COURSES BY SEMESTER: BIOLOGICAL AND CHEMICAL SCIENCES

## SEMESTER I
### PRELIMINARY
- CHEM0615 Preliminary Chemistry I  
- BIOL0051 Biology I  

### LEVEL I
- BIOL1020 Diversity of Life I  
- BIOL1025 Diversity of Life II  
- CHEM1110 Introduction to Organic Chemistry  
- CHEM1125 Introduction to Experimental Chemistry  
- METE1110 Introduction to Ocean and Climate  
- ENSC1000 Earth and its Environment  

### LEVEL II
- BIOL2166 Advanced Genetics I  
- BIOL2370 Flowering Plant Physiology  
- BIOL2371 Ecophysiology of Animals  
- BIOC2365 Primary Metabolism  
- ECOL2460 Essentials of Ecology  
- ECOL2461 Caribbean Island Biodiversity  
- MICR2260 Essential Microbiology  
- CHEM2010 Practical Chemistry I  
- CHEM2100 Inorganic Chemistry I  
- CHEM2200 Organic Chemistry I  
- ENSC2000 Essentials of Oceanography  
- ENSC2001 Introduction to the Earth Life System  
- ENSC2002 Earth’s Climate  

### LEVEL III
- BIOC3354 Biochemistry of Human Disease  
- BIOL3152 Bioinformatics  
- ECOL3452 Behavioural Ecology  
- ECOL3453 Crop Ecology  
- MICR3258 Pathogenic Micro-organisms  
- MICR3252 Microbial Ecology  
- CHEM3100 Inorganic Chemistry II  
- CHEM3300 Physical Chemistry II  

## SEMESTER II
### PRELIMINARY
- CHEM0625 Preliminary Chemistry II  
- BIOL0052 Biology II  

### LEVEL I
- BIOL1030 Introduction to Genetics  
- BIOC1015 Introduction to Biochemistry  
- CHEM1120 Introduction to Physical Chemistry  
- CHEM1125 Introduction to Experimental Chemistry  
- CHEM1130 Introduction to Inorganic Chemistry  
- ENSC1001 Introduction to Physical Geology; Dynamic Earth  

### LEVEL II
- BIOC2366 Protein Biochemistry  
- BIOC2370 Cell Signals  
- BIOC2371 Molecular Techniques  
- BIOL2372 Plants for Caribbean Landscapes  
- ECOL2462 Marine Biota  
- MICR2261 Eukaryotic Microbes  
- MICR2262 Methods in Microbiology  
- CHEM2020 Practical Chemistry II  
- CHEM2300 Physical Chemistry I  
- CHEM2400 Analytical Chemistry I  
- ENSC2002 Earth’s Climate  
- ENSC2003 Sustainable Energy Systems  

### LEVEL III
- BIOC3254 Biochemical Plant Pathology  
- ECOL3423 Coral Reef Ecology  
- ECOL3451 Human Ecology and Conservation  
- MICR3251 Food Microbiology  
- MICR3253 Biology of Viruses  
- CHEM3135 Bioinorganic Chemistry  
- CHEM3145 Bonding in Inorganic Chemistry  
- CHEM3200 Organic Chemistry II
CHEM3415 Analytical Chemistry III
CHEM3500 Chemistry Project
CHEM3515 Environmental Chemistry
ERSC3001 Natural Hazards

YEAR-LONG COURSES
CHEM3505 Chemistry Research Project
BIOC3950 Biochemistry Research Project
BIOL3950 Biology Research Project
ECOL3950 Ecology Research Project
MICR3950 Microbiology Research Project
ENSC3900 Environmental Science Research Project
BIOLOGICAL SCIENCES

The Department of Biological & Chemical Sciences offers Single Majors in Biochemistry, Biology, Ecology and Microbiology as well as a Double Major in Biological Sciences. Biology, Biochemistry, Ecology and Microbiology Majors may not be combined; students wishing to pursue such Double Majors must instead register for the Biological Sciences Double Major. Only the Biology or Biochemistry Major may be combined with the Chemistry Major. Only the Biology or Ecology Major may be combined with the Environmental Science (formerly Earth Science) Minor. Students wishing to combine a Biology, Biochemistry, Ecology or Microbiology Major with a Major of another discipline must seek the approval of the Dean and are advised that timetable clashes of courses may make it impossible to complete such degrees in the minimum 3 year period.

MAJOR IN BIOCHEMISTRY: [Course descriptions]

LEVEL I - (24 Credits)
BIOC1015 Introduction to Biochemistry
BIOL1020 Diversity of Life I
BIOL1025 Diversity of Life II
BIOL1030 Introduction to Genetics
CHEM1110 Introduction to Organic Chemistry
CHEM1120 Introduction to Physical Chemistry
CHEM1125 Experimental Chemistry
CHEM1130 Introduction to Inorganic Chemistry

LEVEL II - (15 Credits)
BIOC2373 Skills for Biologists
BIOC2371 Molecular Techniques
BIOC2365 Primary Metabolism
BIOC2366 Protein Biochemistry

LEVEL III - (15 Credits)
BIOC3265 Principles of Bioinformatics

AND 12 Credits from the following:
Current Level II BIOC, Level III BIOC and CHEM elective courses:
BIOC2900 Biochemistry Exchange Elective
BIOC3370 Basis of Human Disease
BIOC3260 Principles of Biotechnology
BIOC3261 Mitochondrial Bioenergetics
BIOC3990 Biochemistry Project
BIOL3025 Molecular Plant Pathology
CHEM3135 Bioinorganic Chemistry
CHEM3210 Bioorganic & Medicinal Chemistry

AND 3 Credits from the following:
BIOL2166 Advanced Genetics I
BIOC2370 Cell Signals

Notes on Biochemistry Major
Transitional students who have already passed at least one level 2 course required for the Biochemistry Major can switch to this new Major or continue under the old Major (which will also be reduced to 30 credits effective 2016/17). A list of equivalences between old and new level 2 and 3 Biological Sciences courses has been prepared to assist such transitional students in satisfying their Biochemistry Major and Minor requirements.
Transitional students using the current Major may substitute BIOC2365 Primary Metabolism for BIOC2351 Biochemistry I, BIOC2366 Protein Biochemistry for BIOC2352 Biochemistry II, BIOC2371 Molecular Techniques for BIOL2152 General Molecular Biology, BIOL2166 Advanced Genetics I for BIOL2151 Genetics I, BIOC3370 Basis of Human Disease for BIOC3354 Biochemistry of Human Disease, BIOL3025 Molecular Plant Pathology for BIOC3254 Biochemical Plant Pathology, BIOC3265 Principles of Bioinformatics for BIOL3152 Bioinformatics and any Level 3 BIOC/MICR/BIOL course or any Level 2 CHEM course for BIOC3251 Microbial Biochemistry. CHEM3135 Bioinorganic Chemistry and CHEM3210 Bioorganic & Medicinal Chemistry are 4-credit courses that are currently electives in the Biochemistry major but these will be replaced with 3-credit courses with the pending update and approval of all Chemistry courses.

**MINOR IN BIOCHEMISTRY [Fifteen (15) Credits]:** [Course descriptions](#)

BIOC2366  Protein Biochemistry

**AND ANY TWELVE (12) Credits from:**

- BIOC2365  Primary Metabolism
- BIOC3370  Basis of Human Disease
- BIOC3260  Principles of Biotechnology
- BIOC3261  Mitochondrial Bioenergetics
- BIOC3990  Biochemistry Project (Minors)
- BIOL3025  Molecular Plant Pathology
- CHEM3135  Bioinorganic Chemistry
# MAJOR IN BIOLOGY: Course descriptions

## LEVEL I
- BIOC1015  Introduction to Biochemistry
- BIOL1020  Diversity of Life I
- BIOL1025  Diversity of Life II
- BIOL1030  Introduction to Genetics

## LEVELS II & III (30 credits)

### BOTH courses (6 credits):
- BIOC2371  Molecular Techniques
- BIOL2373  Skills for Biologists

### Two courses (6 credits) from:
- BIOC2365  Primary Metabolism
- ECOL2460  Essentials of Ecology
- MICR2260  Essential Microbiology

### Two courses (6 credits) from:
- BIOL2166  Advanced Genetics I
- BIOL2370  Flowering Plant Physiology
- BIOL2371  Ecophysiology of Animals

### Six (6) credits from:
- Level II BIOC/BIOL/ECOL/MICR courses¹
- Level III BIOC/BIOL/ECOL/MICR courses²

### Six (6) credits from:
- Level III BIOC/BIOL/ECOL/MICR courses²

## Level 2 Biological Sciences courses:
- BIOC2365  Primary Metabolism
- BIOC2366  Protein Biochemistry
- BIOC2370  Cell Signals
- BIOC2900  Biochemistry Exchange Elective
- BIOL2166  Advanced Genetics I

## Level 3 Biological Sciences courses:
- BIOC3260  Principles of Biotechnology
- BIOC3261  Mitochondrial Bioenergetics
- BIOC3370  Basis of Human Disease
- BIOL3901  Multidisciplinary Project
- BIOL3990  Biology Project
- BIOC3265  Principles of Bioinformatics
- BIOL3025  Molecular Plant Pathology
- ECOL3100  Statistics for Ecologists
- ECOL3460  Biology & Ecology of Coral Reefs
- ECOL3461  Ecology of a Changing Planet
- ECOL3462  Behaviour: an Evolutionary Approach
- ECOL 3463 Tropical Crop Ecology
- MICR3265  Microbiology of Food
- MICR3266  Ecology of Microorganisms
- MICR3267  Essential Virology
- MICR3268  Microbial Pathogenesis
Transitional students who have already passed at least one Level II course required for the Biology Major can switch to this new Major or continue under the old Major (which will also be reduced to 30 credits effective 2016/17). A list of equivalencies between old and new Level II and III Biological Sciences courses has been prepared to assist such transitional students in satisfying their Biology Major and Minor requirements.

**MINOR IN BIOLOGY (Fifteen (15) Credits):** [Course descriptions](#)  

BIOC2371  Molecular Techniques  
**AND**  
BIOL2370  Flowering Plant Physiology  
**OR**  
BIOL2371  Ecophysiology of animals  

**AND Three 3-credit courses (9 credits) from:**  
- Level II BIOC/BIOL/ECOL/MICR courses  
- Level III BIOC/BIOL/ECOL/MICR courses

For transitional students, effective 2016/17, the old Biology Minor will be reduced from 16 credits to 15 credits.
DO U BL E MAJOR IN BIOLOG I CA L SC I E N CE S  

**LEVEL I**
- BIOC 1015  Introduction to Biochemistry
- BIOL 1020  Diversity of Life I
- BIOL 1025  Diversity of Life II
- BIOL 1030  Introduction to Genetics

**LEVELS II & III (60 credits)**

**ALL SEVEN courses (21 credits):**
- BIOC 2365  Primary Metabolism
- BIOC 2371  Molecular Techniques
- BIOL 2370  Flowering Plant Physiology
- BIOL 2371  Ecophysiology of Animals
- BIOL 2373  Skills for Biologists
- ECOL 2460  Essentials of Ecology
- MICR 2260  Essential Microbiology

**ONE of the following (6 credits)**
- BIOC 3990  Biochemistry Project (6 credits)
- BIOL 3990  Biology Project (6 credits)
- ECOL 3990  Ecology Project (6 credits)
- MICR 3990  Microbiology Project (6 credits)
- BIOL 3901  Multidisciplinary Project (6 credits)

**Fifteen (15) credits from:**
- Level II BIOC/BIOL/ECOL/MICR courses
- Level III BIOC/BIOL/ECOL/MICR courses

**Eighteen (18) credits from:**
- Level III BIOC/BIOL/ECOL/MICR courses

Transitional students who have already passed at least one Level II course required for the Biology Double Major can switch to the new Biological Sciences Double Major or continue under the old Biology Double Major (which will also be reduced to 30 credits effective 2016/17). A list of equivalencies between old and new Level II and III Biological Sciences courses has been prepared to assist such transitional students in satisfying their Biology Double Major Minor requirements.
**MAJOR IN ECOLOGY:** [Course descriptions](#)

### LEVEL I (12 Credits)
- BIOC1015  Introduction to Biochemistry*
- BIOL1020  Diversity of Life I*
- BIOL1025  Diversity of Life II*
- BIOL1030  Introduction to Genetics*

### LEVEL II (12 Credits)
- BIOL2373  Skills for Biologists*
- ECOL2460  Essentials of Ecology*
- ECOL2461  Caribbean Island Biodiversity*
- ECOL2462  Marine Biota*

### LEVEL II or III (18 Credits)
**Six (6) Credits:**
- ECOL3461  Ecology of a Changing Planet*
- ECOL3100  Statistics for Ecologists*

**AND Twelve (12) Credits from the following:**
- Level III ECOL elective courses [Currently]:
  - ECOL3460  Biology & Ecology of Coral Reefs
  - ECOL3463  Tropical Crop Ecology
  - ECOL3462  Behaviour: an Evolutionary Approach
  - ECOL3990  Ecology Project (6 credits)

**AND**
- ENSC2000  Essentials of Oceanography**
- MICR3266  Ecology of Microorganisms***

*Required courses

**Requires METE1110 Introduction to Oceans and Climate or ERSC1000 Earth and its Environment.

***Requires MICR2260 Essential Microbiology (or MICR2251 General Microbiology) and MICR2261 Eukaryotic Microbes (or MICR2252 Eukaryotic Micro-organisms)

A student wishing an Ecology Major with a marine-focus may select ENSC2000 Oceanography and ECOL 3460 Biology and Ecology of Coral Reefs. A student wishing a more terrestrial focus to their Ecology Major may select ECOL3462 Behaviour: An Evolutionary Approach and ECOL 3463 Tropical Crop Ecology. The Ecology offerings are completed by two further compulsory courses; one which exposes students to the impacts of humankind on biodiversity (ECOL3461 Ecology of a Changing Planet) and one which develops methodological and analytical skills (ECOL3100 Statistics for Ecologists).

Transitional students who have already passed at least one Level II course required for the Ecology Major can switch to this new Major or continue under the old Major (which will also be reduced to 30 credits effective 2016/17). A list of equivalencies between old and new Level II and III Biological Sciences courses has been prepared to assist such transitional students in satisfying their Ecology Major and Minor requirements.
MINOR IN ECOLOGY [Fifteen (15) Credits]: [Course descriptions]

BIOL2373  Skills for Biologists*
ECOL2460  Essentials of Ecology
ECOL2461  Caribbean Island Biodiversity
ECOL2462  Marine Biota
AND
ECOL3461  Ecology of a Changing Planet
OR
ECOL3100  Statistics for Ecologists

*This course will be replaced by another ECOL level III course.

For transitional students, effective 2016/17, the old Ecology Minor will be reduced from 16 credits to 15 credits.
## MAJOR IN MICROBIOLOGY: Course descriptions

### LEVEL I

**LEVEL I (12 Credits)**
- BIOC1015 Introduction to Biochemistry
- BIOL1020 Diversity of Life I
- BIOL1025 Diversity of Life II
- BIOL1030 Introduction to Genetics

### LEVEL II and III (30 Credits)

**Eighteen (18) Credits**
- BIOC2365 Primary Metabolism
- BIOC2371 Molecular Techniques
- BIOL2373 Skills for Biologists
- MICR2260 Essential Microbiology
- MICR2261 Eukaryotic Microbes
- MICR2262 Methods in Microbiology

**AND Twelve (12) Credits from the following:**
- BIOL3025 Molecular Plant Pathology
- MICR2900 Microbiology Exchange Elective
- Level III MICR elective courses [Currently]:
  - MICR3265 Microbiology of Food
  - MICR3266 Ecology of Microorganisms
  - MICR3267 Essential Virology
  - MICR3268 Microbial Pathogenesis
  - MICR3990 Microbiology Project (6 credits)

### MINOR IN MICROBIOLOGY [Fifteen (15) Credits]: Course descriptions

**Compulsory:**
- MICR2260 Essential Microbiology

**AND**

**Twelve (12) Credits from the following:**
- Level II MICR courses [Currently]:
  - MICR2261 Eukaryotic Microbes
  - MICR2262 Methods in Microbiology
  - MICR2900 Microbiology Exchange Elective

- Level III MICR courses [Currently]:
  - MICR3265 Microbiology of Food
  - MICR3266 Ecology of Microorganisms
  - MICR3267 Essential Virology
  - MICR3268 Microbial Pathogenesis
  - BIOL3025 Molecular Plant Pathology

Transitional students who have already passed at least one Level II course required for the Microbiology Major can switch to this new Major or continue under the old Major (which will also be reduced to 30 credits effective 2016/17). A list of equivalencies between old and new Level II and III Biological Sciences courses has been prepared to assist such transitional students in satisfying their Microbiology.

For transitional students, effective 2016/17, the old Microbiology Minor will be reduced from 16 credits to 15 credits.
## Equivalencies between Old and New Biological Sciences Courses For the Purpose of Fulfiling Major and Minor Requirements

<table>
<thead>
<tr>
<th>Old Course</th>
<th>New Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 2351 Biochemistry I</td>
<td>BIOC2365 Primary Metabolism</td>
</tr>
<tr>
<td>BIOC 2352 Biochemistry II</td>
<td>BIOC2366 Protein Biochemistry</td>
</tr>
<tr>
<td>No Equivalent</td>
<td>BIOC2370 Cell Signals</td>
</tr>
<tr>
<td>BIOC 3251 Microbial Biochemistry</td>
<td>Any BIOC/CHEM/MICR Level 3 or CHEM Level 2 course</td>
</tr>
<tr>
<td>No Equivalent</td>
<td>BIOC3260 Principles of Biotechnology</td>
</tr>
<tr>
<td>No Equivalent</td>
<td>BIOC3261 Mitochondrial Bioenergetics</td>
</tr>
<tr>
<td>No Equivalent</td>
<td>BIOC3290 Biochemistry Project for Minors</td>
</tr>
<tr>
<td>BIOC 3254 Biochemical Plant Pathology</td>
<td>BIOL3025 Molecular Plant Pathology</td>
</tr>
<tr>
<td>BIOC 3354 Biochemistry of Human Disease</td>
<td>BIOC3370 Basis of Human Disease</td>
</tr>
<tr>
<td>BIOC 3950 Biochemistry Research Project</td>
<td>BIOC3990 Biochemistry Project</td>
</tr>
<tr>
<td>No equivalent</td>
<td>BIOL2373 Skills for Biologists¹</td>
</tr>
<tr>
<td>BIOL 2053 Physiology of Plants &amp; Animals²</td>
<td>BIOL2370 Flowering Plant Physiology</td>
</tr>
<tr>
<td>BIOL 2053 Physiology of Plants &amp; Animals²</td>
<td>BIOL2371 Ecophysiology of Animals</td>
</tr>
<tr>
<td>BIOL 2058 Tropical Ornamental Plants</td>
<td>BIOL2372 Plants for Caribbean Landscapes</td>
</tr>
<tr>
<td>BIOL 2151 Genetics I</td>
<td>BIOL2166 Advanced Genetics I</td>
</tr>
<tr>
<td>BIOL 2152 General Molecular Biology</td>
<td>BIOC2371 Molecular Techniques</td>
</tr>
<tr>
<td>BIOL 3053 Developmental Physiology</td>
<td>Any BIOC/BIOL/ECOL/MICR Level 2 or 3 course</td>
</tr>
<tr>
<td>BIOL 3152 Bioinformatics</td>
<td>BIOC3265 Principles of Bioinformatics</td>
</tr>
<tr>
<td>BIOL 3950 Biology Research Project</td>
<td>BIOL3990 Biology Project</td>
</tr>
<tr>
<td>ECOL 2055 Horticulture</td>
<td>BIOL2465 Tropical Horticulture²</td>
</tr>
<tr>
<td>ECOL 2451 Population Ecology</td>
<td>ECOL2460 Essentials of Ecology</td>
</tr>
<tr>
<td>ECOL 2452 Community Ecology</td>
<td>ECOL2461 Caribbean Island Biodiversity</td>
</tr>
<tr>
<td>ECOL 2453 Caribbean Island Biogeography</td>
<td>ECOL2462 Marine Biota</td>
</tr>
<tr>
<td>ECOL 2454 Marine Biology</td>
<td>ECOL3460 Biology &amp; Ecology of Coral Reefs</td>
</tr>
<tr>
<td>ECOL 3451 Human Ecology and Conservation</td>
<td>ECOL3461 Ecology of a Changing Planet</td>
</tr>
<tr>
<td>ECOL 3452 Behavioural Ecology</td>
<td>ECOL3462 Behaviour: An Evolutionary Approach</td>
</tr>
<tr>
<td>ECOL 3453 Crop Ecology</td>
<td>ECOL 3463 Tropical Crop Ecology</td>
</tr>
<tr>
<td>ECOL 3950 Ecology Research Project</td>
<td>ECOL3990 Ecology Project</td>
</tr>
<tr>
<td>No Equivalent</td>
<td>ECOL3100 Statistics for Ecologists</td>
</tr>
<tr>
<td>MICR 2251 General Microbiology</td>
<td>MICR2260 Essential Microbiology</td>
</tr>
<tr>
<td>MICR 2252 Eukaryotic Micro-Organisms</td>
<td>MICR2261 Eukaryotic Microbes</td>
</tr>
<tr>
<td>No Equivalent</td>
<td>MICR2262 Methods in Microbiology</td>
</tr>
<tr>
<td>MICR 3251 Food Microbiology</td>
<td>MICR3265 Microbiology of Food</td>
</tr>
<tr>
<td>MICR 3252 Microbial Ecology</td>
<td>MICR3266 Ecology of Microorganisms</td>
</tr>
<tr>
<td>MICR 3253 Biology Of Viruses</td>
<td>MICR3267 Essential Virology</td>
</tr>
<tr>
<td>MICR 3258 Pathogenic Micro-Organisms</td>
<td>MICR3268 Microbial Pathogenesis</td>
</tr>
<tr>
<td>MICR 3950 Microbiology Research Project</td>
<td>MICR3990 Microbiology Project</td>
</tr>
</tbody>
</table>
Students following a new Major who have passed BIOL1010 Basic Skills for Biologists cannot take BIOL2373 Skills for Biologists but must substitute any BIOC/BIOL/ECOL/MICR level 2 or 3 course for the latter.

Students who have passed BIOL2053 Physiology of Plants & Animals may use this course to substitute for either BIOL2370 Flowering Plant Physiology or BIOL2371 Ecophysiology of Animals but not both.

### CHEMICAL SCIENCES

The Department of Biological & Chemical Sciences offers a Single Major, Double Major and Minor in Chemistry.

#### MAJOR IN CHEMISTRY: [Course descriptions](#)

<table>
<thead>
<tr>
<th>LEVEL I (12 Credits)</th>
<th>LEVEL II</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM1110 Introduction to Organic Chemistry</td>
<td>CHEM2010 Practical Chemistry I (2 credits)</td>
</tr>
<tr>
<td>CHEM1120 Introduction to Physical Chemistry</td>
<td>CHEM2020 Practical Chemistry II (2 credits)</td>
</tr>
<tr>
<td>CHEM1125 Introduction to Experimental Chemistry</td>
<td>CHEM2100 Inorganic Chemistry I</td>
</tr>
<tr>
<td>CHEM1130 Introduction to Inorganic Chemistry</td>
<td>CHEM2200 Organic Chemistry I</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEVEL III</th>
<th>AND Eight (8) Credits from:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM3500 Chemistry Project (4 credits)*</td>
<td>CHEM3100 Inorganic Chemistry II</td>
</tr>
<tr>
<td></td>
<td>CHEM3200 Organic Chemistry II</td>
</tr>
<tr>
<td></td>
<td>CHEM3300 Physical Chemistry II</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEVEL II/III</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM3505 Chemistry Research Project (8 credits) in place of CHEM3500.</td>
</tr>
</tbody>
</table>

#### MINOR IN CHEMISTRY (Sixteen (16) Credits): [Course descriptions](#)

<table>
<thead>
<tr>
<th>CHEM2010 Practical Chemistry I (2 credits)</th>
<th>CHEM2020 Practical Chemistry II (2 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM2100 Inorganic Chemistry I</td>
<td>CHEM2200 Organic Chemistry I</td>
</tr>
<tr>
<td>CHEM2300 Physical Chemistry I</td>
<td>CHEM2400 Analytical Chemistry I</td>
</tr>
</tbody>
</table>

*With special permission students may be allowed to take CHEM3505 Chemistry Research Project (8 credits) in place of CHEM3500.*
DOUBLE MAJOR IN CHEMISTRY: Course descriptions

LEVEL I (12 Credits)
CHEM1110 Introduction to Organic Chemistry
CHEM1120 Introduction to Physical Chemistry
CHEM1125 Introduction to Experimental Chemistry
CHEM1130 Introduction to Inorganic Chemistry

LEVEL II/III

LEVEL II
CHEM2010 Practical Chemistry I (2 credits)
CHEM2020 Practical Chemistry II (2 credits)
CHEM2100 Inorganic Chemistry I
CHEM2200 Organic Chemistry I
CHEM2300 Physical Chemistry I
CHEM2400 Analytical Chemistry I

LEVEL III
CHEM3505 Chemistry Research Project (8 credits)

AND Thirty-two (32) credits from:
CHEM2950 Chemistry Elective
CHEM3100 Inorganic Chemistry II
CHEM3135 Bioinorganic Chemistry
CHEM3145 Bonding in Inorganic Chemistry
CHEM3200 Organic Chemistry II
CHEM3210 Bioorganic & Medicinal Chemistry
CHEM3300 Physical Chemistry II
CHEM3415 Analytical Chemistry III
CHEM3515 Environmental Chemistry

AND Three (3) Credits From:
BIO2365 Primary Metabolism
ENSC2003 Sustainable Energy Systems

ENVIRONMENTAL SCIENCE

Environmental Science is an interdisciplinary programme of the Faculty comprising individual courses as well as a Minor in Environmental Science. The Minor is restricted to students in the Faculty of Science and Technology.

MINOR IN ENVIRONMENTAL SCIENCE: Course descriptions

Level I (6 Credits)
METE1110 Introduction to Ocean and Climate
OR
ENSC1000 Earth and its Environment
AND
ENSC1001 Introduction to Physical Geology: Dynamic Earth

AND Fifteen (15) credits from the following:

LEVEL II
ENSC2000 Essentials of Oceanography
ENSC2001 Introduction to the Earth Life System
ENSC2002 Earth's Climate
ENSC2003 Sustainable Energy Systems

**LEVEL III**

ENSC3000 Climate Variation and Change
ENSC3001 Natural Hazards and Disasters
ENSC3900 Research Project in Environmental Science (6 Credits)

The Minor in Environmental Science replaces the Minor in Earth Sciences.

For those students currently registered for a minor in Earth Sciences the Level 3 ERSC courses will run in 2016/2017 to allow the students to complete their original declaration during this time period.

Transitional students can switch to this new Minor or continue under the old Minor (which will also be reduced to 15 credits effective 2016/17). A list of equivalences between old and new courses has been prepared to assist such transitional students in satisfying their Minor requirements.

Transitional students using the current Minor in Earth Science may substitute the equivalent new courses to complete the minor. Transitional students using the new Minor in Environmental Science may substitute the equivalent old course to complete the minor.

**Equivalencies between Old Earth Sciences and New Environmental Science Courses For the Purpose of Fulfiling Major and Minor Requirements.**

<table>
<thead>
<tr>
<th>Old Course</th>
<th>New Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>METE1200 Oceans and Climate</td>
<td>METE1110 Introduction to Ocean and Climate</td>
</tr>
<tr>
<td>ERSC1001 Dynamic Earth</td>
<td>ENSC1001 Introduction to Physical Geology: Dynamic Earth</td>
</tr>
<tr>
<td>No equivalent</td>
<td>ENSC1000 Earth and its Environment</td>
</tr>
<tr>
<td>ERSC2001 Earth &amp; Life</td>
<td>ENSC2001 Introduction to the Earth-Life System</td>
</tr>
<tr>
<td>ERSC2002 Climatology</td>
<td>ENSC2002 Earth’s Climate</td>
</tr>
<tr>
<td>ERSC2003 Oceanography</td>
<td>ENSC2000 Essentials of Oceanography</td>
</tr>
<tr>
<td>ERSC2004 Renewable Energy</td>
<td>ENSC2003 Sustainable Energy Systems</td>
</tr>
<tr>
<td>ERSC3001 Natural Hazards</td>
<td>ENSC3001 Natural Hazards and Disasters</td>
</tr>
<tr>
<td>ERSC3002 Climate Variability and</td>
<td>ENSC3000 Climate Variation and Change Predictability</td>
</tr>
<tr>
<td>ERSC3900 Earth Science Research Project</td>
<td>ENSC3900 Environmental Science Research Project</td>
</tr>
</tbody>
</table>

86
All incoming students registered to take courses in the Department of Biological and Chemical Sciences must attend a Safety Seminar usually held during registration week. Students taking laboratory courses in this Department will only be allowed to perform experiments if dressed in an appropriate lab coat, lab goggles and enclosed shoes. Some exceptions may be made in the wearing of safety goggles for lab procedures where there is no risk of eye injury (eg. microscope use).

**BIOLOGICAL COURSES**

**PRELIMINARY BIOLOGICAL COURSES**

**BIOLOGY I (6 Credits)**

**Pre-requisite:** None

**Syllabus:**

- **Cellular Activities:** Subcellular organisation. Cell membrane structure and function. Biological chemistry - water and living systems, carbohydrates, lipids, proteins and amino acids, enzymes as catalysts, nucleic acids.
- **Genetics:** The genetic material. Nuclear division. Patterns of inheritance. Mutation. Genetic engineering.

**Teaching:** Three lectures, one tutorial and three hours of practicals per week.

**Method of Examination:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory: Final Exam</td>
<td>60%</td>
</tr>
<tr>
<td>Theory: Two In-course tests</td>
<td>20%</td>
</tr>
<tr>
<td>Practical reports</td>
<td>20%</td>
</tr>
</tbody>
</table>

**BIOLOGY II (6 Credits)**

**Pre-requisite:** None

**Syllabus:** The organism and the environment: Acquisition of energy - autotrophic, holozoa, saprophytic and parasitic nutrition. Cellular respiration - glycolysis, the Krebs cycle, anaerobic respiration. Ecosystems - structure, function, population interactions. Environmental change & evolution - variation in populations, evolution and natural selection. Human ecology - biodiversity and its value, anthropogenic pollution. Systems and their maintenance: Exchanges with the environment - respiratory gas exchange and excretion. Plant and animal transport systems. Chemical coordination in plants and animals. Nervous coordination in mammals - nervous tissue, conduction and transmission of nerve impulses, the CNS. Support and movement - supporting tissue in plants and tropisms, skeletal diversity and movement in animals.
Teaching: Three lectures, one tutorial and three hours of practicals per week.

Method of Examination:

Theory: Final Examination (3 hours) 60%
Theory: Two In-course tests 20%
Practical reports 20%

LEVEL I BIOLOGICAL COURSES

BIOC1015 - INTRODUCTION TO BIOCHEMISTRY (3 Credits)
Pre-requisite: CAPE Chemistry Unit 1 (or CHEM0615) and CAPE Chemistry Unit 2 (or CHEM0625)
or an approved equivalent

Anti-requisite: BIOC1351 Introductory Biochemistry


Teaching: 21 lectures (1h each), 6 tutorials (1h each) and 6 practical sessions (3h each),

Method of Examination:

Theory: Final Examination (3 hours) 50%
Theory: In-course tests and assignments 25%
Practical reports 25%

BIOL1020 - DIVERSITY OF LIFE I (3 Credits)

Pre-requisite: CAPE Biology Unit 1 (or BIOL0051) and CAPE Biology Unit 2 (or BIOL0052)

OR
CAPE Environmental Science Units 1 & 2 and CSEC Biology

Anti-requisite: BIOL1051 Biodiversity I

88

Teaching: 24 lectures (1h each) and 8 practical sessions (3h each).

Method of Examination:
Theory: final examination (2 hours) 50%
Theory: in-course test(s) 10%
Practical: reports, quizzes 30%
Practical: final practical test 10%

BIOL1025 - DIVERSITY OF LIFE II (3 Credits)
Pre-requisite: CAPE Biology Unit 1 (or BIOL0051) and CAPE Biology Unit 2 (or BIOL0052)
OR
CAPE Environmental Science Units I & 2 and CSEC Biology

Anti-requisite: BIOL1052 Biodiversity II


Teaching: 24 lectures (1h each) and 12 practical sessions (2 h each).

Method of Examination:
Theory: Final Examination (3 hours) 50%
Theory: In-course tests 10%
Practical: quizzes, lab reports, and lab test 40%

**BIOL1030 - INTRODUCTION TO GENETICS (3 Credits)**

Pre-requisite: CAPE Biology Unit 1 (or BIOL0051) and CAPE Biology Unit 2 (or BIOL0052)

OR

CAPE Environmental Science Units 1 & 2 and CSEC Biology

Anti-requisite: BIOL1151 Introductory Genetics


Teaching: 18 lectures (1h each), 6 tutorials (1h each) and 8 practical sessions (3h each).

Method of Examination:

Theory: Final Examination (2 hours) 50%
Theory: In-course test(s) and assignments 25%
Practical: Quizzes, exercises and reports 25%
LEVEL II BIOLOGICAL COURSES

BIOC2365 PRIMARY METABOLISM (3 Credits)

Pre-requisites: BIOC1015 Introduction to Biochemistry (or BIOC1351 Introductory Biochemistry)

Restrictions: Not to be taken by persons who have passed BIOC2351 Biochemistry I

Syllabus:
- Glycolysis and TCA cycle; emphasis on thermodynamic favourability and regulation of pathways.
- Catabolism of hexoses other than glucose: disaccharides, glycogen and starch.
- Gluconeogenesis.
- Biosynthesis of sucrose, starch and glycogen.
- Glyoxylate shunt.
- Pentose phosphate pathways.
- Photosynthetic carbohydrate synthesis.
- Oxidation of fatty acids in mitochondria, peroxisomes, and glyoxysomes.
- Oxidation of unsaturated and odd-chain fatty acids.
- Ketone bodies.
- Fatty acid biosynthesis, including long chain and unsaturated fatty acids.
- Overview of amino acid catabolism.
- Nitrogen excretion and the urea cycle.
- Biosynthesis of amino acids.
- Nitrogen fixation and assimilation.
- Amino acids as biosynthetic precursors.
- DNA replication.
- Protein synthesis: transcription and translation.
- Regulation of prokaryotic gene expression, e.g. lac operon, trp operon and eukaryotic gene expression.
- Selected examples of water-soluble vitamins and lipid-soluble vitamins.

Teaching: Eighteen (18) hours of lectures; Six (6) hours of tutorials and Twenty-four (24) hours of practicals.

Method of Examination:
- Theory: Final Examination (2 hours) 50%
- Theory: In-course Test(s)/Assignment(s) 25%
- Practical: 25%

BIOC2366 - PROTEIN BIOCHEMISTRY (3 Credits)

Pre-requisites: BIOC1015 Introduction to Biochemistry (or BIOC1351 Introductory Biochemistry)

Restrictions: Not to be taken by persons who have passed BIOC2352 Biochemistry II

Syllabus:
- Membrane proteins: structure and function.
- Protein purification. Definition, structure, mechanism and function of enzymes.
- Mathematical concepts related to the calculation of enzyme kinetics.
- Protein post-translational modifications and use of methods to determine protein structure and identity.
- Protein folding, mis-folding and mechanisms of protein degradation and turnover.
- Function of protein-protein interaction and suitable methods for investigating these.
Teaching: Eighteen (18) hours of lectures; Six (6) hours of tutorials and Twenty-four (24) hours of practicals.

Method of Examination:

| Theory: Final Examination (2 hours) | 50% |
| Theory: In-course Test(s)/Assignment(s) | 25% |
| Practical: | 25% |

**BIOC2370 - CELL SIGNALS (3 Credits)**

Pre-requisites: BIOC1015 Introduction to Biochemistry (or BIOC1351 Introductory Biochemistry)

Restrictions: Not to be taken by persons who have passed BIOC3053 Cell Signalling

Syllabus: Overview of endocrine organs and systems. Overview of the mechanisms of Endocrine hormonal (second messengers) action including receptors (nuclear and transmembrane receptors) and second messengers. Regulatory systems of hormonal responsiveness including cross-talk. Mechanisms of hormones and receptors and modulation of hormone levels. Plant hormones and examples of their molecular mode of action. Signals involved in the plant disease mechanisms- Systematic acquired response and the hypersensitive response

Teaching: Eighteen (18) hours of lectures; Six (6) hours of tutorials and Twenty-four (24) hours of practicals.

Method of Examination:

| Theory: Final Examination (2 hours) | 50% |
| Theory: In-course Test(s)/Assignment(s) | 25% |
| Practical: | 25% |

**BIOC2371 - MOLECULAR TECHNIQUES (3 Credits)**

Pre-requisites: BIOL1030 Introduction to Genetics (or BIOL1151 Introductory Genetics)

Restrictions: Not to be taken by persons who have passed BIOL2152 General Molecular Biology


Teaching: Eighteen (18) hours of lectures; Six (6) hours of tutorials and Twenty-four (24) hours of practicals.
Method of Examination:

Theory: Final Examination (2 hours)  50%
Theory: In-course Test(s)/Assignment(s)  25%
Practical:  25%

**BIOC2900 - BIOCHEMISTRY EXCHANGE ELECTIVE (3 Credits)**

Pre-requisites:  Depends on Institution offering course

Syllabus:  This course provides an administrative mechanism for a UWI student on exchange at another approved institution to take an elective course in Biochemistry which has no UWI equivalent. The course content will depend on the specific course delivered at the host institution.

Teaching:  The teaching methodologies will be determined by the host institution.

Method of Examination:  The course assessment methods will be determined by the host institution.

**BIOL2166 - ADVANCED GENETICS I (3 Credits)**

Pre-requisites:  BIOL1030 - Introduction to Genetics (or BIOL1151 - Introductory Genetics) AND BIOC1015 Introduction to Biochemistry (or BIOC1351 Introductory Biochemistry)

Restrictions:  Not to be taken by persons who have passed BIOL2151 Genetics I


Teaching:  Eighteen (18) hours of lectures; Six (6) hours of tutorials and Twenty-four (24) hours of practical
Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory: Final Examination (2 hours)</td>
<td>50%</td>
</tr>
<tr>
<td>Theory: In-course Test(s)/Assignment(s)</td>
<td>25%</td>
</tr>
<tr>
<td>Practical: Quizzes, exercises and reports</td>
<td>25%</td>
</tr>
</tbody>
</table>

**BIOL2370 - FLOWERING PLANT PHYSIOLOGY (3 Credits)**

**Pre-requisites:** BIOL1020 Diversity of Life I (or BIOL1051 Biodiversity 1) AND BIOC1015 Introduction to Biochemistry (or BIOC1351 Introductory Biochemistry)

**Restrictions:** Not to be taken by persons who have passed BIOL2053 Physiology of Plants & Animals or BIOL3053 Developmental Physiology.


**Teaching:** Eighteen (18) hours of lectures; Six (6) hours of tutorials and Twenty-four (24) hours of practical.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory: Final Examination (2 hours)</td>
<td>50%</td>
</tr>
<tr>
<td>Theory: In-course Test(s)/Assignment(s)</td>
<td>20%</td>
</tr>
<tr>
<td>Practical:</td>
<td>30%</td>
</tr>
</tbody>
</table>

**BIOL2371 - ECOPHYSIOLOGY OF ANIMALS (3 Credits)**

**Pre-requisites:** BIOL1025 Diversity of Life II (or BIOL1052 Biodiversity II)

**Restrictions:** Not to be taken by persons who have passed BIOL2053 Physiology of Plants & Animals or BIOL3053 Developmental Physiology.

**Syllabus:** The need for energy. Digestive systems. Acquisition of oxygen. Respiratory surfaces and ventilation in animals. Carriage of oxygen, respiratory pigments, oxygen dissociation curves. Components of circulatory systems; right to left shunting. Renal and extra-renal organs. Osmoregulation and nitrogenous excretion in marine and freshwater animals. The challenge of maintaining water balance on land. Heat transfer between animals and the environment. Ectothermy and endothermy. Adaptations to cold and to hot, dry environments. Experimental design and data analysis.
Teaching: Twenty-four lectures/tutorials and twenty-four hours of practical per semester.

Method of Examination:

Theory: Final Examination (2 hours) 50%
Theory: In-course Test(s)/Assignment(s) 20%
Practical: Laboratory/Field work 30%

**BIOL2372 - PLANTS FOR CARIBBEAN LANDSCAPES (3 Credits)**

Pre-requisites: BIOL1020 Diversity of Life I (or BIOL1051 Biodiversity I)

Restrictions: Not to be taken by persons who have passed BIOL2058 Tropical Ornamental Plants


Teaching: Eighteen (18) hours of lectures; six (6) hours of tutorials; twenty-four (24) hours of practical/field work.

Method of Examination:

Theory: Final Examination (2 hours) 40%
Theory: In-course Test(s)/Assignment(s) 10%
Practical: Laboratory/Field work 50%

**BIOL2373 - SKILLS FOR BIOLOGISTS (3 Credits)**

Pre-requisites: 15 credits of level-1 courses including 6 credits from Level 1 BIOC/BIOL courses.
Restricted to students majoring or minoring in Biology, Ecology, Microbiology or Biochemistry.

Restrictions: Not to be taken by persons who have passed BIOL1010 Basic Skills for Biologists.

Use of computer software tools for data analysis and presentation of results e.g. EXCEL, Genstat, R, SPSS. Data handling and graph preparation in Excel. Excel applications useful for descriptive statistics.

**Dealing with numbers and simple mathematical relationships:** Scientific notation, decimal places, significant figures. Simple calculations with number in scientific notation. Precision and accuracy. SI units and prefixes. The rules of exponents and logarithms. Simple calculations involving these.


**Teaching:** Twenty-four (24) hours of interactive lectures/tutorials AND Twelve (12) hours tutorials/assessments.

**Method of Examination:**

Coursework 100%

**BIOL2463 - SUSTAINABLE LAND USE (3 Credits)**

**Pre-requisite:** Permission of the Department

**Restrictions:** Not to be taken by persons who have passed BIOL2050 Sustainability & Land Use

**Syllabus:** Trade Policy Impact on Land Use and Food Security in the Caribbean; The State of Agriculture Today; Alternative Agricultural Systems; Agricultural Production in the Humid Tropics; Importance of Livestock in Tropical Agriculture; The Status of Animal Production in the Tropics; Livestock Production and Sustainability; Animal Productivity in the Tropics.

**Teaching:** The course will be taught intensively over four weeks in the summer, typically 3 days per week as part of the McGill-UWI BITS Programme. Lectures will be given during each of the morning sessions and labs/field trips will be held in the afternoon sessions.

**Method of Examination:**

Coursework 40%

Final examination (2 hours) 60%

**BIOL2465 - TROPICAL HORTICULTURE (3 Credits)**

**Pre-requisites:** BIOL1020 Diversity of Life I (or BIOL1051 Biodiversity 1) AND BIOL1025 Diversity of Life II (or BIOL1052 Biodiversity 2)

**Restrictions:** Not to be taken by persons who have passed ECOL2055 Horticulture
**Syllabus:**

**Teaching:**
Twenty-four (24) hours of lectures and thirty-six (36) hours of laboratory work /field trips.

**Method of Examination:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Examination (2 hours)</td>
<td>50%</td>
</tr>
<tr>
<td>Coursework (incl. field work, practicals, quizzes)</td>
<td>50%</td>
</tr>
</tbody>
</table>

**BIOL2466 - TROPICAL ENERGY AND BIOPROCESSING (3 Credits)**

**Pre-requisite:**
Permission of the Department

**Restrictions:**
Not to be taken by persons who have passed BIOL2055 Bioprocessing & Tropical Energy.

**Syllabus:**
Tropical energy issues and approaches - Energy vs food debate; Introduction to the scope of bioprocessing industries - definitions, technology and products; Basic biofuel processing concepts; Economics of bioenergy, including economics of conservation and biofuels on reduction of CO₂ generation; Basic principles of industrial utilization of raw food materials for production of bio-products. Characterisation of raw material and products for biotechnological conversion; Utilisation of food residues for the production of bio-products including sugars, antibiotics, amino acids, peptides; Bioprocessing for production of drug therapeutics, nutraceuticals and functional foods.

**Teaching:**
The course will be taught intensively over four weeks in the summer, typically 3 days per week as part of the McGill-UWI BITS Programme. Lectures will be given during each of the morning sessions and labs/field trips will be held in the afternoon sessions.

**Method of Examination:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coursework</td>
<td>40%</td>
</tr>
<tr>
<td>Final examination (2 hours)</td>
<td>60%</td>
</tr>
</tbody>
</table>
**BIOL2900 - BIOLOGY EXCHANGE ELECTIVE (3 Credits)**

**Pre-requisites:** Depends on Institution offering course.

**Syllabus:** This course provides an administrative mechanism for a UWI student on exchange at another approved institution to take an elective course in Biology which has no UWI equivalent. The course content will depend on the specific course delivered at the host institution.

**Teaching:** Depends on Institution offering course.

**Method of Examination:**
Depends on Institution offering course.

---

**ECOL2460 - ESSENTIALS OF ECOLOGY (3 Credits)**

**Pre-requisites:** BIOL1020 Diversity of Life I (or BIOL1051 Biodiversity I) AND BIOL1025 Diversity of Life II (or Biodiversity II)

**Restrictions:** Not to be taken by persons who have passed ECOL2051 Population Ecology

**Syllabus:**
- **Individuals:** Coping with environmental variation.
- **Populations:** Life history, Population distribution and abundance and Population dynamics.
- **Interactions among organisms:** Competition, Predation and herbivory, Parasitism, Mutualism and commensalism.
- **Communities:** The nature of communities, Changes in communities and Species diversity in communities.
- **Ecosystems:** Production, Energy flow and food webs, Nutrient supply and cycling.

**Teaching:** Twenty-four lectures/tutorials and twenty-four hours of practical per semester.

**Method of Examination:**
- Theory: Final Examination (2 hours) 50%
- Theory: In-course Test(s)/Assignment(s) 20%
- Practical: 30%

---

**ECOL2461 - CARIBBEAN ISLAND BIODIVERSITY (3 Credits)**

**Pre-requisites:** BIOL1020 Diversity of Life I (or BIOL1051 Biodiversity I) AND BIOL1025 Diversity of Life II (or BIOL1052 Biodiversity II)

**Restrictions:** Not to be taken by persons who have passed ECOL2453 Caribbean Island Biogeography

Teaching: Twenty-four lectures/tutorials and twenty-four hours of practical per semester.

Method of Examination:
Theory: Final Examination (2 hours) 50%
Theory: In-course Test(s) 10%
Practical: Field journal/assignments 40%

ECOL2462 - MARINE BIOTA (3 Credits)
Pre-requisites: ECOL2460 Essentials of Ecology (or ECOL2451 Population Ecology)

Restrictions: Not to be taken by persons who have passed ECOL2454 Marine Biology


Teaching: Twenty-four lectures/tutorials and twenty-four hours of practical per semester.

Method of Examination:
Theory: Final Examination (2 hours) 50%
Theory: In-course Test(s)/Assignment(s) 20%
Practical: Laboratory/Field Work 30%

ECOL2900 - ECOLOGY EXCHANGE ELECTIVE (3 Credits)
Pre-requisites: Depends on Institution offering course.

Syllabus: This course provides an administrative mechanism for a UWI student on exchange at another approved institution to take an elective course in Ecology which has no UWI equivalent. The course content will depend on the specific course delivered at the host institution.
MICR260 - ESSENTIAL MICROBIOLOGY (3 Credits)
Pre-requisites: BIOL1020 Diversity of Life I (or BIOL1051 Biodiversity I) AND BIOC1015 Introduction to Biochemistry (or BIOC1351 Introductory Biochemistry)

Restrictions: Not to be taken by persons who have passed MICR2251 General Microbiology


Teaching: Twenty-four lectures/tutorials and twenty-four hours of practical per semester.

Method of Examination:
Theory: Final Examination (2 hours) 50%
Theory: In-course Test(s)/Assignment(s) 20%
Practical Coursework: Reports, quizzes, tests 30%

MICR261 - EUKARYOTIC MICROBES (3 Credits)
Pre-requisites: BIOL1020 Diversity of Life I (or BIOL1051 Biodiversity I) AND BIOC1015 Introduction to Biochemistry (or BIOC1351 Introductory Biochemistry)

Restrictions: Not to be taken by persons who have passed MICR2252 Eukaryotic Microorganisms


Teaching: Eighteen (18) hours of lectures; Six (6) hours of tutorials; Twenty-four (24) hours of practical/field work).
Method of Examination:

- Theory: Final Examination (2 hours) 50%
- Theory: In-course Test(s)/Assignment(s) 25%
- Practical: Laboratory/Field work 25%

**MICR2262 - METHODS IN MICROBIOLOGY (3 Credits)**

**Pre-requisites:** MICR2261 Essential Microbiology (or MICR2251 General Microbiology)

**Syllabus:**
- Best laboratory practice.
- Septic techniques.
- Levels of biosafety.
- Preparing a lab book.
- Microbiological media.
- Sampling methods.
- Standard methods for microbial identification.
- Methods for enumeration of micro-organisms.
- Characterization of microbes.
- Antimicrobial sensitivity testing.
- Molecular techniques for microbial identification and characterization.
- Reporting practical work.

**Teaching:** Twelve (12) hours of lectures/tutorials; forty-eight (48) hours of practical/field work.

**Method of Examination:** This will be 100% Coursework

- Laboratory assessments/Field Work 80%
- Tutorials 20%

**MICR2900 - MICROBIOLOGY EXCHANGE ELECTIVE (3 Credits)**

**Pre-requisites:** Depends on Institution offering course

**Syllabus:** This course provides an administrative mechanism for a UWI student on exchange at another approved institution to take an elective course in Microbiology which has no UWI equivalent. The course content will depend on the specific course delivered at the host institution.

**Teaching:** Depends on Institution offering course.

**Method of Examination:**

- Depends on Institution offering course.
LEVEL III BIOLOGICAL COURSES

BIOC3254 - BIOCHEMICAL PLANT PATHOLOGY (4 Credits)
Pre-requisites: MICR2251 General Microbiology or BIOL2152 General Molecular Biology.


Teaching: Two lectures, one tutorial and three hours of practicals per week.

Method of Examination:
- Theory: Final Examination (3 hours) 60%
- Theory: In-course Test(s)/Assignment(s) 20%
- Practical: reports 20%

BIOC3352 - BIOCHEMISTRY III (4 Credits)
Pre-requisites: BIOC2351 Biochemistry I & BIOC2352 Biochemistry II

Syllabus: The areas of study may vary from year to year but will usually include; Clinical biochemistry and techniques, biological membranes and transport, food biochemistry, protein structure and function, molecular chaperones.

Teaching: Two one-hour lectures and one three hour practical every week.

Method of Examination:
- Theory: Final Examination (3 hours) 60%
- Theory: In-course Test(s)/Assignment(s) 20%
- Practical: reports 20%

BIOC3354 - BIOCHEMISTRY OF HUMAN DISEASE (4 Credits)
Prerequisite: BIOC2351 Biochemistry I

Syllabus: The areas of study will focus on a variety of human diseases such as: HIV/AIDS, cardiovascular disease, diabetes, obesity, various cancers, liver disease, kidney disease, various syndromes and deficiencies including in-born errors of metabolism. Various aspects of the biochemistry will be studied for the
diseases, with a highlight of the latest ground-breaking research in the area. The areas studied will include specific biochemical pathways, key proteins and enzymes that play a role in the disease, and linkage of these pathways with the presentation of the symptoms of the disease.

Teaching: Two lectures, one tutorial and three hours of practicals per week.

Method of Examination:
- Theory: Final Examination (3 hours) 60%
- Theory: In-course Test(s)/Assignment(s) 20%
- Practical: reports 20%

**BIOC3950 - BIOCHEMISTRY RESEARCH PROJECT (8 Credits)**

Pre-requisites: BIOL2151 Genetics I, BIOL2152 General Molecular Biology, BIOC2351 Biochemistry I and BIOC2352 Biochemistry II

Restrictions: Not to be taken with BIOL3950 Biology Research Project, BIOL3901 Multidisciplinary Project, MICR3950 Microbiology Research Project, ECOL3950 Ecology or CHEM3505 Research Project

Syllabus: A practical project in Biochemistry carried out under the supervision of a staff member. Students will be allocated one of the available research topics and are expected to spend not less than 144 hours in field/ laboratory studies. The project will be presented both orally in the form of a short seminar and in a written report. Three typed and bound copies of the written report must be presented.

Method of Examination:
- Project report 70%
- Seminar 15%
- Supervisor assessment 15%

**BIOC3260 - PRINCIPLES OF BIOTECHNOLOGY (3 Credits - Offered from 2017/18)**

Pre-requisite: BIOC2371 Molecular Techniques (or BIOL2152 General Molecular Biology)

Syllabus: Biotechnology applications to medicine, e.g. animal and human cell, tissue and organ culture. Medical/pharmaceutical products of animal cell culture. Biotechnology applications to agriculture e.g. plant cell and tissue culture. Plant based production of biofuels, molecular markers. Applications of biotechnology to environmental solutions e.g., monitoring, and remediation of contaminated soils. New and emerging biotechnologies e.g. RNAi, CRISPR, gene therapy, and synthetic biology among other new techniques.
Teaching: Eighteen (18) hours of lectures; Six (6) hours of tutorials and Twenty-four (24) hours of practicals.

Method of Examination:
- Theory: Final Examination (2 hours) 50%
- Theory: In-course Test(s)/Assignment(s) 25%
- Practical: reports 25%

**BIOC3261 - MITOCHONDRIAL BIOENERGETICS (3 Credits - Offered from 2017/18)**

Pre-requisite: BIOC2365 Primary Metabolism (or BIOC2351 Biochemistry I) AND BIOC2371 Molecular Techniques (or BIOL2152 General Molecular Biology)


Teaching: Eighteen (18) hours of lectures; Six (6) hours of tutorials and Twenty-four (24) hours of practicals.

Method of Examination:
- Theory: Final Examination (2 hours) 50%
- Theory: In-course Test(s)/Assignment(s) 20%
- Practical: reports 30%

**BIOC3265 - PRINCIPLES OF BIOINFORMATICS (3 Credits - Offered from 2017/18)**

Pre-requisite: BIOC2371 Molecular Techniques (or BIOL2152 General Molecular Biology)

Restrictions: Not to be taken by persons who have passed BIOL3152 Bioinformatics

Syllabus: Descriptive terminology in Bioinformatics and basic computer programming; Biological algorithms; Pairwise and Multiple sequence alignments; Global and Local sequence alignment; BLAST and FASTA searches; Secondary structure analyses in molecular data e.g. domain and motif searches; Introduction to key software and databases including MEGA, MEME, NCBI, EBI, and DDBJ databases; Phylogenetic and basic cluster analysis methods; Genome projects, e.g. the Human genome; Microbiome and cancer genome projects as well as plant genome projects.

Teaching: Eighteen (18) hours of lectures; Six (6) hours of tutorials and Twenty-four (24) hours of practicals.
Method of Examination:
Theory: Final Examination (2 hours) 50%
Theory: In-course Test(s)/Assignment(s) 30%
Practical: reports 20%

**BIOC3290 - BIOCHEMISTRY PROJECT (MINORS) (3 Credits - Offered from 2017/18)**

Pre-requisites: BIOL2373 Skills for Biologists AND 6 credits from Level II BIOC/BIOL/ECOL/MICR courses. Only available to final year students minoring in Biochemistry.

Restrictions: Not to be taken with BIOL3901 Multidisciplinary Project, BIOL3990 Biology Project, MICR3990 Microbiology Project, ECOL3990 Ecology Project, BIOC3950 Biochemistry Research Project, BIOL3950 Biology Research Project, MICR3950 Microbiology Research Project, ECOL3950 Ecology Research Project or CHEM 3505 Research Project.

Syllabus: Research question. Summary of scientific literature. Collection of data. Analysis of data. Concise report. Poster presentation. Topics that address real Biochemical questions, whether pure or applied. Research ethics. Suggestions for specific topics may be considered from students but final proposed topics must come from the prospective supervisor and the Department must have the resources to execute the research.

Method of Examination:
Project report 60%
Poster Presentation 25%
Supervisor assessment 15%

**BIOC3370 - BASIS OF HUMAN DISEASE (3 Credits - Offered from 2017/18)**

Prerequisite: BIOC2371 Molecular Techniques AND BIOC2370 Cell Signals

Restrictions: Not to be taken by persons who have passed BIOC3354 Biochemistry of Human Disease

Syllabus: Characteristics of the selected diseases/syndromes. Overview of the immune system. Endocrine organs and systems relevant to the selected disease states. Mechanisms of hormones and receptors relevant to the selected disease states. Modulation of hormone levels in healthy and in disease states. System regulators and errors contributing to the disease state. Clinical presentation and progression of the selected diseases/symptoms. The linkage of the symptoms with system errors. Overview of diagnostic
tools, drugs and therapies. Disease management. Applications of biochemical techniques used in biomedical research and forensic sciences.

Teaching: Eighteen (18) hours of lectures; Six (6) hours of tutorials and Twenty-four (24) hours of practical.

Method of Examination:

Theory: Final Examination (2 hours) 50%
Theory: In-course Test(s)/Assignment(s) 25%
Practical: reports 25%

BIOC3990 - BIOCHEMISTRY PROJECT (6 Credits - Offered from 2017/18)

Pre-requisites: BIOL2373 Skills for Biologists AND 12 credits from Level II BIOC/BIOL/ECOL/MICR courses. Only available to final year students majoring in Biochemistry.

Restrictions: Not to be taken with BIOL3901 Multidisciplinary Project, BIOL3990 Biology Project, MICR3990 Microbiology Project, ECOL3990 Ecology Project, BIOC3950 Biochemistry Research Project, BIOL3950 Biology Research Project, MICR3950 Microbiology Research Project, ECOL3950 Ecology Research Project or CHEM 3505 Research Project

Syllabus: Research question. Review of the scientific literature. Research proposal. Collection of data. Analysis of data. Report and illustrated summary. Oral presentation. Topics that address real Biochemical questions, whether pure or applied. Research ethics. Suggestions for specific topics may be considered from students but final proposed topics must come from the prospective supervisor and the Department must have the resources to execute the research.

Method of Examination:

Project report 70%
Seminar 15%
Supervisor assessment 15%

BIOL 3152 - BIOINFORMATICS (4 Credits)

Pre-requisite: BIOL2152 General Molecular Biology

Syllabus: Common types of genomic and proteomic data including DNA and protein sequences, motifs, domains, patterns, secondary structure and folding classes, tertiary structure. DNA and protein sequence analysis including analysis of homology, identification of motifs and domains, pair-wise and multiple alignments including global and local alignments. Dynamic programming algorithms for sequence alignment, prediction of secondary structure, prediction of gene structure. Methods of phylogenetic analysis. The
distribution of data through public databases, data formats, and end-user applications for manipulation and analysis including use of PAM250 scoring matrix, BLOSUM 62, scoring matrix, FASTA, BLAST, PSI-BLAST, PHI-BLAST, PSSM, Smith-Waterman dynamic Programming.

Teaching: Two lectures, one tutorial, and three hours of practical per week

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory: Final Examination (3 hours)</td>
<td>60%</td>
</tr>
<tr>
<td>Theory: In-course Test(s)/Assignment(s)</td>
<td>20%</td>
</tr>
<tr>
<td>Practical: reports</td>
<td>20%</td>
</tr>
</tbody>
</table>

**BIOL3901 - MULTIDISCIPLINARY PROJECT (6 Credits)**

Pre-requisite: Permission of Department

Restrictions: Not to be taken with BIOC3990 Biochemistry Project, BIOL3990 Biology Project, MICR3990 Microbiology Project, ECOL3990 Ecology Project, BIOC3950 Biochemistry Research Project, BIOL3950 Biology Research Project, MICR3950 Microbiology Research Project, ECOL3950 Ecology Research Project or CHEM 3505 Research Project

Syllabus: A lab and/or field project carried out under the supervision of a member of staff as part of the McGill UWI BITS Programme. Projects will address real-world problems related to food, nutrition or energy at the local, regional or international level. Development of a hypothesis suitable for investigation. Experimental work to support or refute this hypothesis. Analysis and communication of results obtained.

Teaching: Duration of the course is 14 weeks in the summer period, with approximately 2 days per week devoted to individual project work.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written proposal plus an interim report:</td>
<td>20%</td>
</tr>
<tr>
<td>Final report, illustrated summary, poster and oral presentation:</td>
<td>80%</td>
</tr>
</tbody>
</table>

**BIOL3950 - BIOLOGY RESEARCH PROJECT (8 Credits)**

Pre-requisites: 16 credits from Level II Biological courses.

Only available to final year students majoring in Biology.

Restrictions: Not to be taken with BIOC3950 Biochemistry Research Project, BIOL3901 Multidisciplinary Project, MICR3950 Microbiology Research Project, ECOL3950 Ecology or CHEM 3505 Research Project
Syllabus: A practical project in Biology carried out under the supervision of a staff member. Students will be allocated one of the available research topics and are expected to spend not less than 144 hours in field/ laboratory studies. The project will be presented both orally in the form of a short seminar and in a written report. Three typed and bound copies of the written report must be presented.

Method of Examination:

- Project report: 70%
- Seminar: 15%
- Supervisor assessment: 15%

BIOL3025 - MOLECULAR PLANT PATHOLOGY (3 Credits - Offered from 2017/18)

- Pre-requisites: BIOL 1020- Diversity of Life II and 3 credits from any Level II BIOC/ECOL/MICR courses
- Restrictions: Not to be taken by persons who have passed BIOC3254 Biochemical Plant Pathology
- Syllabus: Physical attachment and entry of pathogens to host - viruses, bacteria and fungi; appresoria, haustoria infection peg. Host plant interactions - molecules at the interface and cell wall penetrating molecules e.g. enzyme and proteins. HR and SAR disease resistance mechanism, epidemiology, disease diagnosis, bio-control mechanisms of plant pathogens, disease management.
- Teaching: Eighteen (18) hours of lectures; Six (6) hours of tutorials and Twenty-four (24) hours of practical.
- Method of Examination:
  - Theory: Final Examination (2 hours) 50%
  - Theory: In-course Test(s)/Assignment(s) 25%
  - Practical: reports 25%

BIOL3990 - BIOLOGY PROJECT (6 Credits - Offered from 2017/18)

- Pre-requisites: 16 credits from Level II Biological courses. Only available to final year students majoring in Biology.
- Restrictions: Not to be taken with BIOL3901 Multidisciplinary Project, BIOC3990 Biochemistry Project, ECOL3990 Ecology Project, MICR3990 Microbiology Project, BIOC3950 Biochemistry Research Project, BIOL3950 Biology Research Project, MICR3950 Microbiology Research Project, ECOL3950 Ecology Research Project or CHEM 3505 Research Project
Syllabus: Elements of scientific research. Research questions. Research ethics. Review of the scientific literature. Research proposal. Collection of data. Analysis of data. Project report writing. Oral presentation. Selection of a topic that addresses real biological questions, whether pure or applied. Suggestions for specific topics may be considered from students but final proposed topics must come from the prospective supervisor and the Department must have the resources to execute the research.

Method of Examination:

- Project report 70%
- Seminar 15%
- Supervisor assessment 15%

ECOL3423 - CORAL REEF ECOLOGY (4 Credits)

Pre-requisites: ECOL2452 Community Ecology & ECOL2454 Marine Biology

Syllabus: Environmental conditions required for coral reef formation, geological history of Caribbean reef formation and types of reefs. Dynamics of reef structure formation & erosion; Scleractinian coral biology, including taxonomy, anatomy, endosymbiosis with zooxanthellae, growth (calcification & skeletal morphology), nutrition, reproduction and recruitment; Ecology of coral communities, including reef community structure, zonation and dynamics, diversity/stability relationships, keystone species, algal-herbivore and predator-prey interactions, inter-specific competition, succession, disturbance, and linked systems from mangroves to deep sea; overview of the major taxonomic groups of reef-associated organisms, including other coelenterates, poriferans, echinoderms, fishes, and algae with attention to their ecological function; value and uses of Caribbean coral reef ecosystems, including coral reef fisheries, tourism and recreation, biodiversity and marine products, and ecosystem services; The threats and future challenges to Caribbean coral reefs, including natural disturbances and anthropogenic activities. Current trends in coral reef research.

Teaching: Two lectures, one tutorial and three hours of practical per week.

Method of Examination:

- Final Examination (3 hours) 60%
- Project report/Essay 40%

ECOL3451- HUMAN ECOLOGY AND CONSERVATION (4 Credits)

Pre-requisites: ECOL2452 Community Ecology.

Teaching: Two lectures and three hours of practical per week.

Method of Examination:
- Final Examination (3 hours) 70%
- Project report/Essay 30%

ECOL3452 - BEHAVIOURAL ECOLOGY (4 Credits)
Pre-requisites: ECOL2452 Community Ecology


Teaching: Two lectures and three hours of practical per week.

Method of Examination:
- Final Examination (3 hours) 70%
- Project report/Essay 30%

ECOL3453 - CROP ECOLOGY (4 Credits)
Pre-requisites: ECOL2452 Community Ecology and BIOL1151 Introductory Genetics

Syllabus: Autecology of selected crop species and their evolution, propagation and breeding. Interactions of crop species with weed, pest, disease and beneficial organisms in the agroecosystem. Control of weeds, diseases and pests by cultural, chemical and biological means. Integrated pest management.

Teaching: Two lectures, one tutorial and three hours of practical per week.

Method of Examination:
- Final Examination (3 hours) 60%
**ECOL3454 - FISHERIES BIOLOGY (4 Credits)**
Pre-requisites: ECOL2452 Community Ecology and ECOL2454 Marine Biology


Teaching: Two lectures and three hours of practicals per week.

Method of Examination:
- Theory: Final Examination (3 hours) 70%
- Theory: In-course Test(s)/Assignment(s) 10%
- Practical: reports 20%

**This course is not offered this academic year.

ECOL3950 - ECOLOGY RESEARCH PROJECT (8 Credits)
Pre-requisites: ECOL2452 Community Ecology and ECOL2453 Caribbean Island Biogeography

Restrictions: Not to be taken with BIOL3950 Biology Research Project, BIOL3901 Multidisciplinary Project, MICR3950 Microbiology Research Project, BIOC3950 Biochemistry or CHEM3505 Research Project

Syllabus: A practical project in Ecology carried out under the supervision of a staff member(s). Students will be allocated one of the available research topics and are expected to spend not less than 144 hours in field/laboratory studies. The project will be presented both orally in the form of a short seminar and in a written report. Three typed, and bound copies of the written report must be presented.

Method of Examination:
- Project report 70%
- Seminar 15%
- Supervisor assessment 15%

ECOL3100 - STATISTICS FOR ECOLOGISTS (3 Credits - Offered from 2017/18)
Pre-requisites: ECOL2460 Essentials of Ecology
Syllabus:  
**The statistical background:** Probability; permutations; populations and samples; descriptive versus inferential statistics; the normal distribution and confidence intervals; null and alternative hypotheses; alpha and beta error; data types. **The planning stage:** Formulation of ideas; background research; hypothesis formulation; experimental design (e.g. sampling procedures); identification of data needs; identification of relevant statistical tests: Tests for differences (from one to multiple samples), and Tests for linking data. **The recording stage:** configuration of datasets for analysis. **The analysis stage:** Data exploration and visualization; hypothesis testing; selection of parametric versus non-parametric statistical tests; evaluation of model fits. **The reporting stage:** Choice and production of graphics and summary statistic outputs.

Teaching:  
Twenty-four lectures/tutorials and twenty-four hours of practical per semester.

Method of Examination:  
Coursework 100%

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td>30%</td>
</tr>
<tr>
<td>Practical</td>
<td>70%</td>
</tr>
</tbody>
</table>

**ECOL3460 - BIOLOGY & ECOLOGY OF CORAL REEFS (3 Credits - Offered from 2017/18)**

Pre-requisites:  
ECOL2462 Marine Biota (or ECOL2454 Marine Biology). Students **must** be able to swim and snorkel competently.

Restrictions:  
Not to be taken by persons who have passed ECOL3423 Coral reef Ecology

Syllabus:  

Teaching:  
Twenty-four lectures/tutorials and twenty-four hours of practical per semester.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Examination (2 hours)</td>
<td>50%</td>
</tr>
<tr>
<td>Coursework: Theory</td>
<td>20%</td>
</tr>
<tr>
<td>Coursework: Practical</td>
<td>30%</td>
</tr>
</tbody>
</table>
ECOL 3461 - ECOLOGY OF A CHANGING PLANET (3 Credits - Offered from 2017/18)

Pre-requisites: ECOL2460 Essentials of Ecology or ECOL 2451 Population Ecology

Restrictions: Not to be taken by persons who have passed ECOL3451 Human Ecology & Conservation

Syllabus: Human population growth and migration patterns. Impacts of human colonization on biodiversity in previously uninhabited lands. Impacts of conversion of land to agriculture and increased water extraction on biodiversity. Accidental and deliberate introductions of invasive species and their ecological impacts on native biodiversity. Methods to prevent introduction and/or manage invasive terrestrial and marine species. How cultural value systems affect biodiversity use. The role of overexploitation in species declines and the strategies that have been used in species recovery. Location and protection of biodiversity hotspots. Size, shape and connectedness of protected areas for species conservation. Observed and predicted impacts of climate change on the biology and ecology of terrestrial and marine biodiversity. Conservation goals for the 21st century.

Teaching: Twenty-four lectures/tutorials and twenty-four hours of practical per semester.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Examination (2 hours)</td>
<td>60%</td>
</tr>
<tr>
<td>Coursework</td>
<td>40%</td>
</tr>
</tbody>
</table>

ECOL 3462 - BEHAVIOUR: AN EVOLUTIONARY APPROACH (3 Credits - Offered from 2017/18)

Pre-requisites: ECOL2460 Essentials of Ecology or ECOL 2451 Population Ecology

Restrictions: Not to be taken by persons who have passed ECOL3452 Behavioural Ecology


Teaching: Twenty-four lectures/tutorials and twenty-four hours of practical per semester.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Examination (2 hours)</td>
<td>60%</td>
</tr>
<tr>
<td>Coursework</td>
<td>40%</td>
</tr>
</tbody>
</table>

ECOL 3463 - TROPICAL CROP ECOLOGY (3 Credits - Offered from 2017/18)

Pre-requisites: ECOL2460 Essentials of Ecology (or ECOL2451 Population Ecology) AND BIOL1030 Introduction to Genetics (or BIOL1151 Introductory Genetics).
Restrictions: Not to be taken by persons who have passed ECOL3453 Crop Ecology

Syllabus: Introduction: Tropical crop productions systems and agro-ecosystems; Physical and biological environments of crops; Social constraints to crop production; Conventional vs. Alternative agriculture. Crop evolution, distribution, propagation and breeding of tropical crops. Soil factors; Physical and Chemical properties of soil; Root room; tilth, aeration; pH; Salinity; Tolerance mechanisms; Management under tropical conditions. Mineral nutrition; Deficiency/Toxicity effects; Tolerance mechanisms; Mineral balance of plants and plant communities; Management options in the tropics. Radiation distribution in tropical crops; Photosynthesis & bio-productivity; High and low irradiance tolerance; Carbon balance of crops; Management options. Physiological effects of temperature; Heat tolerance; Energy balance and evapotranspiration; Management options (1 lecture). Crops and water; Water injury (drought/flood); Tolerance mechanisms; Water balance of plants and plant communities; Management options in the tropics. Tropical crop diseases; Integrated management. Tropical crop pests; Biological control; Integrated management. Weeds; Integrated management in the tropics. Tropical agroforestry cropping systems. Course Review.

Teaching: Two lectures, one tutorial and three hours of practical per week.

Method of Examination:

- Final Examination (2 hours) 60%
- Coursework 40%

ECOL3990 - ECOLOGY PROJECT (6 Credits - Offered from 2017/18)

Pre-requisites: BIOL2373 Skills for Biologists AND 12 credits from Level II or III ECOL courses. Students with a GPA of 3.00 or above are preferred.

Restrictions: Not to be taken with BIOL3901 Multidisciplinary Project, BIOL3990 Biology Project, MICR3990 Microbiology Project, BIOC3990 Biochemistry Project, BIOC3950 Biochemistry Research Project, BIOL3950 Biology Research Project, MICR3950 Microbiology Research Project, ECOL3950 Ecology Research Project or CHEM 3505 Research Project

Syllabus: Elements of scientific research. Research questions. Research ethics. Review of the scientific literature. Research proposal. Collection of data. Analysis of data. Project report writing. Oral presentation. Selection of a topic that addresses real ecological questions, whether pure or applied. Suggestions for specific topics may be considered from students but final proposed topics must come from the prospective supervisor and the Department must have the resources to execute the research.

Method of Examination:

- Project report 70%
MICR3251 - FOOD MICROBIOLOGY (4 Credits)
Pre-requisites: MICR2251 General Microbiology

Syllabus: Factors regulating the development of food microorganisms and methods to control these factors. Food pathogens and microorganisms deteriorating the major food types. Good practices in alimentary transformations. Food contamination and intoxicaations.

Teaching: Two lectures, one tutorial and three hours of practical per week.

Method of Examination:
- Theory: Final Examination (3 hours) 50%
- Theory: In-course Test(s)/Assignment(s) 20%
- Practical: reports 30%

MICR3252 - MICROBIAL ECOLOGY (4 Credits)
Pre-requisites: MICR2251 General Microbiology


Teaching: Two lectures, one tutorial and three hours of practical per week.

Method of Examination:
- Theory: Final Examination (3 hours) 50%
- Theory: In-course Test(s)/Assignment(s) 15%
- Practical: reports 35%

MICR3253 - BIOLOGY OF VIRUSES (4 Credits)
Pre-requisites: MICR2251 General Microbiology AND BIOL1030 Introduction to Genetics (or BIOL1151 Introductory Genetics)

interferon, Plant viruses - disease symptoms, control measures. Molecular virology: entry and exit of viruses from host cells; RNA virus replication; DNA virus replication, viral oncogenesis. Medical virology; viral diseases of humans; modes of transmission, symptoms: pathogenesis, control measures. Laboratory techniques used in the study, detection and identification of viruses.

Teaching: Two lectures, one tutorial and three hours of practicals per week.

Method of Examination:

Theory: Final Examination (3 hours) 50%
Theory: In-course Test(s)/Assignment(s) 20%
Practical: report(s) 30%

MICR3258 - PATHOGENIC MICRO-ORGANISMS (4 Credits)

Pre-requisites: MICR2251 General Microbiology AND BIOL1030 Introduction to Genetics (or BIOL1151 Introductory Genetics)


Teaching: Two lectures and one tutorial per week and three hour practicals including attachment to a Medical Laboratory.

Method of Examination:

Theory: Final Examination (3 hours) 50%
Theory: In-course Test(s)/Assignment(s) 35%
Practical: reports 15%

MICR3950 - MICROBIOLOGY RESEARCH PROJECT (8 Credits)

Pre-requisites: MICR2251 General Microbiology, BIOL2151 Genetics I, BIOC2351 Biochemistry I and MICR2252 Eukaryotic Micro-organisms

Restrictions: Not to be taken with BIOL3901 Multidisciplinary Project, BIOC3950 Biochemistry Research Project, BIOL3950 Biology Research Project, ECOL3950 Ecology Research Project or CHEM 3505 Research Project
Syllabus: A practical project in Microbiology carried out under the supervision of a staff member. Students will be allocated one of the available research topics and are expected to spend not less than 144 hours in field/laboratory studies. The project will be presented both orally in the form of a short seminar and in a written report. Three typed and bound copies of the written report must be presented.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project report</td>
<td>70%</td>
</tr>
<tr>
<td>Seminar</td>
<td>15%</td>
</tr>
<tr>
<td>Supervisor assessment</td>
<td>15%</td>
</tr>
</tbody>
</table>

MICR3265 - MICROBIOLOGY OF FOOD (3 Credits - Offered from 2017/18)

Pre-requisites: MICR2260 Essential Microbiology (or MICR2251 General Microbiology)

Restrictions: Not to be taken by persons who have passed MICR3251 Food Microbiology


Teaching: Twenty-four (24) lectures/tutorials and twenty-four (24) hours of practical per semester.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory: Final Examination</td>
<td>50%</td>
</tr>
<tr>
<td>Theory: In-course Test(s)</td>
<td>20%</td>
</tr>
<tr>
<td>Practical: Laboratory/Field work</td>
<td>30%</td>
</tr>
</tbody>
</table>

MICR3266 - ECOLOGY OF MICROORGANISMS (3 Credits - Offered from 2017/18)

Pre-requisites: MICR2260 Essential Microbiology (or MICR2251 General Microbiology), AND MICR2261 Eukaryotic Microbes (or MICR2252 Eukaryotic Micro-organisms)

Restrictions: Not to be taken by persons who have passed MICR3252 Microbial Ecology

Teaching: Eighteen (18) hours of lectures; Six (6) hours of tutorials; Twenty-four (24) hours of practical/field work.

Method of Examination:

- Theory: Final Examination (2 hours) 50%
- Theory: In-course Test(s)/Assignment(s) 15%
- Practical: Laboratory/Field work 35%

**MICR3267 - ESSENTIAL VIROLOGY (3 Credits - Offered from 2017/18)**

Pre-requisites: MICR2260 Essential Microbiology (or MICR2251 General Microbiology) AND BIOL1030 Introduction to Genetics (or BIOL1151 Introductory Genetics).

Restrictions: Not to be taken by persons who have passed MICR3253 Biology of Viruses


Teaching: Twenty-four (24) hours of lectures/tutorials; Twenty-four (24) hours of practical.

Method of Examination:

- Theory: Final Examination (2 hours) 50%
- Theory: In-course Test(s)/Assignment(s) 25%
- Practical assignment(s) 25%

**MICR3268 - MICROBIAL PATHOGENESIS (3 Credits - Offered from 2017/18)**

Pre-requisites: MICR2260 Essential Microbiology (or MICR2251 General Microbiology) AND BIOL1151 Introductory Genetics.

Restrictions: Not to be taken by persons who have passed MICR3258 Pathogenic Microorganisms


Teaching: Twenty-four (24) hours of lectures/tutorials; Twenty-four (24) hours of practical.

Method of Examination:

Theory: Final Examination (2 hours) 50%
Theory: In-course Test(s)/Assignment(s) 35%
Practical: Assignment(s) 15%

**MICR3950 - MICROBIOLOGY PROJECT (6 Credits - Offered from 2017/18)**

Pre-requisites: MICR2260 Essential Microbiology (or MICR2251 General Microbiology), MICR2262 Methods in Microbiology, BIOL2373 Skills for Biologists AND 9 credits from Level II BIOC/BIOL/ECOL/MICR courses. Only available to final year students majoring in Microbiology.

Restrictions: Not to be taken with BIOL3901 Multidisciplinary Project, BIOL3990 Biology Project, ECOL3990 Ecology Project, MICR3990 Microbiology Project, BIOC3990 Biochemistry Project, BIOC3950 Biochemistry Research Project, BIOL3950 Biology Research Project, ECOL3950 Ecology Research Project or CHEM 3505 Research Project

Syllabus: Research question. Research ethics. Review of the scientific literature. Research proposal. Collection of data. Analysis of data. Report and illustrated summary. Oral presentation. Topics that address real Microbiological questions, whether pure or applied. Suggestions for specific topics may be considered from students but final proposed topics must come from the prospective supervisor and the Department must have the resources to execute the research.

Method of Examination:

- Project report 70%
- Seminar 15%
- Supervisor assessment 15%

**CHEMISTRY COURSES**

**PRELIMINARY CHEMISTRY COURSES**

**CHEM0615 - PRELIMINARY CHEMISTRY I (6 Credits)**

Pre-requisite: None
Co-requisite: CHEM0625 Preliminary Chemistry II or equivalent.


Teaching: Three lectures, one tutorial and three hours of practical work per week.

Method of Examination:
- Theory: Final Examination (3 hours) 60%
- Theory: In-course Test(s)/Assignment(s) 20%
- Practical: reports 20%
LEVEL I CHEMISTRY COURSES

CHEM1110 - INTRODUCTION TO ORGANIC CHEMISTRY (3 Credits)
Pre-requisite: CHEM0615 and CHEM0625; or CAPE CHEMISTRY UNITS 1 and 2; or EQUIVALENT

Co-requisite: None

Syllabus: This course covers the basic and fundamental principles of organic chemistry and exposes students to the concepts of chemical bonding in organic molecules, functional groups, nomenclature, stereochemistry and reaction mechanisms. Electron pushing formalism will be emphasized in an attempt to discourage rote learning and to allow students to better understand the language of organic chemistry. Students will be expected to apply their knowledge to interpret reactions based on their patterns of reactivity and hence predict and explain unknown reactions.

Teaching: Two one-hour lectures and a one-hour tutorial per week.

Method of Examination:

Theory: Final Examination (2 hours) 50%
Theory: In-course Test(s)/Assignment(s) 50%

CHEM11130 - INTRODUCTION TO INORGANIC CHEMISTRY (3 Credits)
Pre-requisite: CHEM0615 and CHEM0625; or CAPE CHEMISTRY UNITS 1 and 2; or EQUIVALENT

Co-requisite: None

Syllabus: This course seeks to equip biological and chemical sciences students with knowledge of the fundamental principles of inorganic chemistry including atomic and molecular structures and properties, the chemistry of the main group and transition elements, including industrial and commercial applications, coordination compounds and the packing arrangements of ionic structures. These areas will be used as the basis for advanced inorganic chemistry courses required for the major/minor in chemistry.

Teaching: Two one-hour lectures and a one-hour tutorial per week.

Method of Examination:

Theory: Final Examination (2 hours) 50%
Theory: In-course Test(s)/Assignment(s) 50%
CHEM1120 - INTRODUCTION TO PHYSICAL CHEMISTRY (3 Credits)
Pre-requisite: CHEM0615 and CHEM0625; or CAPE CHEMISTRY UNITS 1 and 2; or EQUIVALENT

Co-requisite: None

Syllabus: This course seeks to provide students with knowledge of the fundamental principles of physical chemistry with an emphasis on thermodynamics, energetics, chemical kinetics, electrochemistry and the fundamentals of spectroscopy. The aim is to provide 1st year (i.e. fully matriculated) students with a theoretical foundation for the more advanced and specialised 2nd and 3rd year physical chemistry courses.

Teaching: Two one-hour lectures and a one-hour tutorial per week.

Method of Examination:
- Theory: Final Examination (2 hours) 50%
- Theory: In-course Test(s)/Assignment(s) 50%

CHEM1125 - INTRODUCTION TO EXPERIMENTAL CHEMISTRY (3 Credits)
Pre-requisite: CHEM0615 and CHEM0625; or CAPE CHEMISTRY UNITS 1 and 2; or EQUIVALENT

Co-requisite: None

Syllabus: This course is a yearlong 3-credit experimental chemistry course with 84 hours of experimental work in which students are exposed to concepts and laboratory skills associated with Organic, Inorganic, Analytical and Physical Chemistry. Students will hone their critical thinking and analytical skills through a series of discussions and experiments designed to improve experimental skills and prepare them for more advanced laboratory techniques.

Teaching: Seven-six (76) hours for practical skills and eight (8) hours for data analysis skill set.

Method of Examination:
- Coursework: 100%
- Laboratory Reports: 80%
- Exercises: 20%
LEVEL II CHEMISTRY COURSES

CHEM2010 - PRACTICAL CHEMISTRY I (2 Credits)
Pre-requisite: CHEM1010 Fundamentals of Chemistry and CHEM1020 Introductory Chemistry
Syllabus: A course of sixty (60) hours of practical work selected from the disciplines of Analytical Chemistry, Inorganic Chemistry, Organic Chemistry and Physical Chemistry.
Teaching: Five hours of practical classes per week.
Method of Examination:
Practical work 60%
In-course Test(s)/Assignment(s) 40%

CHEM2020 - PRACTICAL CHEMISTRY II (2 Credits)
Pre-requisite: CHEM1010 Fundamentals of Chemistry and CHEM1020 Introductory Chemistry
Syllabus: A course of sixty (60) hours of practical work selected from the disciplines of Analytical Chemistry, Inorganic Chemistry, Organic Chemistry and Physical Chemistry.
Teaching: Five hours of practical classes per week.
Method of Examination:
Practical work 60%
In-course Test(s)/Assignment(s) 40%

CHEM2100 - INORGANIC CHEMISTRY I (4 Credits)
Pre-requisite: CHEM1010 Fundamentals of Chemistry and CHEM1020 Introductory Chemistry
Syllabus: A course of 36 lectures and associated tutorials, surveying the chemistry of the main group and transition elements. Main Group Chemistry: A survey of the structures, properties and reactions of the sand p-block elements, and their compounds, including hydrides, oxides, halides, polymers and technologically important materials. Transition Metals: A survey of the properties and reactions of the first row transition metals and their compounds, with emphasis on the effects of the non-degeneracy of the d-orbitals in complexes and on technologically important materials.
Teaching: Three lectures and one tutorial per week.
Method of Examination:

Theory: Final Examination (3 hours) 60%
Theory: In-course Test(s)/Assignment(s) 40%

CHEM2200 - ORGANIC CHEMISTRY I (4 Credits)

Pre-requisite: CHEM1010 Fundamentals of Chemistry and CHEM1020 Introductory Chemistry

Syllabus: A course of 36 lectures and associated tutorials on the essential areas of Organic Chemistry. 
**Reaction mechanisms:** Energetics, kinetics and the investigation of mechanisms. Substitution, elimination and addition reactions. Linear free energy relationships.

Teaching: Three lectures and one tutorial per week.

Method of Examination:

Theory: Final Examination (3 hours) 60%
Theory: In-course Test(s)/Assignment(s) 40%

CHEM2300 - PHYSICAL CHEMISTRY I (4 Credits)

Pre-requisite: CHEM1010 Fundamentals of Chemistry and CHEM1020 Introductory Chemistry

Syllabus: A course of 36 lectures and associated tutorials, surveying thermodynamics, properties of matter, molecular spectroscopy and electrochemistry

Teaching: Three lectures and one tutorial per week

Method of Examination:

Theory: Final Examination (3 hours) 60%
Theory: In-course Test(s)/Assignment(s) 40%

CHEM2400 - ANALYTICAL CHEMISTRY I (4 Credits)

Pre-requisite: CHEM1010 Fundamentals of Chemistry and CHEM1020 Introductory Chemistry
Syllabus: A course of 36 lectures and associated tutorials, surveying the essential areas of analytical chemistry, statistical methods applying to the analytical measurements, sampling techniques and methodology. The course discusses the instrumental methods of analysis including basic instrumentation and principles of spectroscopic methods viz. UV/Visible, FTIR, fundamentals of AAS, AES, use of electrochemical methods and comprehensive discussion of Chromatographic methods (GC, HPLC), and detailed description about the detectors, standardization method and derivatization of the samples.

Teaching: Three lectures and one tutorial per week

Method of Examinations:

Theory: Final Examination (2 hours) 60%
Theory: In-course Test(s)/Assignment(s) 40%

CHEM2950 - CHEMISTRY ELECTIVE (4 Credits)

Pre-requisites: None

Syllabus: An advanced course in Chemistry taken as an exchange student at an approved institution and pre-approved by the Dean.

LEVEL III CHEMISTRY COURSES

CHEM3100 - INORGANIC CHEMISTRY II (4 Credits)

Prerequisites: CHEM2100 Inorganic Chemistry I

Syllabus: This final year inorganic chemistry course covers topics in the applications of group theory to problems in bonding and spectroscopy, the use of spectroscopic techniques in Inorganic Chemistry, organometallic chemistry of main group and transition elements and rates and mechanisms of inorganic reactions. The course requires a sound grounding in descriptive inorganic chemistry.

Teaching: Three lectures and one tutorial per week.

Method of Examination:

Theory: Final Examination (3 hours) 60%
Theory: In-course Test(s)/Assignment(s) 40%
CHEM3135 - BIOINORGANIC CHEMISTRY (4 Credits)

Pre-requisites: CHEM2100 Inorganic Chemistry I or CHEM2115 Main Group Chemistry and CHEM3115 Transition Metal Chemistry I

Syllabus: Importance of metal ions in the environment. Basic concepts of ions in aqueous solutions. Determination of hydration numbers by NMR spectroscopy. Redox potentials of cations. Acidity and polymerization of aquocations. The chemical and physical factors controlling the elements of life energy in biological systems and hydrogen biochemistry, the role of biological macromolecules and polymers. The roles of some individual elements in biology and medicine. Molybdenum enzymes, cofactors and model systems. The chemistry of cobalt and iron complexes and their role in biological systems with respect to electron transfer reactions in aqueous media.

Teaching: Two lectures, one tutorial and four hours of practicals per week.

Method of Examination:
Theory: Final Examination (3 hours) 60%
Theory: In-course Test(s)/Assignment(s) 40%

CHEM3145 - BONDING IN INORGANIC CHEMISTRY (4 Credits)

Pre-requisites: CHEM3100 Inorganic Chemistry II


Teaching: Three lectures and one tutorial per week.

Method of Examination:
Theory: Final Examination (3 hours) 60%
Theory: In-course Test(s)/Assignment(s) 40%

CHEM3200 - ORGANIC CHEMISTRY II (4 Credits)

Pre-requisites: CHEM2200 Organic Chemistry I or CHEM2215 Basic Organic Chemistry
Syllabus: This course aims to develop an understanding of the basic synthesis reactions used in organic synthesis. Students will be taught to identify advantages and limitations associated with generally applied methodologies of compound classes and to propose mechanisms for the general reactions covered in the course. General principles of retrosynthetic analysis will be used to design simple synthetic schemes for synthesis of target molecules, including important natural products and drug targets. The teaching approaches used will include lectures, tutorials and student presentations.

Teaching: Three lectures and one tutorial per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Examination (3 hours)</td>
<td>60%</td>
</tr>
<tr>
<td>In-course test(s)/Assignment(s)</td>
<td>20%</td>
</tr>
<tr>
<td>Weekly assignments</td>
<td>10%</td>
</tr>
<tr>
<td>Presentations</td>
<td>10%</td>
</tr>
</tbody>
</table>

CHEM3210 - BIOORGANIC & MEDICINAL CHEMISTRY (4 Credits)
Pre-requisites: CHEM2200 Organic Chemistry I or CHEM2215 Basic Organic Chemistry

Restrictions: Not available to persons who have passed CHEM3225 Natural Products Chemistry or CHEM3235 Bio-organic Chemistry

Syllabus: The aim of this course is to give students an understanding of the basic principles used in the synthesis of compounds of biological importance, an overview of the major classes of secondary metabolites found in nature, and an introduction to medicinal chemistry. The advantages and disadvantages of different approaches to the synthesis of the biologically important compounds will be discussed, while modern methods for the study of natural products and medicinal chemistry will be emphasized.

Teaching: Three lectures and one tutorial per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Examination (2 hours)</td>
<td>60%</td>
</tr>
<tr>
<td>In-course test(s)/Quizzes</td>
<td>20%</td>
</tr>
<tr>
<td>In-course assignments</td>
<td>20%</td>
</tr>
</tbody>
</table>

CHEM3300 - PHYSICAL CHEMISTRY II (4 Credits)
Pre-requisites: CHEM2300 Physical Chemistry I or CHEM2315 Physical Chemistry II
Syllabus: This final year physical chemistry course covers topics in advanced spectroscopy and fundamental theoretical aspects of chemical kinetics, quantum mechanics and statistical Thermodynamics. This course also requires a sound grounding in basic mathematics as well as calculus.

Teaching: Three lectures and one tutorial per week.

Method of Examination:

Theory: Final Examination (3 hours) 60%
Theory: In-course Test(s)/Assignment(s) 40%

CHEM3415 - ANALYTICAL CHEMISTRY III (4 Credits)
Pre-requisites: CHEM2400 Analytical Chemistry I

Syllabus: A survey of advanced instrumental techniques, applications, and data analysis, selected from the following: chromatographic methods, including gas chromatography; mass spectrometry, high performance liquid chromatography (HPLC); Atomic absorption spectroscopy (AAS) and atomic emission spectroscopy (AES); use of the diode array spectroscopy, including Fourier transform infrared (FTIR) and Raman spectroscopy; electrochemical methods, including potentiometric, conductometric, biochemical methods, including enzymatic protein sequencing, and fluorescence; thermogravimetric methods and differential scanning calorimetry; fundamentals of crystallography, including origin of systematic absences, intensity of diffraction, and comparison of monochromatic and Laue methods, fluorescence, including energy transfer, quenching and fluorescence anisotrophy statistics; multiplexing; experimental design; use of computers to analyse data. Students will complete an instrumentation related project worth 15% of the course grade. The project will include approximately 20 hours of lab work.

Teaching: Two lectures, one tutorial and a three hour practical per week.

Method of Examination:

Final Examination (2 hours) 60%
In-course test(s)/Assignment(s) 10%
Practicals 15%
Project 15%

CHEM3500 - CHEMISTRY PROJECT (4 Credits)
Restrictions: For chemistry majors only or with permission of the Department. Not to be taken with CHEM3505 Chemistry Research Project.

Syllabus: The course consists of a research project carried out under the supervision of a member of staff. Students will be directed to an initial survey of relevant literature and will present brief outlines of their planned research. Duration of the project is one semester, and students are expected to spend at least 72 hours on laboratory and/or computational work. Each student will be required to give a seminar on completion of the project and submit two copies of a typed report.

Method of Examination:
- Practical Assessment: 30%
- Seminar: 15%
- Project Report: 55%

**CHEM3505 - CHEMISTRY RESEARCH PROJECT (8 Credits)**


Restrictions: For Chemistry Double Majors only or with permission of the Department. Not to be taken with CHEM3500 Chemistry Project, BIOC3950 Biochemistry Research Project, BIOL3950 Biology Research Project, ECOL3950 Ecology Research Project or MICR3950 Microbiology Research Project.

Description: A practical project carried out under the supervision of a member of staff. The project will run throughout the academic year and students are expected to spend at least 144 hours on laboratory work. Each student will be required to give a seminar on completion of the project as well as submit two typed and bound copies of a written report. Enrolment will be limited to those students who have demonstrated good practical skills and an aptitude for research.

Method of Examination:
- Supervisor’s Assessment: 15%
- Seminar: 15%
- Project Report: 70%

**CHEM3515 - ENVIRONMENTAL CHEMISTRY (4 Credits)**

Prerequisites: CHEM2010 Practical Chemistry I, CHEM2020 Practical Chemistry II and CHEM2400 Analytical Chemistry I
Description: This course explores the chemistry of the environment encompassing the atmosphere, hydrosphere, pedosphere, and biosphere. The course intends to provide an understanding of the earth’s natural chemical processes in air, water, and soil, with special attention to the chemical aspects of environmental disturbances that humans have provoked in the natural environment. The emphasis of the course is on important chemical principles and reactions that determine the balance of the molecular species that exist in the environment and how humans affect this balance. Environmental issues include air pollution, ozone depletion, greenhouse gases, water quality, pollution and treatment of water resources, toxic metals and persistent organic pollutants. Students who are interested in broadening their understanding of chemistry and its application to real world problems, or in gaining further experience of standard laboratory practices and sampling methodology, or who have an interest in working in an analytical, forensic or environmental field, or wishing to improve their critical evaluation and deduction skills should undertake this course.

Teaching: Two lectures, one tutorial and one three hour practical sessions per week.

Method of Examination:

| Theory: Final Examination (3 hours) | 60% |
| Theory: In-course Test(s)/Assignment(s) | 20% |
| Practical: Reports | 20% |
ENVIRONMENTAL SCIENCE COURSES

LEVEL I ENVIRONMENTAL SCIENCE COURSES

METE1110 - INTRODUCTION TO OCEANS AND CLIMATE (3 Credits)
Pre-requisites: None

Co-requisites: METE1000: Introduction to Physical Meteorology and Weather Observations (or 3 credit equivalent)
METE1100: Introduction to Dynamic Meteorology and Analysis (or 3 credit equivalent)
(for Meteorology Majors and Minors ONLY)

Syllabus: This course is intended for students wishing to gain the essentials of climatology and oceanography. It is available to scientists and non-scientists alike. The course will provide information regarding the science of climate, the structure of the oceans, and the interaction of the ocean and the atmosphere as a driver of climate. Topics to be covered include the global radiation budget; heat and moisture transfer on the earth; the composition of the ocean; the chemical composition of the ocean; and ocean circulations

Teaching: One (1) lecture; one (1) tutorial and two (2) hours of labs per week.

Method of Examination:
Theory: Final Examination (2 hours) 60%
Theory: In-course Test(s)/Assignment(s) 15%
Labs/Assignments 25%

ENSC1000 - EARTH AND ITS ENVIRONMENT (3 Credits)
Pre-requisites: None

Syllabus: This course facilitates students’ access to geographical knowledge of the world, including physical features such as the location of continents, countries, oceans and oceanic currents, mountains, deserts, seas, human population. Cartography and map analysis sessions will be used to visualize specific features of the Earth system. The course intends to train students to interpret and look at the Earth System as a holistic system to understand the connections between its different elements.

Teaching: Thirty-six (36) hours of interactive lectures tutorials.

Method of Examination:
Weekly worksheet assignment (s) 100%
ENSC1001 - INTRODUCTION TO PHYSICAL GEOLOGY: DYNAMIC EARTH (3 Credits)

Pre-requisites: None

Syllabus: This course introduces geology, the study of the solid earth; its structure, composition and the internal and surface processes that combine to form the planet upon which we live. The driving force behind these processes is plate tectonics the “unifying theory” which explains many of the phenomena observed in the solid Earth. The course will also examine how the study of earthquakes has been crucial in developing an understanding of the Earth’s internal structure. At a more local level, the role that plate tectonics has played in the geological formation and development of Barbados and the other islands of the Lesser Antilles will be also studied.

Teaching: One (1) hour of lecture; one (1) hour of tutorial each week, and a maximum of five (5) hours of practical class every other week.

Method of Examination:

Theory: Final Examination (2 hours) 50%
Theory: In-course Test(s)/Assignment(s) 25%
Practical: practical test/field trip 25%

LEVEL II ENVIRONMENTAL SCIENCE COURSES

ENSC2000 - ESSENTIALS OF OCEANOGRAPHY (3 Credits)

Pre-requisites: METE1110 Introduction to Ocean and Climate OR ERSC1001 Earth and its Environment OR METE1200 Oceans and Climate

Syllabus: Oceanography is the scientific study of all aspects of the marine environment. This course is designed to provide a working knowledge of important ocean processes by integrating relevant aspects of physical, chemical and biological oceanography. It will provide the student with tools to assess information on the major geographic features of the ocean basins and their origin, the chemistry of the ocean and its role in regulating climate and productivity, the origins and dynamics of wind waves, tsunamis, tides and coastal processes, and marine pollution problems. The lectures/tutorials will focus on the description and explanation of the ocean as an integrated system, whilst wet and dry practical sessions (including field exercises) will deal with application to working scenarios to underpin the theory provided. Laboratory exercises will emphasize problem solving, and data analysis and interpretation, leading to a working knowledge of oceanographic processes.

Teaching: Twenty-four (24) hours of lectures/tutorials; twenty-four (24) hours of practical exercises/fieldwork.
Method of Examination:

- Theory: Final Examination (2 hours) 50%
- Theory: In-course Test(s)/Assignment(s) 20%
- Practical/field work 30%

**ENSC2001- INTRODUCTION TO THE EARTH LIFE SYSTEM (3 Credits)**

**Pre-requisites:**
- ENSC1001 An Introduction to Physical Geology: Dynamic Earth OR ERSC1001 Dynamic Earth; AND METE1110 Introduction to Oceans and Climate OR METE1200 Oceans and Climate OR ERSC1000 Earth and Its Environment.

**Syllabus:**
This course provides a more integrated approach, summarizing the history of the significant environmental changes that have taken place during the past four-and-a-half billion years of the Earth’s history, illustrating the effects of those changes on life and the influence of life in effecting change. The lectures will explain Earth-system processes and provide supporting evidence for environmental change from the geological record and numerical models. Assignments will focus on problem solving, analysis and interpretation of tabular, graphical and numerical data.

**Teaching:**
Two (2) hour lectures and one (1) hour of tutorial.

**Method of Examination:**

- Theory: Final Examination (2 hours) 60%
- Theory: In-course Test(s)/Assignment(s) 40%

**ENSC2002 - EARTH’S CLIMATE (3 Credits)**

**Pre-requisites:**
- ENSC1000 Earth and its Environment OR METE1110 Introduction to Ocean and Climate OR METE1200 Oceans and Climate

**Syllabus:**
This course provides a detailed description of the earth’s climate from seasonal to annual time scales based on a geographical approach. The global distribution of climate parameters and their fluctuation through the year are explained in detail in conjunction with the sun-earth relationship, atmospheric and oceanic global circulation, latitudinal and longitudinal effects, and topography. The topics cover the seasonal cycle of temperature and rainfall and the atmospheric and oceanic circulation at global and regional scales. The course also points out the interrelations between the different components of the earth’s system, and explains the different mechanisms involved in the climate system. The regional climate and their classification will be presented with an introduction of the Caribbean climate. The students will be assessed on their ability to relate the different climate parameters and to explain why
such a climate in observed in a given area. This course is part of the minor in Environmental Science and will also benefit students in Ecology and Meteorology.

**Teaching:** Twenty-four (24) hours of interactive lecture/tutorials.

**Method of Examination:**

- **Theory:** Final Examination (2 hours) 50%
- **Theory:** In-course Test(s)/Assignment(s) 20%
- **Practical:** Lab tests 30%

**ENSC2003 - SUSTAINABLE ENERGY SYSTEMS (3 Credits)**

**Pre-requisites:** Fifteen (15) Level 1 Faculty of Science & Technology (FST) credits

**Syllabus:** This course is an elective on the Environmental Science minor and will provide an opportunity for students to gain an understanding of the wider implications of human interaction with our environment. This course will first explain how societies traditionally source their energy for electricity production and the impact that this is having on our environment, before providing an introduction to sustainable energy resources and the technologies that can be used to take advantage of them. At the heart of this course is a look at how a Caribbean small island state can transition from an energy system dominated by fossil fuels, towards one that is based on 100% clean, economically viable, indigenous sustainable energy sources. The subject matter for this course is interdisciplinary in nature and has been designed for all FST students. It is recommended to those students interested in pursuing careers/further study in the expanding field of sustainable energy systems.

**Teaching:** Twenty-four (24) lectures/tutorials and twenty-four (24) hours of practical work.

**Method of Examination:**

- **Theory:** Final Examination (2 hours) 50%
- **In-course test(s):** 25%
- **Laboratory report:** 10%
- **Group presentation:** 10%
- **Online discussion forum and field trip reports:** 5%

**LEVEL III ENVIRONMENTAL SCIENCE COURSES**

**ERSC3001 - NATURAL HAZARDS (4 Credits)**

**Pre-requisites:** ERSC1001 The Dynamic Earth **AND** ERSC2003 Oceanography **OR** ERSC2002 Climatology

Teaching: Two lectures, one tutorial and three hours of research/practical work each week.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Examination (3 hours)</td>
<td>60%</td>
</tr>
<tr>
<td>In-course &amp; practical work</td>
<td>40%</td>
</tr>
</tbody>
</table>

ERSC3002 - CLIMATE VARIABILITY & PREDICTABILITY (4 Credits)

Pre-requisites: ERSC2002 Climatology


Teaching: Two lectures, one tutorial and three hours of labs per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Examination (3 hours)</td>
<td>60%</td>
</tr>
<tr>
<td>Laboratory</td>
<td>20%</td>
</tr>
<tr>
<td>In-course assignments/tests</td>
<td>20%</td>
</tr>
</tbody>
</table>

ERSC3900 - EARTH SCIENCE RESEARCH PROJECT (8 Credits)

Syllabus: This course consists of a research project in Earth Science carried out under the supervision of a member (or members) of staff. Students will be allocated one of the available research projects and are expected to spend not less than 144 hours in field/laboratory/theoretical studies. The project will be presented in the form of a short seminar and a written report.

Teaching: Students will be involved in regular meeting/discussions with their supervisor(s) who will provide training in relevant laboratory/field methods/skills and guide the student in experimental design, data collection and the analysis and interpretation of the data collected.

Method of Examination:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor's Assessment</td>
<td>15%</td>
</tr>
<tr>
<td>Seminar</td>
<td>15%</td>
</tr>
<tr>
<td>Project Report</td>
<td>70%</td>
</tr>
</tbody>
</table>

**ENSC3000 - CLIMATE VARIATION AND CHANGE (3 Credits) to run in 2017/18**

Pre-requisites: ENSC2002 Earth's Climate

Syllabus: Climate variations have always influenced the geographical location of flora and fauna and the settlement of the populations on Earth. The recent observed warming of the earth represents a “real time” example of these interactions. Therefore this course provides physical explanations on how and why the climate has varied since the last 400,000 years with an emphasis on the Holocene period and the post-industrial period. The course will provide the students with keys and tools to assess the past, present and future climate variations. Hence the role of the radiative forcing, feedback and physical processes in the variations of the climate at global and regional scale will be demonstrated. The impact of the climate variation on the environment will be also demonstrated. The last part of the course focuses the Caribbean climate. The impacts of the climate change on the environment are studied in this course. The lectures will focus on the description and explanation of the processes involved in climate’s variations while the practical sessions will provide the tools to analyze and interpret such variations.

Teaching: Twenty-four (24) lectures/tutorials, and twelve (12) 2-hour practical sessions.

Method of Examination:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory: Final Examination (2 hours)</td>
<td>50%</td>
</tr>
<tr>
<td>Theory: In-course Test(s)/Assignment(s)</td>
<td>20%</td>
</tr>
<tr>
<td>Practical: Lab test and/or report</td>
<td>30%</td>
</tr>
</tbody>
</table>
ENSC3001 - NATURAL HAZARDS AND DISASTERS (3 Credits) to run in 2017/18

Pre-requisites: ENSC1001: An Introduction to Physical Geology: Dynamic Earth AND ENSC2002: Earth’s Climate

Syllabus: Natural disasters of one form or another occur almost daily and such events can be extremely costly both in human lives and financial terms. The islands of the Caribbean are vulnerable to a variety of natural hazards due to a combination of their tropical climate and geographical location. This course builds on the knowledge acquired from ENSC1001 An Introduction to Physical Geology: Dynamic Earth and ENSC2002 Earth’s Climate in order to explain the physical processes that lead to natural disasters, the impact of those disasters on communities and the ways in which the risks of such disasters can be reduced.

Teaching: Twenty-four (24) lectures and twelve (12) tutorials.

Method of Examination:
Theory: Final Examination (3 hours) 50%
Theory: In-course Test(s)/Assignment(s) 50%

ENSC3900 - RESEARCH PROJECT IN ENVIRONMENTAL SCIENCE (6 Credits) to run in 2017/18

Pre-requisites: A minimum of 6 credits from ERSC level II or III courses. The students must be in their final year and projects will be awarded at the discretion of the supervisor.

Restrictions: Any other 6 credit research project offered within the Department of Biological and Chemical Sciences

Syllabus: This course provides an opportunity to involve students in practical research in environmental science fields. It provides the opportunity for students to further develop their practical and analytical skills acquired in the level II and III environmental science courses. The course is developed around a research project defined and supervised by a member(s) of the Faculty of Science and Technology. A research project will be assigned to students who show interest in such a course and who have already demonstrated some abilities in environmental sciences. Students are expected to spend a total of 144 hours of work on the project across both semesters/summer, meeting weekly with their supervisor(s).

Teaching: Students will be involved in weekly meeting/discussions with their supervisor(s) who will provide training in relevant laboratory/field methods/skills and guide the student in experimental design, data collection and the analysis and interpretation of the data collected. A library session for students to assist them in developing their skills in searching online databases for relevant resources will be provided.

Method of Examination:
<table>
<thead>
<tr>
<th>Assessment Type</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor's Assessment</td>
<td>15%</td>
</tr>
<tr>
<td>Seminar</td>
<td>15%</td>
</tr>
<tr>
<td>Project Report</td>
<td>70%</td>
</tr>
</tbody>
</table>
## COURSES BY SEMESTER: COMPUTER SCIENCE, ELECTRONICS, MATHEMATICS AND PHYSICS:

### SEMESTER I

**PRELIMINARY (6 credits)**
- COMP0001 Preliminary Computer Science I
- MATH0101 Preliminary Mathematics I
- PHYS0070 Preliminary Physics I

**LEVEL I (3 credits)**
- COMP1205 Computing I
- COMP1210 Computing II
- COMP1215 UNIX
- COMP1170 Entrepreneurship for Computer Scientist
- COMP1180 Mathematics for Computer Science
- ELET1205 Computer Aided Design
- ELET1210 Digital Electronics I
- ELET1220 Introduction to Electronics
- MATH1190 Calculus A
- MATH1141 Introductory Linear Algebra & Analytical Geometry
- MATH1235 Python Programming & Mathematical Software
- PHYS1200 Physics I: Mechanics of Translational Motion
- PHYS1205 Physics II: Rotation, Waves and Thermodynamics

**LEVEL II (4 credits)**
- COMP2105 Discrete Mathematics
- COMP2115 Information Structures
- COMP2125 Computer Architecture
- COMP2145 Software Engineering I
- COMP2150 Computer Networks I
- COMP2160 Object-Oriented Programming
- ELET2100 Microprocessors I
- ELET2110 Circuit Simulation
- ELET2130 Digital Communications I
- MATH2110 Linear Algebra

### SEMESTER II

**PRELIMINARY (6 credits)**
- COMP0002 Preliminary Computer Science II
- MATH0102 Preliminary Mathematics II
- PHYS0071 Preliminary Physics II

**LEVEL I (3 credits)**
- COMP1205 Computing I
- COMP1210 Computing II
- COMP1215 UNIX
- COMP1180 Mathematics for Computer Science I
- ELET1200 Basic Circuit Analysis
- ELET1210 Digital Electronics I
- ELET1215 Digital Electronics II
- MATH1195 Calculus B
- MATH1152 Sets and Number Systems
- MATH1230 Introductory Applied Statistics I
- PHYS1210 Physics III: Electric Fields, Currents and Circuits (3 cr)
- PHYS1220 Physics IV: Magnetism, Electromagnetic Waves and Optics

**LEVEL II (4 credits)**
- COMP2105 Discrete Mathematics
- COMP2115 Information Structures
- COMP2125 Computer Architecture
- COMP2145 Software Engineering I
- COMP2150 Computer Networks I
- COMP2160 Object-Oriented Programming
- ELET2120 Discrete Device Electronics
- ELET2140 Medical Instrumentation
- ELET2150 Automation Technology
- MATH2100 Abstract Algebra
- MATH2130 Ordinary Differential Equations
- MATH2150 Mathematical Statistics
- PHYS2102 Solid State Physics
- PHYS2103 Classical Mechanics
MATH2120 Analysis and Methods
MATH2140 Probability Theory
PHYS2100 Mathematical Methods in Physics
PHYS2101 Quantum Mechanics and Special Relativity
PHYS2102 Solid State Physics
PHYS2106 Advanced Physics/Technology Lab. I
PHYS2107 Advanced Physics/Technology Laboratory II

**LEVEL III (4 credits)**
COMP3100 Operating Systems
COMP3125 Artificial Intelligence
COMP3180 Algorithm Design and Analysis
COMP3210 Electronic Commerce
COMP3260 Computer Graphics I
COMP3910 Computer Science Research Project
COMP3920 Computer Science Major Research Project*
COMP3930 Computer Science Group Research Project
ELET3110 Control and Instrumentation
ELET3130 Introduction to DSP
ELET3160 Electronics Research Project
MATH3160 Number Theory
MATH3190 Matrix Analysis
MATH3450 Statistical Theory I
MATH3300 Research Project
PHYS3100 Quantum Mechanics
PHYS3102 Optics and Lasers
PHYS3106 Physics Research Project
PHYS3107 Fundamental of Photovoltaic Physics

* 8 credits

**COURSES BY SEMESTER: METEOROLOGY**

**SEMESTER I**

**LEVEL I**
METE1110 Introduction to Oceans and Climate (3 credits)
METE1000 Intro. To Physical Meteorology & Weather Observations

**LEVEL II**
METE2000 Physical Meteorology I

**SEMESTER II**

**LEVEL I**
METE1100 Intro to Dynamic Met & Weather Syst
METE1300 Climate Change, Edu. & Awareness

**LEVEL II**
METE2001 Physical Meteorology II
METE2100 Dynamic Meteorology I
METE2300 Hydrometeorology

LEVEL III
METE3100 Dynamic Meteorology II
METE3200 Synoptic Meteorology II

METE2200 Synoptic Meteorology I

LEVEL III
METE3300 Tropical Meteorology
METE3400 Weather Radars and Satellites
COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

The Department of Computer Science, Mathematics & Physics offers a Major, Double Major and Minor in Computer Science and a Major and Minor in Information Technology. In association with the Faculty of Social Sciences, the Options of a Double Major combining Computer Science or Information Technology with Accounting or Management are also offered to select students (See Appendix VI, Options in conjunction with other Faculties).

It is a requirement of the discipline that, to pass any Computer Science course, students must pass both Coursework and Final exam.

MAJOR IN COMPUTER SCIENCE: Course descriptions

LEVEL I
COMP1205 Computing I
COMP1210 Computing II
COMP1180 Mathematics for Computer Science I
COMP1215 UNIX
COMP1170 Entrepreneurship for Computer Scientists

LEVEL II
COMP2105 Discrete Mathematics
COMP2115 Information Structures
COMP2125 Computer Architecture
COMP2145 Software Engineering I

LEVEL III
COMP3100 Operating Systems
COMP3180 Algorithm Design and Analysis
AND Eight (8) Credits (including at least one Level III courses) from:
COMP2150 Computer Networks I
COMP2155 Building Web Applications
COMP2160 Object-Oriented Programming
COMP2950 Computer Science Elective
COMP3115 Information Systems
COMP3125 Artificial Intelligence
COMP3135 Programming Languages
COMP3140 Software Engineering II
COMP3155 Computer Networks II
COMP3160 Data Base Management Systems
COMP3170 Web-Based Applications
COMP3190 Special Topics in Computer Science
COMP3210 Electronic Commerce
COMP3220 Human-Computer Interaction
COMP3230 Network and Computer Security
COMP3260 Computer Graphics I
COMP3910 Computer Science Research Project
COMP3920 Computer Science Major Research Project
COMP3930 Computer Science Group Research Project
**MINOR IN COMPUTER SCIENCE [Sixteen (16) Credits]**

**Course descriptions**

**At Least Eight (8) Credits From:**
- COMP2105 Discrete Mathematics
- COMP2115 Information Structures
- COMP2125 Computer Architecture
- COMP2145 Software Engineering I
- COMP3100 Operating Systems
- COMP3180 Algorithm Design and Analysis

**AND At Most Eight (8) Credits from:**
- COMP2150 Computer Networks I
- COMP2155 Building Web Applications
- COMP2160 Object-Oriented Programming
- COMP2950 Computer Science Elective
- COMP3115 Information Systems
- COMP3125 Artificial Intelligence
- COMP3135 Programming Languages
- COMP3140 Software Engineering II
- COMP3155 Computer Networks II
- COMP3160 Data Base Management Systems
- COMP3165 Software Quality Assurance
- COMP3170 Web-Based Applications
- COMP3190 Special Topics in Computer Science
- COMP3210 Electronic Commerce
- COMP3220 Human-Computer Interaction
- COMP3230 Network and Computer Security
- COMP3260 Computer Graphics I
- COMP3910 Research Project
- COMP3920 Computer Science Major Research Project
- COMP3930 Computer Science Group Research Project

**N.B:** Students are not allowed to take both COMP3115 Information Systems and MGMT3011 Management Information Systems II for credit.
MAJOR IN INFORMATION TECHNOLOGY:  

**LEVEL I**
- COMP1205 Computing I
- COMP1210 Computing II
- COMP1180 Mathematics for Computer Science I
- COMP1215 UNIX
- COMP1170 Entrepreneurship for Computer Scientists

**LEVEL II**
- COMP2105 Discrete Mathematics
- COMP2115 Information Structures
- COMP2145 Software Engineering I
- COMP2160 Object-Oriented Programming

**LEVEL III**
- COMP3160 Database Management Systems
- COMP3170 Web-Based Applications

AND Eight (8) Credits (including at least one Level III course) from:
- COMP2125 Computer Architecture
- COMP2150 Computer Networks I
- COMP2155 Building Web Applications
- COMP2950 Computer Science Elective
- COMP3100 Operating Systems
- COMP3115 Information Systems
- COMP3125 Artificial Intelligence
- COMP3135 Programming Languages
- COMP3140 Software Engineering II
- COMP3155 Computer Networks II
- COMP3165 Software Quality Assurance
- COMP3180 Algorithm Design and Analysis
- COMP3190 Special Topics in Computer Science
- COMP3210 Electronic Commerce
- COMP3220 Human-Computer Interaction
- COMP3230 Network and Computer Security
- COMP3260 Computer Graphics I
- COMP3910 Computer Science Research Project
- COMP3920 Computer Science Major Research Project
- COMP3930 Computer Science Group Research Project
MINOR IN INFORMATION TECHNOLOGY [Sixteen (16) Credits]: Course descriptions

<table>
<thead>
<tr>
<th>At Least Eight (8) Credits From:</th>
<th>AND At Most Eight (8) Credits From:</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP2105 Discrete Mathematics</td>
<td>COMP2125 Computer Architecture</td>
</tr>
<tr>
<td>COMP2115 Information Structures</td>
<td>COMP2150 Computer Networks I</td>
</tr>
<tr>
<td>COMP2145 Software Engineering I</td>
<td>COMP2155 Building Web Applications</td>
</tr>
<tr>
<td>COMP2160 Object-Oriented Programming</td>
<td>COMP2950 Computer Science Elective</td>
</tr>
<tr>
<td>COMP3160 Database Management Systems</td>
<td>COMP3100 Operating Systems</td>
</tr>
<tr>
<td>COMP3170 Web-Based Applications</td>
<td>COMP3115 Information Systems</td>
</tr>
<tr>
<td></td>
<td>COMP3125 Artificial Intelligence</td>
</tr>
<tr>
<td></td>
<td>COMP3135 Programming Languages</td>
</tr>
<tr>
<td></td>
<td>COMP3140 Software Engineering II</td>
</tr>
<tr>
<td></td>
<td>COMP3155 Computer Networks II</td>
</tr>
<tr>
<td></td>
<td>COMP3165 Software Quality Assurance</td>
</tr>
<tr>
<td></td>
<td>COMP3180 Algorithm Design and Analysis</td>
</tr>
<tr>
<td></td>
<td>COMP3190 Special Topics in Computer Science</td>
</tr>
<tr>
<td></td>
<td>COMP3210 Electronic Commerce</td>
</tr>
<tr>
<td></td>
<td>COMP3220 Human-Computer Interaction</td>
</tr>
<tr>
<td></td>
<td>COMP3230 Network and Computer Security</td>
</tr>
<tr>
<td></td>
<td>COMP3260 Computer Graphics I</td>
</tr>
<tr>
<td></td>
<td>COMP3910 Research Project</td>
</tr>
<tr>
<td></td>
<td>COMP3920 Computer Science Major Research Project</td>
</tr>
<tr>
<td></td>
<td>COMP3930 Computer Science Group Research Project</td>
</tr>
</tbody>
</table>

N.B: Students are not allowed to take both COMP3115 Information Systems and MGMT3011 Management Information Systems II for credit.
**DOUBLE MAJOR IN COMPUTER SCIENCE:** Course descriptions

**LEVEL I**
- COMP1205 Computing I
- COMP1210 Computing II
- COMP1180 Mathematics for Computer Science I
- COMP1215 UNIX
- COMP1170 Entrepreneurship for Computer Scientists

**LEVEL II**
- COMP2105 Discrete Mathematics
- COMP2115 Information Structures
- COMP2125 Computer Architecture
- COMP2145 Software Engineering I
- COMP2150 Computer Networks I
- COMP2160 Object-Oriented Programming
- AND at most Eight (8) Credits From:
  - COMP2950 Computer Science Elective
  - ELET2100 Microprocessors I
  - ELET2130 Digital Communications I

**LEVEL III**
- COMP3100 Operating Systems
- COMP3155 Computer Networks II
- COMP3160 Database Management Systems
- COMP3180 Algorithm Design and Analysis
- AND
  - COMP3910 Computer Science Research Project
  - Four (4) level II-III credits from Computer science
- OR
  - COMP3920 Computer Science Major Research Project
- OR
  - COMP3930 Computer Science Group Research Project
  - Four (4) level II-III credits from Computer science
- AND at least Eight (8) Credits From:
  - COMP2155 Building Web Applications
  - COMP3115 Information Systems
  - COMP3125 Artificial Intelligence
  - COMP3135 Programming Languages
  - COMP3140 Software Engineering II
  - COMP3165 Software Quality Assurance
  - COMP3170 Web-Based Applications
  - COMP3190 Special Topics in Computer Science
  - COMP3210 Electronic Commerce
  - COMP3220 Human-Computer Interaction
  - COMP3230 Network and Computer Security
  - COMP3260 Computer Graphics I
  - ELET3151 Digital Communications II

**Equivalencies between Old and New Computer Science Courses For the Purpose of Fulfilling Major and Minor Requirements.**

<table>
<thead>
<tr>
<th>Old Course</th>
<th>New Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP1105 Computer Programming I</td>
<td>COMP1205 Computing I</td>
</tr>
<tr>
<td>COMP1115 Computer Programming II</td>
<td>COMP1210 Computing II</td>
</tr>
<tr>
<td>MATH 1101 Basic Mathematics I</td>
<td>COMP1180 Mathematics for Computer Science I</td>
</tr>
<tr>
<td>MATH 1100 Basic Mathematics</td>
<td>COMP1215 Unix</td>
</tr>
<tr>
<td>COMP1125 Introduction to Unix</td>
<td></td>
</tr>
</tbody>
</table>
ELECTRONICS

The Department of Computer Science, Mathematics & Physics offers a Major and Minor in Electronics.

MAJOR IN ELECTRONICS: Course descriptions

LEVEL I
ELET1200 Basic Circuit Analysis
ELET1210 Digital Electronics I
ELET1215 Digital Electronics II
ELET1220 Introduction to Electronics
MATH1190 Calculus A
And 30 Credits from Level II & III Electronics courses as indicated below.

LEVEL II
At Least Twelve (12) Credits From:
ELET2100 Microprocessors I
ELET2110 Circuit Simulation
ELET2120 Discrete Device Electronics
ELET2130 Digital Communications I
ELET2140 Medical Instrumentation
ELET2150 Automation Technology

LEVEL III
At Most Twenty (20) Credits (Five Courses) From:
ELET3041 Microcontrollers & Applications
ELET3110 Control and Instrumentation
ELET3120 Communication Circuits
ELET3130 Intro. to Digital Signal Processing (DSP)
ELET3151 Digital Communications II
ELET3152 Mobile Communications and Applications
ELET3160 Electronics Research Project
ELET3210 Sensor and Actuator Technology

MINOR IN ELECTRONICS (Sixteen (16) Credits): Course descriptions

Sixteen (16) Credits (Four Courses) From:
ELET2100 Microprocessors I
ELET2110 Circuit Simulation
ELET2120 Discrete Device Electronics
ELET2130 Digital Communications I
ELET2140 Medical Instrumentation
ELET2150 Automation Technology
ELET3041 Microcontrollers & Applications
ELET3110 Control and Instrumentation
ELET3120 Communication Circuits
ELET3130 Intro. to Digital Signal Processing (DSP)
ELET3151 Digital Communications II
MINOR IN MEDICAL ELECTRONICS [Sixteen (16) Credits]: Course descriptions

A student with a Minor in Medical Electronics cannot count any of these courses as part of their Major or Minor in Electronics.

Equivalencies between Old and New Electronics Courses For the Purpose of Filling Major and Minor Requirements.

<table>
<thead>
<tr>
<th>Old Course</th>
<th>New Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELET1100 Circuit Analysis</td>
<td>ELET1200 Basic Circuit Analysis</td>
</tr>
<tr>
<td>ELET1110 Digital Electronics</td>
<td>ELET1210 Digital Electronics I</td>
</tr>
<tr>
<td>No Equivalent</td>
<td>ELET1215 Digital Electronics II</td>
</tr>
<tr>
<td>ELET1120 Basic Electronics</td>
<td>ELET1220 Introduction to Electronics</td>
</tr>
<tr>
<td>No Equivalent</td>
<td>ELET1205 Computer Aided Design</td>
</tr>
</tbody>
</table>
MATHEMATICS

The Department of Computer Science, Mathematics & Physics offers a Double Major, Major and Minor in Mathematics. It is a requirement of the discipline that, to pass any Mathematics course, students must pass both Coursework and Final exam.

MAJOR IN MATHEMATICS: Course descriptions
LEVEL I
MATH 1141 Introductory Linear Algebra & Analytical Geometry
MATH 1152 Sets and Number Systems
MATH 1190 Calculus A
MATH 1195 Calculus B
MATH 1235 Python Programming & Mathematical Software

LEVEL II
MATH 2100 Abstract Algebra
MATH 2110 Linear Algebra
MATH 2120 Analysis & Methods I
MATH 2130 Ordinary Differential Equations

LEVEL III
Sixteen (16) Credits from Levels II and III courses (including AT LEAST two Level III courses) from:
MATH 2140 Probability Theory
MATH 2150 Mathematical Statistics
MATH 3100 Multivariate Analysis
MATH 3110 Design of Experiments
MATH 3120 Numerical Analysis
MATH 3130 Optimization Theory
MATH 3140 Fourier Analysis and PDE
MATH 3150 Complex Variables I
MATH 3160 Number Theory
MATH 3170 Advanced Algebra
MATH 3180 Introduction to Topology
MATH 3190 Matrix Analysis
MATH 3220 Sampling Theory
MATH 3300 Mathematics Research Project
MATH 3450 Statistical Theory I
MATH 3460 Statistical Theory II
MATH 3375 Discrete and Computational Geometry

MINOR IN MATHEMATICS [Sixteen (16) Credits]: Course descriptions

LEVEL II
MATH 2100 Abstract Algebra
MATH 2120 Analysis & Methods I

AND Eight (8) Credits From:
MATH 2110 Linear Algebra
MATH 2130 Ordinary Differential Equations
MATH 2140 Probability Theory
MATH 2150 Mathematical Statistics
MATH 3100 Multivariate Analysis
MATH 3110 Design of Experiments
MATH 3120 Numerical Analysis
MATH 3130 Optimization Theory
MATH 3140 Fourier Analysis and PDE  
MATH 3150 Complex Variables I  
MATH 3160 Number Theory  
MATH 3170 Advanced Algebra  
MATH 3180 Introduction to Topology  
MATH 3190 Matrix Analysis  
MATH 3220 Sampling Theory  
MATH 3375 Discrete and Computational Geometry  
MATH 3450 Statistical Theory I  
MATH 3460 Statistical Theory II

**MINOR IN STATISTICS [Sixteen (16) Credits]**: [Course descriptions](#)  
MATH 2140 Probability Theory  
MATH 2150 Mathematical Statistics  
MATH 3100 Multivariate analysis  
MATH 3460 Statistical Theory II
DOUBLE MAJOR IN MATHEMATICS: Course descriptions

LEVEL I
MATH1141 Introductory Linear Algebra & Analytical Geometry
MATH1152 Sets and Number Systems
MATH1190 Calculus A
MATH1195 Calculus B
MATH1230 Introduction to Applied Statistics I
MATH1235 Python Programming & Mathematical Software

LEVEL II
MATH2100 Abstract Algebra
MATH2110 Linear Algebra
MATH2120 Analysis & Methods I
MATH2130 Ordinary Differential Equations

LEVEL III
Forty-eight (48) Credits from Levels II and III courses:
MATH2140 Probability Theory
MATH2150 Mathematical Statistics
MATH3100 Multivariate Analysis
MATH3120 Numerical Analysis
MATH3130 Optimization Theory
MATH3140 Fourier Analysis and PDE
MATH3150 Complex Variables I
MATH3160 Number Theory
MATH3170 Advanced Algebra
MATH3180 Introduction to Topology
MATH3190 Matrix Analysis
MATH3300 Mathematics Research Project
MATH3450 Statistical Theory I
MATH3460 Statistical Theory II

Equivalencies between Old and New Mathematics Courses For the Purpose of Fulfilling Major and Minor Requirements.

<table>
<thead>
<tr>
<th>Old Course</th>
<th>New Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH1101 Basic Mathematics I</td>
<td>MATH1152 Sets and Number Systems</td>
</tr>
<tr>
<td>MATH1102 Basic Mathematics II</td>
<td>MATH1141 Introductory Linear Algebra &amp; Analytical Geometry</td>
</tr>
<tr>
<td>MATH1110 Applied Statistics</td>
<td>MATH1230 Introductory Applied Statistics I</td>
</tr>
<tr>
<td>MATH1120 Calculus I</td>
<td>MATH1190 Calculus A</td>
</tr>
<tr>
<td>MATH1130 Calculus II</td>
<td>MATH1195 Calculus B</td>
</tr>
<tr>
<td>No equivalent</td>
<td>MATH1235 Python Programming &amp; Mathematical Software</td>
</tr>
</tbody>
</table>
METEOROLOGY
Through our affiliate institution, the Caribbean Institute for Meteorology & Hydrology, a Major and Minor in Meteorology are offered.

MAJOR IN METEOROLOGY: Course descriptions

LEVEL I
METE1000 Introduction to Physical Meteorology & Weather Observations
METE1100 Introduction to Dynamic Meteorology & Weather Systems
METE1110 Introduction to Oceans & Climate
MATH1190 Calculus A
MATH1195 Calculus B

LEVEL II
METE2000 Physical Meteorology I
METE2001 Physical Meteorology II
METE2100 Dynamic Meteorology I
METE2200 Synoptic Meteorology I

LEVEL III
METE3100 Dynamic Meteorology II
METE3200 Synoptic Meteorology II
METE3300 Tropical Meteorology

AND Four (4) Credits from:
METE2300 Hydrometeorology
METE3400 Weather Radar and Satellites
METE3500 Bioclimatology

MINOR IN METEOROLOGY [Sixteen (16) Credits]: Course descriptions

METE2100 Dynamic Meteorology I
METE2200 Synoptic Meteorology I

AND Four (4) Credits from:
METE2000 Physical Meteorology I
METE2001 Physical Meteorology II

AND Four (4) Credits from:
METE2100 Dynamic Meteorology II
METE3200 Synoptic Meteorology II
METE3300 Tropical Meteorology

Equivalencies between Old and New Meteorology Courses For the Purpose of Fulfilling Major and Minor Requirements

Old Course
METE1200 Oceans and Climate

New Course
METE1110 Introduction to Ocean and Climate
**PHYSICS**

The Department of Computer Science, Mathematics & Physics offers a Major and Minor in Physics.

**MAJOR IN PHYSICS:** Course descriptions

**LEVEL I**
- PHYS1200 Physics I: Mechanics of Translational Motion
- PHYS1205 Physics II: Rotation, Waves and Thermodynamics
- PHYS1210 Physics III: Electric Fields, Currents and Circuits
- PHYS1220 Physics IV: Magnetism, Electromagnetic Waves and Optics
- MATH1190 Calculus A
- MATH1195 Calculus B

**LEVEL II**
- PHYS2100 Mathematical Methods in Physics
- PHYS2101 Quantum Mechanics & Special Relativity
- PHYS2103 Classical Mechanics
- PHYS2106 Advanced Physics/Technology Laboratory I
- PHYS2107 Advanced Physics/Technology Laboratory II

**LEVEL III**
- PHYS3100 Quantum Mechanics
- PHYS3101 Electrodynamics
- PHYS3105 Statistical Mechanics

AND Four (4) Credits From:
- ELET2100 Microprocessors I
- ELET2110 Circuit Simulation
- ELET2120 Discrete Device Electronics
- ELET2130 Digital Communications I
- ELET2140 Medical Instrumentation
- PHYS2102 Solid State Physics
- PHYS2105 Computational Physics I
- PHYS2950 Physics Elective
- ELET3041 Microcontrollers and Applications
- ELET3110 Control and Instrumentation
- ELET3120 Communication Circuits
- ELET3130 Introd. to Digital Signal Processing (DSP)
- ELET3151 Digital Communications II
- ELET3152 Mobile Communication & Applications
- ELET3160 Electronics Research Project
- ELET3210 Sensors & Actuator Technology
- PHYS3102 Optics and Lasers
- PHYS3103 Astrophysics
- PHYS3106 Physics Research Project
- PHYS3107 Fundamentals of Photovoltaic Physics
MINOR IN PHYSICS (Sixteen (16) Credits): Course descriptions

At Least Eight (8) Credits From:

PHYS2100 Mathematical Methods in Physics
PHYS2101 Quantum Mechanics & Special Relativity
PHYS2103 Classical Mechanics
PHYS2106* Advanced Physics/Technology Laboratory I
PHYS2107* Advanced Physics/Technology Laboratory II
PHYS3100 Quantum Mechanics
PHYS3101 Electrodynamics
PHYS3105 Statistical Mechanics

AND at Most Eight (8) Credits From:

PHYS2100 Mathematical Methods in Physics
PHYS2101 Quantum Mechanics & Special Relativity
PHYS2102 Solid State Physics
PHYS2103 Classical Mechanics
PHYS2105 Computational Physics I
PHYS2106 Advanced Physics/Technology Laboratory I
PHYS2107 Advanced Physics/Technology Laboratory II
PHYS2950 Physics Elective
PHYS3100 Quantum Mechanics
PHYS3101 Electrodynamics
PHYS3103 Astrophysics
PHYS3102 Optics and Lasers
PHYS3105 Statistical Mechanics
PHYS3106 Physics Research Project
PHYS3107 Fundamentals of Photovoltaic Physics

* Students should note that PHYS2106 and PHYS2107 are Practical Courses that are worth Two (2) Credits each.

Equivalencies between Old and New Physics Courses For the Purpose of Fulfilling Major and Minor Requirements.

<table>
<thead>
<tr>
<th>Old Course</th>
<th>New Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS1100 Mechanics</td>
<td>PHYS1200 Physics I: Mechanics of Translational Motion</td>
</tr>
<tr>
<td>PHYS1101 Electricity &amp; Magnetism</td>
<td>PHYS1210 Physics III: Electric Fields, Currents and Circuits</td>
</tr>
<tr>
<td>PHYS1102 Optics, Thermodynamics &amp; Modern Physics</td>
<td>PHYS1205 Physics II: Rotation, Waves and Thermodynamics</td>
</tr>
</tbody>
</table>
COMPUTER SCIENCE & INFORMATION TECHNOLOGY COURSES

PRELIMINARY COMPUTER COURSES

COMP0001 - PRELIMINARY COMPUTER SCIENCE (6 Credits)
Pre-requisite: None

Syllabus: Fundamentals of Information Technology; Relating IT and other Computing disciplines. Distinguish between data and information; Fundamentals of Computer Architecture The components of computer-based systems; Functional components of a computer system (characteristics, performance and interactions Problem Solving with Computers; The problem solving process The development and use of algorithms.

Teaching: Four (4) lectures, One (1) tutorial, One (1) 2-hour laboratory per week

Method of Examination:
In-course Test(s)/Assignment(s) 20%
Laboratory Exercises 20%
Final Theory Examination (2 hrs) 60%

COMP0002 - PRELIMINARY COMPUTER SCIENCE II (6 Credits)
Pre-requisite: None

Syllabus: Data structures; Using abstract data types (ADTs); Basic algorithms for sorting and Searching; Software engineering; The software development life cycle Methods, processes, tools and techniques used in software engineering Operating systems and networks; Functions of operating systems Incorporation of networking technology and applications in operating systems Use of information technology tools; Using productivity tools to solve real-life problems Presenting information in an appropriate manner.

Teaching: Four (4) lectures, One (1) tutorial, One (1) 2-hour laboratory per week

Method of Examination:
In-course Test(s)/Assignment(s) 20%
Laboratory Exercises 20%
Final Theory Examination (2 hrs) 60%
LEVEL I COMPUTER SCIENCE COURSES

COMP1205 - COMPUTING I (3 Credits)
Pre-requisite: None
Anti-requisite: COMP1105 Computer Programming I


Teaching: Two (2) hours of lectures and two (2) hours of labs per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-course Test(s)/Assignment(s)</td>
<td>40%</td>
</tr>
<tr>
<td>Final Theory Examination</td>
<td>60%</td>
</tr>
</tbody>
</table>

COMP1210 - COMPUTING II (3 Credits)
Pre-requisite: COMP1205: Computing I or COMP1105 Computer Programming I
Anti-requisite: COMP1115 Computer Programming II

Syllabus: Introduction to Objects and Classes, Fundamental Algorithms for Searching and Sorting, Randomness and Recursion, Data Types, Data Structures, Abstract Data Types, File Processing.

Teaching: Two (2) hours of lectures and two (2) hours of labs per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-course Test(s)/Assignment(s)</td>
<td>40%</td>
</tr>
<tr>
<td>Final Theory Examination</td>
<td>60%</td>
</tr>
</tbody>
</table>

COMP1180 - MATHEMATICS FOR COMPUTER SCIENCE I (3 Credits)
Pre-requisite: None
Anti-requisite: MATH1101 Basic Mathematics I

Teaching: Two (2) hours of lectures and one (1) hour of tutorial per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-course Test(s)/Assignment(s)</td>
<td>40%</td>
</tr>
<tr>
<td>Final Theory Examination</td>
<td>60%</td>
</tr>
</tbody>
</table>

**COMP1215 - UNIX (3 Credits)**

Pre-requisite: None

Anti-requisite: COMP1125 Introduction to UNIX


Teaching: Two (2) hours of lectures and two (2) hours of labs per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-course Test(s)/Assignment(s)</td>
<td>40%</td>
</tr>
<tr>
<td>Final Theory Examination</td>
<td>60%</td>
</tr>
</tbody>
</table>

**COMP1170 - ENTREPRENEURSHIP FOR COMPUTER SCIENTISTS (3 Credits)**

Pre-requisite: None

Anti-requisite: COMP1130 Web Technology Fundamentals

Syllabus: Entrepreneurship. The importance of technology entrepreneurship. Life stories of successful technology entrepreneurs. How the Internet and e-business applications have changed the way that we

Teaching: Two (2) hours of lectures and two (2) hours of labs per week.

Method of Examination:

<table>
<thead>
<tr>
<th>In-course Test(s)/Assignment(s)</th>
<th>40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Theory Examination</td>
<td>60%</td>
</tr>
</tbody>
</table>

**LEVEL II COMPUTER SCIENCE COURSES**

**COMP2105 - DISCRETE MATHEMATICS (4 Credits)**

Pre-requisite: MATH1100 Basic Mathematics OR MATH1101 Basic Mathematics 1

Syllabus: Predicate Calculus (Universal and existential quantifiers, proofs, logical equivalences and inferences), Asymptotic Analysis and Notation (O, θ and Ω), Recurrence Relations (Homogeneous, non-homogeneous, change of variable), Mathematical induction, Elementary Combinatorics (permutations and combinations, Binomial Theorem, Pigeonhole principle), Elementary Graph Theory (Paths, cycles and connectivity, classes of graphs, trees, minimum spanning trees, depth-first and breath-first traversals, adjacency and incident matrices), Finite State Machines, (State graphs/tables, regular sets, recognizers, Kleene’s theorem, machine minimization)

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

<table>
<thead>
<tr>
<th>In-course Test(s)/Assignment(s)</th>
<th>40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Theory Examination (2 hrs)</td>
<td>60%</td>
</tr>
</tbody>
</table>
COMP2115 INFORMATION STRUCTURES (4 Credits)
Pre-requisite: COMP1115 Computer Programming II

Syllabus: Abstract Data Types (Lists, queues, stacks, trees), Indices (Open /closed hash tables, hash functions, collision resolution schemes), Dictionaries (Binary search trees, AVL-trees, splay trees, B-trees), Graphs (Adjacency matrices/lists, mapping functions), Sets (Forest, path compression, weighted unions)

Teaching: Three (3) lectures, one tutorial and two (2) hours of labs per week.

Method of Examination:
In-course Test(s)/Assignment(s) 40%
Final Theory Examination (2 hrs) 60%

COMP2125 - COMPUTER ARCHITECTURE (4 Credits)
Pre-requisites: [COMP1115 Computer Programming II & MATH1101 Basic Mathematics I] or [COMP1115 Computer Programming II & MATH1100 Basic Mathematics] or ELET1110 Digital Electronics

Syllabus: Instruction Sets and Execution, Pipelining, Addressing Modes, Memory Hierarchies, Caching, RISC vs CISC Architecture, Interrupt Processing, I/O Processing.

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:
In-course Test(s)/Assignment(s) 40%
Final Theory Examination (2 hrs) 60%

COMP2145 - SOFTWARE ENGINEERING I (4 Credits)
Pre-requisite: COMP1115 Computer Programming II

Syllabus: Software Development (Requirements analysis, specifications, Design, implementation, validation and verification, maintenance), Product and Project Documentation (user manuals, internal documentation), Software Development Approaches (e.g. prototyping, agile development), Testing Strategies (black box, white box, usability).

Teaching: Three (3) lectures and one laboratory per week.

Method of Examination:
In-course Test(s)/Assignment(s) 40%
Final Theory Examination (2 hrs) 60%

**COMP2150 - COMPUTER NETWORKS I (4 Credits)**

Pre-requisite: COMP1115 Computer Programming II


Teaching: Three (3) hours of lectures and two (2) hours of laboratory per week.

Method of Examination:

<table>
<thead>
<tr>
<th>In-course Test(s)/Assignment(s)</th>
<th>40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Theory Examination (2 hrs)</td>
<td>60%</td>
</tr>
</tbody>
</table>

**COMP2155 - BUILDING WEB APPLICATIONS (4 Credits)**

Pre-requisite: COMP1115 - Computer Programming II

Syllabus: Overview of Web Technologies; HTML, XHTML and HTML5; Cascading Style Sheets; Server configuration for Web application delivery; Browser compatibility; Client-side programming; Introduction to the single- and two-tier application architectures; Server-Side Scripting; Introduction to Web usability.

Teaching: Three (3) hours of lectures and two (2) hours of labs each week

Method of Examination:

<table>
<thead>
<tr>
<th>In-course Test(s)/Assignment(s)</th>
<th>40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Theory Examination (2 hrs)</td>
<td>60%</td>
</tr>
</tbody>
</table>

**COMP2160 - OBJECT-ORIENTED PROGRAMMING (4 Credits)**

Pre-requisite: COMP1115 Computer Programming II

Syllabus: Fundamental Concepts (Encapsulation, information hiding, classes and objects, inheritance, polymorphism, dynamic binding), Fundamentals of Class Design (Inheritance vs composition relationships, constructors and destructors, copy constructors, selectors, modifiers) Design by Contract

161
(Exception handling, assertions), Advanced Concepts (Abstract and concrete classes, frame-works and design patterns), Applications using Class Libraries.

Teaching: Three (3) lectures, one tutorial and two (2) hours of labs per week.

Method of Examination:

- In-course Tests/Assignments: 40%
- Final Theory Examination (2 hours): 60%

**COMP2950 - COMPUTER SCIENCE ELECTIVE (4 Credits)**

**Pre-requisites:** None

**Syllabus:** An advanced course in Computer Science taken as an exchange student at an approved institution and pre-approved by the Dean.

**LEVEL III COMPUTER SCIENCE COURSES**

**COMP3100 - OPERATING SYSTEMS (4 Credits)**

**Pre-requisites:** COMP2115 Information Structures & COMP2125 Computer Architecture

**Syllabus:** Evolution of Operating Systems Characteristics of Modern Operating systems Process Management (Processess and threads, process synchronization, Scheduling, deadlock), Memory Management (Memory partitioning, paging, virtual memory segmentation), File Management (File organization, file system implementation, example file systems), Device Management (I/O devices, device drivers, I/O design issues, disk-scheduling), Security (Security threats, protection mechanisms, trusted systems).

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

- In-course Tests/Assignments: 40%
- Final Theory Examination (2 hours): 60%

**COMP3115 - INFORMATION SYSTEMS (4 Credits)**

**Pre-requisite:** COMP2145 Software Engineering I
Restriction: Not available to students who have passed MGMT3011 - Management Information Systems II


Teaching: Three (3) lectures and two hours of Lab per week.

Method of Examination:

- In-course Tests/Assignments 40%
- Final Theory Examination (2 hours) 60%

**COMP3125 - ARTIFICIAL INTELLIGENCE (4 Credits)**

Pre-requisites: COMP2105 Discrete Mathematics & COMP2115 Information Structures

Syllabus: Problems and Search (Problem spaces, heuristic search), Knowledge Representation (Predicate logic, rule-based systems, Reasoning, slot-and-filler), Advanced Topics (Game playing, natural language, planning, learning), Applications (Expert systems, software agents, programming-by-example) Software Development Approaches (e.g. prototyping, agile development), Testing Strategies (black box, white box, usability).

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

- In-course Tests/Assignments 40%
- Final Theory Examination (2 hours) 60%

**COMP3135 - PROGRAMMING LANGUAGES (4 Credits)**

Pre-requisite: COMP2115 Information Structures

Syllabus: Imperative Programming (Basic Semantics, data types control structures), Object- Oriented Programming (Objects, classes and methods, Inheritance, polymorphism), Functional Programming (Referential transparency, recursion, types and Polymorphism, lambda calculus) Logic Programming (Predicate calculus and logical deduction, unification and resolution, non determinism and backtracking), Scripting Languages (Regular expressions) Concurrent Programming (Communication and synchronization).

Teaching: Three (3) lectures and one tutorial per week.
Method of Examination:

In-course Tests/Assignments 40%
Final Theory Examination (2 hours) 60%

COMP3140 - SOFTWARE ENGINEERING II (4 Credits)

Pre-requisite: COMP2145 Software Engineering I


Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

In-course Tests/Assignments 40%
Final Theory Examination (2 hours) 60%

COMP3155 - COMPUTER NETWORKS II (4 Credits)

Pre-requisite: COMP2150 Computer Networks I

Syllabus: The ISO Reference Model - layer 3 and above, Internetworking with TCP/IP, WAN Technologies e.g. ATM, Frame Relay Quality of Service in Communications Networks, Network Security, Network Design, Network Performance, Network Management.

Teaching: Three (3) hours of lectures and Two (2) hours of labs per week.

Method of Examination:

In-course Tests/Assignments 40%
Final Theory Examination (2 hours) 60%

COMP3160 - DATABASE MANAGEMENT SYSTEMS (4 Credits)

Pre-requisite: COMP2115 Information Structures

Syllabus: Principles of Database Design (Logical and Physical schemas, Data independence, entity-relationship model), Relational Database Systems (Data normalization, data Description Languages, query languages), Advanced Database Concepts(Distributed databases, object-oriented Databases, data warehousing).
Teaching: Three (3) lectures, one tutorial and two (2) hours of labs per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-course Tests/Assignments</td>
<td>40%</td>
</tr>
<tr>
<td>Final Theory Examination (2 hours)</td>
<td>60%</td>
</tr>
</tbody>
</table>

**COMP3165 SOFTWARE QUALITY ASSURANCE (4 Credits)**

Pre-requisite: COMP2145 Software Engineering I


Teaching:

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coursework</td>
<td>40%</td>
</tr>
<tr>
<td>Final Theory Examination (2 hours)</td>
<td>60%</td>
</tr>
</tbody>
</table>

**COMP3170 - WEB-BASED APPLICATIONS (4 Credits)**

Pre-requisite: COMP2160 Object-Oriented Programming

Syllabus: Overall Client-Server Model, Client Side Programming (Development of browser software, Client side scripting), Networking (TCP/IP, HTTP, sockets, data grams, routing issues), Server Side Programming (GUI, server side scripting, web services), Database Connectivity (Server to database connectivity issues), Security (Policy development, physical security, securing web applications), Design Issues (User interface factors, hardware issues).

Teaching: Three (3) lectures, one tutorial and two (2) hours of labs per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-course Tests/Assignments</td>
<td>40%</td>
</tr>
<tr>
<td>Final Theory Examination (2 hours)</td>
<td>60%</td>
</tr>
</tbody>
</table>
**COMP3180 - ALGORITHM DESIGN AND ANALYSIS (4 Credits)**

Pre-requisites: COMP2105 Discrete Mathematics & COMP2115 Information Structures

**Syllabus:** Analysis of Algorithms: computational models, time and space; Complexities worst-case and expected complexities, lower and upper bounds; Techniques for designing efficient algorithms: recursion, divide-and-conquer, balancing, dynamic programming, and branch-and-bound; Problems on sets and sequences including sorting and selection; string matching; Matrix and Boolean matrix multiplication; Graph algorithms; The classes of P, NP and NP-Complete problems.

**Teaching:** Three (3) lectures and one tutorial per week.

**Method of Examination:**
- In-course Tests/Assignments 40%
- Final Theory Examination (2 hours) 60%

**COMP3190 - SPECIAL TOPICS IN COMPUTER SCIENCE (4 Credits)**

Pre-requisite: Restricted to Finalists majoring in Computer Science.

**Syllabus:** Topics will be drawn from the principles of programming languages, operating systems, information systems, graphics, artificial intelligence, software engineering, networks, logic, computability and complexity theory, algorithms, program verification, discrete mathematics and any other area of current interest.

**Teaching:** Three (3) lectures and one tutorial per week.

**Method of Examination:**
- In-course Tests/Assignments 40%
- Final Theory Examination (2 hours) 60%

**COMP3210 - ELECTRONIC COMMERCE (4 Credits)**

Pre-requisite: COMP2160 Object-Oriented Programming

**Syllabus:** Internet concepts and technology, Economic foundation of electronic commerce, Storefronts, shopping carts and Landing pages, Order processing, Pricing and payment processing, Security issues, Shipping and handling, Products, Internet marketing and legal issues.

**Teaching:** Three (3) lectures and two hours of Lab per week.
COMP3220 - HUMAN-COMPUTER INTERACTION (4 Credits)

Pre-requisites: COMP2115 Information Structures & COMP2145 Software Engineering I

Syllabus: Historical overview of human-computer interaction, Current and future developments in the area of human-computer interaction, Relationship to computer science and software engineering, Influences on interface design. General models and guidelines, Methods of designing interfaces, Software and hardware interface implementation, Mechanisms of evaluation.

Teaching: Three (3) hours of lectures and two (2) hours of labs per week.

Method of Examination:

In-course Tests/Assignments: 40%
Final Theory Examination (2 hours): 60%

COMP3230 - NETWORK AND COMPUTER SECURITY (4 Credits)

Pre-requisites: COMP2105 Discrete Mathematics & COMP2150 Computer Networks I

Syllabus: Introduction to cryptography, Symmetric-key encryption and authentication, Public-key encryption and authentication, Cryptographic hash functions, Message authentication codes and digital signatures, Key distribution and certification, Authorization and access control, Security protocols, Storage security, Web security, Payment systems. Email security, Digital rights management, Social issues such as usability, privacy and risk assessment.

Teaching: Three (3) hours of lectures and two (2) hours of labs per week.

Method of Examination:

In-course Tests/Assignments: 40%
Final Theory Examination (2 hours): 60%

COMP3260 - COMPUTER GRAPHICS I (4 Credits)

Pre-requisites: COMP2115 - Information Structures & COMP2105 - Discrete Mathematics
Syllabus: Output primitives, 2-dimensional transformations and clipping, 3-dimensional display techniques, Representations and transformations, Projection algorithms, 2D Raster Graphics Algorithms, Illumination and color models, Hidden-surface elimination, Bézier and B-Spline curves.

Teaching: Three (3) hours of lectures and two (2) hours of labs per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Course</th>
<th>In-course Tests/Assignments</th>
<th>Final Theory Examination (2 hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP3910 - COMPUTER SCIENCE RESEARCH PROJECT (4 Credits)</td>
<td>40%</td>
<td>60%</td>
</tr>
</tbody>
</table>

**COMP3910 - COMPUTER SCIENCE RESEARCH PROJECT (4 Credits)**

**Pre-requisite:** Restricted to Finalists majoring in Computer Science.

**Syllabus:** In consultation with and under the supervision of a Faculty member, students are expected to define, investigate and report on an applied or theoretical research topic in Computer Science. The project itself is equivalent to a single Faculty course and must therefore reach that standard in terms of content and research effort. The project should contain some originality in material and evidence of extensive reading and comprehension of the subject area. A proposal and literature review must be submitted no later than the fourth week of Semester II and a final written report must be submitted and presented orally to a panel of at least three Faculty members no later than the last week of classes in Semester II. N.B. Enrolment will be limited to those students who have demonstrated a sound academic background and an aptitude for research.

**Teaching:** Three (3) lectures and one tutorial per week.

**Method of Examination:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Presentation</td>
<td>20%</td>
</tr>
<tr>
<td>Written Report</td>
<td>60%</td>
</tr>
<tr>
<td>Proposal and Literature Review</td>
<td>20%</td>
</tr>
</tbody>
</table>

**COMP3920 - COMPUTER SCIENCE MAJOR RESEARCH PROJECT (8 Credits)**

**Pre-requisite:** Restricted to finalists majoring in Computer Science or Information Technology and by permission of the Computer Science discipline.

**Syllabus:** This course provides students with the opportunity to complete a major project utilizing classroom knowledge to solve a real world or research-based problem. Students are required to realize a significant software application from inception through to implementation or proof of concept. The project runs throughout the academic year (semesters I and II) giving students the needed time to
thoroughly research and solve a problem that can produce usable outcomes with either commercial or research applications.

Teaching: Students are required to meet with their supervisors at least once a week.

Method of Examination:

- Proposal Report 10%
- Proposal Presentation 10%
- Final Presentation 15%
- Demonstration 15%
- Final Report 50%

COMP3930 - COMPUTER SCIENCE GROUP RESEARCH PROJECT (4 Credits)

Pre-requisite: COMP2115, COMP2145 and restricted to finalists majoring in Computer Science or Information Technology and by permission of the Computer Science discipline

Syllabus: This course provides groups comprised of 2-4 students with the opportunity to implement a substantive software system under the supervision of a staff member. The software may address a problem in any domain, but must meet the minimum standards of design and functionality, appropriate for a Computer Science or Information Technology major.

Teaching: Students are required to meet with their supervisors at least once a week.

Method of Examination:

- Mid-term presentation 10%
- Final project presentation 15%
- Product Demonstration 15%
- Web Page 10%
- Report 50%

Project Restrictions: Students can only receive credits for one project course.
ELECTRONICS

LEVEL I ELECTRONICS COURSES

ELET1200 - BASIC CIRCUIT ANALYSIS (3 Credits)

Pre-requisites: CAPE Physics or CAPE Mathematics and CSEC Physics or equivalents

Anti-requisite: ELET1100 – CIRCUIT ANALYSIS


Teaching: Two (2) lectures and Two (2) hours of laboratory per week.

Method of Examination:

Final Theory Examination (2 hours) 60%

In course test(s) / Assignment(s) 20%

Laboratory 20%

ELET1205 - COMPUTER AIDED DESIGN (3 Credits)

Pre-requisites: None

Anti-requisite: None


Teaching: One (1) lecture and Four (4) hours laboratory per week.

Method of Examination:

Final Theory Examination (2 hours) 40%

In course test(s) / Assignment(s) 10%

Laboratory 50%
ELET1220 - INTRODUCTION TO ELECTRONICS (3 Credits)

Pre-requisites: CAPE Physics or CAPE Mathematics and CSEC Physics or equivalents
Anti-requisite: ELET1120 - BASIC ELECTRONICS

Syllabus: Resistors; Capacitors; Inductors; Characteristics of discrete components; Application of discrete components in simple circuits. Diodes; Bipolar Junction Transistors (BJT); Silicon Controlled Rectifiers (SCR); Diodes for Alternating Current (DIAC); Triode for alternating current (TRIAC); Characteristics of discrete components; Applications. Power supply components; Regulator components; Characteristics of simple power supplies and regulators; Applications.

Teaching: Two (2) lectures and Two (2) hours of laboratory per week.

Method of Examination:
- Final Theory Examination (2 hours) 60%
- In course test(s) / Assignment(s) 20%
- Laboratory 20%

ELET1210 - DIGITAL ELECTRONICS I (3 Credits)

Pre-requisites: CAPE Physics or CAPE Mathematics and CSEC Physics or equivalents
Anti-requisite: ELET1110 - Digital Electronics

Syllabus: The implementation of logical functions using electronic gates and the importance of minimization, using various methods. Binary arithmetic; Number systems; Floating point representation; Binary codes and code conversion; Encoders and Decoders. Digital Building Blocks (flip-flops, counters, data selectors and demultiplexers, binary adders). Logic Families (Bipolar, TTL, FET, MOS, CMOS) and their family characteristics (propagation delay, fan out, power dissipation, noise immunity and packing density). Finite State Device (FSD) design and construction.

Teaching: Two (2) lectures and Two (2) hours of laboratory per week.

Method of Examination:
- Final Theory Examination (2 hours) 60%
- In course test(s) / Assignment(s) 20%
- Laboratory 20%

ELET1215 - DIGITAL ELECTRONICS II (3 Credits)

Pre-requisites: ELET1210 – Digital Electronics I
Anti-requisite: None

Syllabus: Shift registers, latches and word clocks. Monostable pulse generators and sequencers. Schmitt trigger. Types of Analog to Digital (ADC) and Digital to Analog (DAC) circuits. Design of Asynchronous Sequential Circuits and hazard analysis. Combining functional blocks together to produce complex, non-programmable devices.

Teaching: Two (2) lectures and Two (2) hours of laboratory per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Theory Examination (2 hours)</td>
<td>60%</td>
</tr>
<tr>
<td>In course test(s) / Assignment(s)</td>
<td>20%</td>
</tr>
<tr>
<td>Laboratory</td>
<td>20%</td>
</tr>
</tbody>
</table>

**LEVEL II ELECTRONICS COURSES**

**ELET2100 - MICROPROCESSORS I (4 Credits)**

Pre-requisite: ELET1110 Digital Electronics

Syllabus: Architecture of 8-bit CPU’s e.g. INTEL 8085, Instruction set, Registers and their uses, Operation, Busses, Addressing, Data flow, Control section, Interrupts, Stack, Branching, Subroutines, Loops, Serial I/O, Interfacing, Port and memory mapping, Polling, Handshaking, Parallel ports, Serial communications (RS-232), A/D and basic D/A interfacing, device control with simple examples, comparison with other 8-bit CPU’s, Introduction to advanced microprocessors.

Teaching: Two (2) lectures four (4) hours of laboratory per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Theory Examination (2 hours)</td>
<td>60%</td>
</tr>
<tr>
<td>In-course Tests/Assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Laboratory</td>
<td>20%</td>
</tr>
</tbody>
</table>

**ELET2110 - CIRCUIT SIMULATION (4 Credits)**

Pre-requisite: ELET1100 Circuit Analysis
Syllabus: Introduction to SPICE, Language syntax, netlists, Source specification and passive element models, Active device modeling, macro models, AC, DC, transient, frequency and Monte Carlo analysis, Issues of convergence and stability.

Teaching: Two (2) contact hours and four (4) laboratory hours per week

Method of Examination:
Final Theory Examination (2 hour) 60%
In-course Tests/Assignments 20%
Laboratory 20%

ELET2120 - DISCRETE DEVICE ELECTRONICS (4 Credits)
Pre-requisite: ELET1120 Basic Electronics


Teaching: Two (2) lectures and four (4) hours of laboratory per week.

Method of Examination:
Final Theory Examination (2 hours) 60%
In-course Tests/Assignments 20%
Laboratory 20%

ELET2130 - DIGITAL COMMUNICATIONS I (4 Credits)
Pre-requisite: MATH1120 Calculus I and ELET1110 Digital Electronics


Teaching: Two (2) 1-hour lectures and four (4) hours of laboratory per week.

Method of Examination:
Final Theory Examination (2 hours) 60%
In-course Tests/Assignments 20%
Laboratory 20%
ELET2140 - MEDICAL INSTRUMENTATION (4 Credits)
Pre-requisite: ELET1110 Digital Electronics

Syllabus: The following topics and concepts will be discussed during the course: Introduction to Anatomy and Physiology, Overview of Medical Electronics Equipments, Preparation of Biosensor Types of Biosensors and their Applications, Electrodes, Bio-Medical Recorders, Patient Monitoring Systems, Safety Aspects of Medical Instruments.

Teaching: Two (2) lectures and four (4) hours of laboratory per week.

Method of Examination:
- Final Theory Examination (2 hours): 40%
- In-course Tests/Assignments: 20%
- Laboratory/Mini-project: 40%
Syllabus: An advanced course in Electronics taken as an exchange student at an approved institution and pre-approved by the Dean.
LEVEL III ELECTRONICS COURSES

ELET3041 - MICROCONTROLLERS AND APPLICATIONS (4 Credits)
Pre-requisite: ELET2100 Microprocessors I

Syllabus: A Microcontroller Framework – hardware architecture, instruction set, addressing modes, program memory, register file structure and uses, simple program operations. The Assembler and Its Use - application code source file, list, hex, and object file generation, table use, macros, subroutines, directives. Input and Output Peripherals - ports, displays, buttons, keypads, sensors, actuators, relays, interrupts, timers, counters, pre-scalars, A/D, D/A, motors, PWM, serial communication Protocols. Memory – RAM, ROM, PROM, EPROM, EEPROM, Flash, and Error Correction. Applications – a variety of applications from consumer electronics to research instruments

Teaching: Two hours of lectures, one hour of tutorial and three hours of laboratory each week.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Theory Examination</td>
<td>50%</td>
</tr>
<tr>
<td>In-course Tests/Assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Laboratory/Mini-Project</td>
<td>30%</td>
</tr>
</tbody>
</table>

ELET3110 - CONTROL & INSTRUMENTATION (4 Credits)
Pre-requisite: ELET2120 Discrete Device Electronics

Syllabus: Block diagrams, signal flow graphs, frequency response, stability, steady state and transient response. Transducers, controllers and control systems for level, temperature, speed and position control. Sampled systems. Introduction to computer control and robotics.

Teaching: Two (2) lectures and four (4) hours of laboratory per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Theory Examination</td>
<td>60%</td>
</tr>
<tr>
<td>In-course Tests/Assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Laboratory</td>
<td>20%</td>
</tr>
</tbody>
</table>

ELET3120 - COMMUNICATION CIRCUITS (4 Credits)
Pre-requisite: ELET2120 Discrete Device Electronics

Teaching: Two (2) lectures and four (4) hours of laboratory per week.

Method of Examination:
- Final Theory Examination (2 hours) 60%
- In-course Tests/Assignments 20%
- Laboratory 20%

ELET3130 - INTRODUCTION TO DIGITAL SIGNAL PROCESSING (DSP) (4 Credits)

Pre-requisite: ELET2130 Digital Communications I


Teaching: Two (2) lectures and four (4) hours of laboratory per week.

Method of Examination:
- Final Theory Examination (2 hours) 60%
- In-course Tests/Assignments 20%
- Laboratory 20%

ELET3151 - DIGITAL COMMUNICATIONS II (4 Credits)

Pre-requisite: ELET2130 Digital Communications I

Syllabus: Signals and Spectra, Bandpass Transmission, Error Control Coding (Convolutional), Satellite Communications, Wireless Communications.

Teaching: Two (2) 1-hour lectures and four (4) hours of laboratory per week.

Method of Examination:
- Final Theory Examination (2 hours) 60%
- In-course Tests/Assignments 20%
- Laboratory 20%
ELET3152 - MOBILE COMMUNICATION & APPLICATIONS (4 Credits)

Pre-requisite: ELET2130 Digital Communications I or COMP2150 Computer Networks I

Syllabus: Radio basics, Electromagnetic energy, frequency and wavelength, Spectrum management, Information theory, Coding theory, Core wireless communications, technologies and standards, FSK, PSK, QAM, TDMA, FDMA, OFDM, CDMA, SDMA, GSM, UMTS, HSPA, LTE, Wi-Fi, WiMAX, Bluetooth, Wireless Networking, Network design, Cellular infrastructure, WAN, MAN, LAN, PAN, HRAN, Mobile Internet and the protocol Stack, Circuit and packet switching TCP/IP, mobile IPv4, mobile IPv6, Technological convergence and multi-purpose mobile computing, SMS, MMS, VoIP, Video conferencing, Geolocation, Mobile operating systems, Symbian, Microsoft, iPhone, Android, Mobile application development, Mobile application environment, Context-aware mobile applications

Teaching: Two lectures & Four hours of Lab work per week

Method of Examination:
- Final Theory Examination (2 hours) 60%
- Course & Lab work 40%

ELET3160 - ELECTRONICS RESEARCH PROJECT (4 Credits)

Pre-requisite: Restricted to Finalists Majoring in Electronics

Syllabus: Students will be given a problem for which they must develop a workable electronics solution which should preferably be of commercial interest. The developed solution should be of sufficient breadth and depth to make it equivalent to a 4-credit advanced course in electronics. Solution may include Mathematics and Computer Software but an electronic circuit component is required.

Method of Examination:
- Proposal and Literature Review 20%
- Oral Presentation 20%
- Final Written Project Report 60%

ELET3210 - SENSORS & ACTUATOR TECHNOLOGY (4 Credits)

Pre-requisite: ELET1110 Digital Electronics

Teaching: Two lectures, one tutorial, 3 hours of Practical per week

Method of Examination:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>In course test(s) / Assignment(s)</td>
<td>20%</td>
</tr>
<tr>
<td>Laboratory/ Mini-Project</td>
<td>40%</td>
</tr>
<tr>
<td>Final Theory Examination (2 hrs)</td>
<td></td>
</tr>
</tbody>
</table>
MATH 0101 - PRELIMINARY MATHEMATICS I (6 Credits)

Pre-requisite: CXC Mathematics or equivalent.

Syllabus: Algebra: Sets. Cartesian Product, functions, operations, the integers, mathematical induction, algebraic operations on polynomials and rational quadratics, step functions, modulus function. Geometry: Coordinate geometry, trigonometrical functions and identities, complex numbers, Argand diagram; vectors. Calculus: Limits, continuity, intermediate-value theorem, gradient of a tangent, differentiation, Mean value theorem and its consequences (motivation, but no proof), curve sketching, integration as inverses of differentiation, fundamental theorem of calculus, techniques of integration, numerical techniques.

Teaching: Five (5) lectures and one tutorial per week.

Method of Examination:

Final Theory Examination (3 hours) 80%
In-course Tests/Assignments 20%

MATH 0102 - PRELIMINARY MATHEMATICS II (6 Credits)

Pre-requisite: CXC Mathematics or equivalent


Teaching: Five (5) lectures and one tutorial per week.

Method of Examination:

Final Theory Examination (3 hours) 80%
In-class Tests/Assignments 20%
LEVEL I MATHEMATICS COURSES

MATH 1141 - INTRODUCTORY LINEAR ALGEBRA & ANALYTICAL GEOMETRY (3 Credits)

Pre-requisite: CAPE Pure Mathematics Units 1 and 2 or MATH0101 & MATH0102 Preliminary Mathematics 1 & 2 or equivalent

Anti-requisite: None

Syllabus:
VECTORS IN THE EUCLIDEAN PLANE: algebraic definition and geometric interpretation of a vector; norm; triangle inequality; scalar product; projects; parallel and perpendicular vectors.

VECTORS IN 3-DIMENSIONAL SPACE: norm; scalar product and projections; vector product and its geometric interpretation; (parametric) equations of lines & planes; intersections and parallel lines & planes; skew lines; shortest distances between skew lines and points and planes.

SYSTEMS OF LINEAR EQUATIONS: the general case of m linear equations in n unknowns; consistent, inconsistent and over determined systems; Gaussian Elimination; row echelon form.

MATRIX ALGEBRA: addition, scalar and matrix multiplication; square matrices and non-singular matrices; transpose of a matrix; diagonal and triangular matrices; inverse of a matrix.

DETERMINANTS: properties, evaluation and recursive definition of determinants; elementary row and column operation; adjoint matrix; Cramer’s rule.

COMPLEX NUMBERS: geometric interpretation of algebraic operations; Argand diagram; roots of polynomials.

CONIC SECTIONS: circles, ellipses, parabolas hyperbolas: construction and equations.

Teaching: Two (2) hours of lectures and one (1) tutorial session.

Method of Examination:

In-course Test(s)/Assignment(s) 50%
Final Theory Examination 50%

MATH 1190 - CALCULUS A (3 Credits)

Pre-requisite: CAPE Pure Mathematics Units 1 and 2 or MATH0101 & MATH0102 Preliminary Mathematics 1 & 2 or equivalent

Anti-requisite: None
Syllabus: LIMIT OF A SEQUENCE: limit of a sequence of real numbers; sum, product and quotient of convergent sequences

INFINITE SERIES: partial sum of a series real numbers; definition of a convergent series, and examples of convergent and divergent series; comparison and ratio tests for convergence of a series

LIMITS OF FUNCTIONS: basic properties of limits; limit of \( \sin(x)/x \) as \( x \) tends to zero; limit as \( x \) tends to infinity; evaluating the limits of functions

CONTINUITY: definition of continuity at a point; examples of (dis)continuous functions; intermediate value theorem and its use to find roots of equations

DERIVATIVE: definition of the derivative as the limit, as \( h \to 0 \), of \( (f(x+h)-f(x))/h \); calculating the derivative of simple functions using the definition; derivation of the derivative of the sum, product and quotient of functions; Leibniz’s formula; chain rule; hyperbolic functions; Maclaurin and Taylor series expansions of functions using the definition; derivation of the derivative of the sum, product and quotient of functions; Leibniz’s formula; chain rule; hyperbolic functions; Maclaurin and Taylor series expansions of functions

INTEGRATION: the definite integral as the limit of a sum; evaluating the (Riemann) integral of simple functions from the definition; statement and use of the fundamental theorem of calculus; evaluation of integrals by standard techniques; length of a curve.

FUNCTIONS OF TWO VARIABLES: functions of two variables and their graphs; functions of several variables; definition and calculation of the partial derivative of a function of several variables; maxima and minima of functions of two variables

Teaching: Two (2) hours of lectures and one (1) tutorial session.

Method of Examination:

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-course Test(s)/Assignment(s)</td>
<td>50%</td>
</tr>
<tr>
<td>Final Theory Examination</td>
<td>50%</td>
</tr>
</tbody>
</table>

MATH 1152 - SETS AND NUMBER SYSTEMS (3 Credits)

Pre-requisite: Math1141 Introductory Linear Algebra & Analytical Geometry

Anti-requisite: None
Syllabus: LOGIC AND SET THEORY: statements in mathematics; negation, conjunction, disjunction and implication; illustration of logical statements; proof and validity of arguments; definition of a set; subsets, unions and intersections; set algebra and de Morgan’s laws

RELATIONS: Cartesian product of sets; functions; injectivity and surjectivity; inverse of a function and inverse image; reflexive, symmetric and transitive relations; equivalence relations and partitions of sets; binary operations: commutative, associative and distributive operations

NATURAL NUMBERS: principle of mathematical induction; permutations and combinations; sequences

INTEGERS: divisibility; greatest common divisor and the Euclidean algorithm; infinitude of primes; fundamental theorem of arithmetic

RATIONAL NUMBERS: field axioms; is irrational

REAL NUMBERS: solution of linear and non-linear inequalities; absolute value and triangle inequality; sum of simple infinite series of real numbers (without tests for convergence)

COMPLEX NUMBERS: real and imaginary parts of a complex number; complex conjugates; modulus and argument of a complex number; triangle inequality; polar forms of a complex number

Teaching: Two (2) hours of lectures and one (1) tutorial session.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-course Test(s)/Assignment(s)</td>
<td>50%</td>
</tr>
<tr>
<td>Final Theory Examination</td>
<td>50%</td>
</tr>
</tbody>
</table>

**MATH 1195 - CALCULUS B (3 Credits)**

Pre-requisite: MATH1190 Calculus A

Anti-requisite: None

Syllabus:
LIMITS OF FUNCTIONS: intervals, neighborhoods and bounds of a function (of a single variable); \( \varepsilon/\delta \) definition of a limit; properties/theorems of limits (with associated proofs); directed (left-hand and right-hand) limits; asymptotes.

CONTINUITY: continuity, removable and essential discontinuities; properties/theorems of continuous functions; intermediate value theorem; squeeze theorem; extreme value theorem.

DERIVATIVES: derivative of a function (definition, differentiability & continuity, left & right-hand derivatives); Rolle's theorem; mean value theorem (including Cauchy's mean value theorem); evaluating indeterminate forms \( \frac{0}{0} \) & \( \frac{\infty}{\infty} \) using l'Hôpital's rule; other indeterminate forms: \( 0(\infty) \), \( \infty - \infty \), \( 0^0 \), \( \infty^0 \), \( 1^\infty \).

INTEGRATION AND DOUBLE INTEGRALS: reduction formulae; introduction to the double integral as a double sum; double integral as an iterated integral; transformations in double integration.

Teaching: Two (2) hours of lectures and one (1) tutorial session.

Method of Examination:
- In-course Test(s)/Assignment(s) 50%
- Final Theory Examination 50%

**MATH 1235 PYTHON PROGRAMMING & MATHEMATICAL SOFTWARE (3 Credits)**

Pre-requisite: CAPE Pure Mathematics Units 1 and 2 or MATH0101 & MATH0102 Preliminary Mathematics 1 & 2 or equivalent.
(No prerequisite programming knowledge is necessary for this course.)

Anti-requisite: None

Syllabus:
- INTRODUCTION TO SAGE & SAGEMATHCLOUD: using Sage as a calculator; functions; matrices; solving problems symbolically; differentiation and integration in Sage
- PYTHON PROGRAMMING: loops and conditional expressions; lists, tuples, dictionaries and arrays; subroutines; program flow and good practice in programming
PLOTTING IN SAGE: graphing functions & integrals; axes labeling; contour plots and level sets; parametric plots; loglog plots

ELEMENTARY STATISTICS USING R: descriptive statistics; data visualization; interaction of R and Sage

ELEMENTS OF GEOGEBRA: Toolbar, simple construction, measurements, classical triangle centers (medians, centroid, altitudes, orthocenter)

ADVANCED TECHNIQUES IN GEOGEBRA: Check boxes, Pythagorean theorem

Teaching: Two (2) hours of lectures and one (1) tutorial session

Method of Examination:
In-course Test(s)/Assignment(s) 100%

MATH 1230 INTRODUCTORY APPLIED STATISTICS 1 (3 Credits)

Pre-requisite: CAPE Pure Mathematics Units 1 and 2 or MATH0101 & MATH0102 Preliminary Mathematics 1 & 2 or equivalent

Anti-requisite: None

Syllabus:
OVERVIEW AND DESCRIPTIVE STATISTICS: population, samples and processes; pictorial and tabular methods in descriptive statistics; measures of location and measures of variability components

PROBABILITY: sample spaces and events; axioms, interpretations and properties of probability; counting techniques and conditional probability

DISCRETE RANDOM VARIABLES AND PROBABILITY DISTRIBUTION: random variables; probability distributions for discrete random variables; binomial probability distribution; hypergeometric, negative binomial distribution and Poisson probability distribution

CONTINUOUS RANDOM VARIABLES AND PROBABILITY DISTRIBUTIONS: continuous random variables and probability density functions; cumulative distribution functions and expected values; normal distribution

POINT ESTIMATION: some basic general concept of point estimation
STATISTICAL INTERVALS BASED ON A SINGLE SAMPLE: basic properties of confidence intervals; large-sample confidence intervals for a population mean and proportion; intervals for a population mean and proportion; intervals based on a normal population distribution; confidence intervals for the variance and standard deviation of a normal population.

TESTS OF HYPOTHESES BASED ON A SINGLE SAMPLE: hypotheses and test procedures; test about a population mean; tests concerning a population proportion; P-values and some comments on selecting a test procedure.

INFERENCES BASED ON TWO SAMPLES: Z-tests and confidence intervals for a difference between two population means; two-sample t-test and confidence interval; analysis of paired data; inferences concerning a difference between population proportions and inferences concerning two population variances.

THE ANALYSIS OF VARIANCE: single-factor ANOVA.

SIMPLE LINEAR REGRESSION AND CORRELATION: simple linear regression model; estimating model parameters; inferences about the slope parameter; prediction of future Y values and correlation.

Teaching: Two (2) hours of lectures and one (1) tutorial session.

Method of Examination:

<table>
<thead>
<tr>
<th>In-course Test(s)/Assignment(s)</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Theory Examination</td>
<td>50%</td>
</tr>
</tbody>
</table>

LEVEL II MATHEMATICS COURSES

MATH2100 - ABSTRACT ALGEBRA (4 Credits)

Pre-requisite: MATH1101 Basic Mathematics and MATH1102 Basic Mathematics II.


Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

<table>
<thead>
<tr>
<th>In-class Tests/Assignments</th>
<th>30%</th>
</tr>
</thead>
</table>
MATH2110 - LINEAR ALGEBRA (4 Credits)
Pre-requisite: MATH1101 Basic Mathematics I & MATH1102 Basic Mathematics II


Teaching: Three (3) lectures and one tutorial per week.
Method of Examination:
- In-class Tests/Assignments 30%
- Final Theory Examination (2 hours) 70%

MATH2120 - ANALYSIS & METHODS I (4 Credits)
Pre-requisite: MATH1101 Basic Mathematics I, MATH1102 Basic Mathematics II, MATH1120 Calculus I & MATH1130 Calculus II

Syllabus: The real number system. Countability and topology of the real line; Continuity and differentiability. The Riemann integral. Infinite series and power series.

Teaching: Three (3) lectures and one tutorial per week.
Method of Examination:
- In-class Tests/Assignments 30%
- Final Theory Examination (2 hours) 70%

MATH2130 - ORDINARY DIFFERENTIAL EQUATIONS (4 Credits)
Pre-requisite: MATH1101 Basic Mathematics I, MATH1102 Basic Mathematics II, MATH1120 Calculus I & MATH1130 Calculus II


Teaching: Three (3) lectures and one tutorial per week.
Method of Examination:
In-class Tests/Assignments 30%
Final Theory Examination (2 hours) 70%

MATH 2140 - PROBABILITY THEORY (4 Credits)
Pre-requisite: MATH1120 Calculus I & MATH1130 Calculus II

Syllabus: Basic probability theory: Combinational Methods, Laws of probability, conditional probability, independence. Bayes formula; random variables, discrete and continuous distributions, expectations, moments, moment generating functions, functions of random variables, jointly distributed random variable. Special distributions: binomial, geometric, negative binomial, Poisson, hypergeometric, uniform, exponential, gamma, normal, bivariate normal. Law of large numbers, the central limit theorem.

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:
In-class Tests/Assignments 30%
Final Theory Examination (2 hours) 70%

MATH 2150 - MATHEMATICAL STATISTICS (4 Credits)
Pre-requisite: MATH2140 Probability Theory


Teaching: Three (3) lectures and one tutorial per week.

Method of Examinations:
In-class Tests/Assignments 30%
Final Theory examination (2 hours) 70%

MATH 2950 - MATHEMATICS ELECTIVE (4 Credits)
Pre-requisites: NONE

Syllabus: An advanced course in Mathematics taken as an exchange student at an approved institution and pre approved by the Dean.
LEVEL III MATHEMATICS COURSES

MATH3100 - MULTIVARIATE ANALYSIS (4 Credits)
Prerequisites: MATH2110 Linear Algebra and MATH2140 Probability Theory.


Teaching: Three lectures and one tutorial per week.

Method of Examinations:
- Coursework 40%
- One 2-hour written paper 60%

MATH3120 - NUMERICAL ANALYSIS (4 Credits)
Pre-requisite: MATH2110 Linear Algebra, MATH2120 Analysis & Methods I, MATH2130 Ordinary Differential Equations

Syllabus: Types of error, Finite Differences and Interpolation; Numerical Evaluation and Integrals; Numerical solution of Differential equations; Roots of Equations: Linear Systems and Matrices.; Construction of Algorithms for Computation using MATLAB.

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:
- In-class Tests/Assignments 40%
- Final Theory Examination (2 hours) 60%

MATH3140 - FOURIER ANALYSIS AND PDE (4 Credits)
Pre-requisite: MATH2130 Ordinary Differential Equations


Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

In-class Tests/Assignments 40%
Final Theory Examination (2 hours) 60%

**MATH3150 - COMPLEX VARIABLES 1 (4 Credits)**

Pre-requisite: MATH2120 Analysis & Methods I

Description: This is a first course in the theory and methods of complex variables. Many concepts in complex variable are generalizations of topics in calculus and real analysis, while other results and methods are specific to the subject itself. The material in this course is a blend of mathematical theorems and computational techniques. This course will be of interest to students majoring in mathematics or physics.


Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

In-class Tests/Assignments 40%
Final Theory Examination (2 hours) 60%

**MATH3160 - NUMBER THEORY (4 Credits)**

Pre-requisite: MATH2100 Abstract Algebra


Teaching: Three (3) lectures and one tutorial per week.
Method of Examination:
In-class Tests/Assignments 40%
Final Theory Examination (2 hours) 60%

**MATH3170 - ADVANCED ALGEBRA (4 Credits)**
Pre-requisite: MATH2100 Abstract Algebra


Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:
In-class Tests/Assignments 40%
Final Theory Examination (2 hours) 60%

**MATH3180 - INTRODUCTION TO TOPOLOGY (4 Credits)**
Pre-requisites: MATH2100 Abstract Algebra & MATH2120 Analysis & Methods I


Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:
In-class Tests/Assignments 40%
Final Theory Examination (2 hours) 60%

**MATH3190 - MATRIX ANALYSIS (4 Credits)**
Pre-requisite: MATH 2110 - Linear Algebra


Teaching: Three (3) lectures and one tutorial per week.
Method of Examination:
In-class Tests/Assignments 40%
Final Theory Examination (2 hours) 60%

MATH 3220 - SAMPLING THEORY (4 Credits)
Pre-requisite: MATH1110 Applied Statistics and MATH2150 Mathematical Statistics
Syllabus: Basic ideas concerning the design and uses of sample surveys. Sampling techniques: Simple random sampling (with Derivations of basic results), Stratified sampling, Cluster sampling, (one and two stage). Systematic sampling. Non-response and missing data in sample surveys. Designing forms and collecting data. Interpretation of data.
Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:
In-class tests/Assignments 40%
Final Theory Examination (2 hours) 60%

MATH 3300 - MATHEMATICS RESEARCH PROJECT (4 Credits)
Pre-requisite: Restricted to Finalists Majoring in Mathematics
Syllabus: In consultation with and under the supervision of a Faculty member, students are expected to define, investigate and report on an applied or theoretical research topic in Mathematics. The project itself is equivalent to a single Faculty course and must therefore reach that standard in terms of content and research effort. The project should contain some originality in material and evidence of extensive reading and comprehension of the subject area. A proposal and literature review must be submitted no later than the fourth week of the Semester and a final written report must be submitted and presented orally to a panel of at least three Faculty members no later than the last week of classes in the same Semester. N.B. Enrolment will be limited to those students who have demonstrated a sound academic background and an aptitude for research.

Method of Examination:
Oral Presentation 20%
Proposal and Literature Review 20%
Written Report 60%

MATH 3375 - DISCRETE AND COMPUTATIONAL GEOMETRY (4 Credits)
Pre-requisite: MATH1102 Basic Mathematics II or COMP2105 Discrete Mathematics, and 12 additional credits from Level II & III Mathematics or Computer Science courses
Syllabus: Polygons, convex hulls, Delaunay triangulation, Voronoi diagrams, Euler's polyhedral formula, Gauss Bonnet theorem

Teaching: Three (3) lectures and one tutorial per week

Method of Examination:

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-class Test(s)/Assignment(s)</td>
<td>40%</td>
</tr>
<tr>
<td>Final Theory Examination (2 hour)</td>
<td>60%</td>
</tr>
</tbody>
</table>

MATH3450 - STATISTICAL THEORY I (4 Credits)

Pre-requisite: MATH2120 Analysis & Methods and MATH2140 Probability Theory and MATH2150 Mathematical Statistics

Syllabus: Measure Theory & Law of Large Numbers, Conditional Expectation, Bounding Probability & Expectations, Introduction to Queuing Theory, Renewal Theory

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class tests/computer assignments</td>
<td>40%</td>
</tr>
<tr>
<td>Final Theory Examination (2 hour)</td>
<td>60%</td>
</tr>
</tbody>
</table>

MATH3460 - STATISTICAL THEORY II (4 Credits)

Pre-requisite: MATH2140 Probability Theory and MATH2150 Mathematical Statistics

Syllabus: Methods of finding estimators and their properties; Bayesian Inference; Regression Analysis; Time Series Analysis; Testing of Hypothesis; Design of Experiments; Sampling Theory.

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class tests/computer assignments</td>
<td>40%</td>
</tr>
<tr>
<td>Final Theory Examination (2 hour)</td>
<td>60%</td>
</tr>
</tbody>
</table>
PHYSICS

PRELIMINARY PHYSICS COURSES

PHYS0070 - PRELIMINARY PHYSICS I (6 Credits)

Pre-requisite: None

Syllabus: SI system and standard units, dimensional analysis, vectors (graphical and analytical) Equilibrium, Newton's first law, third law, friction, motion in a straight line, average and instantaneous velocity & acceleration, accelerated motion, free fall, relative velocity Motion in a plane, projectiles, circular motion, centripetal force, Newton's second law & applications. Gravitation, mass and weight, satellite motion. Work & kinetic energy, gravitational & elastic potential energy, dissipative and conservative forces, power, simple machines moments & torque, couples. Stress, strain, elastic moduli, force constant, Hooke's law, simple harmonic motion (basic concepts), SHM & circular motion, mass-spring system, simple pendulum, pressure in a fluid, pressure gauges, Archimedes principle, surface tension, pressure difference across surface film, contact angle and capillaries, Bernoulli's equation (applications), viscosity, Stoke's law, Reynold's number. The temperature concept, thermometers, scales, thermal expansion and stress. Heat capacity, phase changes, conduction, convection, radiation, Stefan-Boltzman law, ideal radiator, solar energy, ideal gas, equation of state, phase diagrams, triple and critical points, vapour pressure, effect of dissolved substances on freezing and boiling point, first law of thermodynamics, energy and work, work and heat, adiabatic, isochoric, isothermal and isobaric processes, internal energy, molecular theory of motion, kinetic theory of ideal gas. Mechanical waves, waves, mathematical representation, waves at boundaries, standing waves, interference of sound waves, beats, sound intensity, the decibel, the ear & hearing, quality and pitch, Doppler effect, ultrasonics and applications.

Teaching: Three (3) lectures, one tutorial per week and 52 hours of practical work.

Method of Examination:

<table>
<thead>
<tr>
<th>Final Theory Examination (3 hours)</th>
<th>70%</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-course Tests/Assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Practical Reports</td>
<td>10%</td>
</tr>
</tbody>
</table>

PHYS0071 - PRELIMINARY PHYSICS II (6 Credits)

Pre-requisite: None

Syllabus: Charge, Coulomb's law, insulators and conductors. Electric field, lines of force, electric potential, potential differences, electron volt (Millikan's experiment, CRO). Capacitance, series and parallel combination, energy in a charge capacitor. Dielectrics, current Resistivity, resistance, EMF, work and

Teaching: Three (3) lectures, one tutorial per week and 52 hours of practical work.

Method of Examination:

Final Theory Examination (3 hours) 70%
In-course Tests/Assignments 20%
Practical Reports 10%

LEVEL I PHYSICS COURSES

PHYS1200 - PHYSICS I: MECHANICS OF TRANSLATIONAL MOTION (3 Credits)

Pre-requisite: CAPE Physics Units 1 & 2 and CAPE Pure Mathematics Units 1 & 2

Co-requisite: PHYS1205 Physics II: Rotation, Waves and Thermodynamics

Objectives: Fundamentals of kinematics and dynamics of classical particles

Systems with varying mass; rockets.

Teaching: Three (3) one-hour lectures, one (1) hour of tutorial and four (4) hours of practical per week.
Course runs during first six (6) weeks of Semester I.

Method of Examination:

<table>
<thead>
<tr>
<th>Examination Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Theory Examination (2 hours)</td>
<td>60%</td>
</tr>
<tr>
<td>In-class Tests/Assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Practical Reports</td>
<td>20%</td>
</tr>
</tbody>
</table>

**PHYS1205 - PHYSICS II: ROTATION, WAVES AND THERMODYNAMICS (3 Credits)**

Pre-requisite: CAPE Physics Units 1 & 2 and CAPE Pure Mathematics Units 1 & 2.

Co-requisite: PHYS1200 Physics I: Mechanics of Translational Motion.

Objectives: Fundamentals of rotation, mechanical waves and thermodynamics.


Teaching: Three (3) one-hour lectures, one (1) hour of tutorial and four (4) hours of practical per week. Course runs during second six (6) weeks of Semester I.

Method of Examination:

<table>
<thead>
<tr>
<th>Examination Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Theory Examination (2 hours)</td>
<td>60%</td>
</tr>
<tr>
<td>In-class Tests/Assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Practical Reports</td>
<td>20%</td>
</tr>
</tbody>
</table>
PHYS1210 - PHYSICS III: ELECTRIC FIELDS, CURRENTS AND CIRCUITS (3 Credits)

Pre-requisite: CAPE Physics Units 1 & 2 and CAPE Pure Mathematics Units 1 & 2.

Co-requisite: PHYS1220 Physics IV: Magnetism, Electromagnetic Waves and Optics.

Objectives: Fundamentals of electric fields, electric potential, current, resistors and capacitors, simple circuits.


Teaching: Three (3) one-hour lectures, one (1) hour of tutorial and four (4) hours of practical per week. Course runs during first six (6) weeks of Semester II.

Method of Examination:

Final Theory Examination (2 hours) 60%
In-class Tests/Assignments 20%
Practical Reports 20%
PHYS1220 - PHYSICS IV: MAGNETISM, ELECTROMAGNETIC WAVES AND OPTICS (3 Credits)

Pre-requisite: CAPE Physics Units 1 & 2 and CAPE Pure Mathematics Units 1 & 2.


Objectives: Fundamentals of magnetic fields, induction, electromagnetic waves, interference and diffraction.


Teaching: Three (3) one-hour lectures, one (1) hour of tutorial and four (4) hours of practical per week. Course runs during last six (6) weeks of Semester II.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Theory Examination (2 hours)</td>
<td>60%</td>
</tr>
<tr>
<td>In-class Tests/Assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Practical Reports</td>
<td>20%</td>
</tr>
</tbody>
</table>

LEVEL II PHYSICS COURSES

PHYS2100 - MATHEMATICAL METHODS IN PHYSICS (4 Credits)

Prerequisites: MATH 1120 Calculus I

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:
- Final Theory Examination (2 hours) 80%
- In-course tests / assignments 20%

PHYS2101 - QUANTUM MECHANICS & SPECIAL RELATIVITY (4 Credits)

Pre-requisite: PHYS1100 Mechanics, PHYS1102 Optics, Thermodynamics & Modern Physics, and MATH1120 Calculus I


Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:
- Final Theory Examination (2 hours) 80%
- In-class Tests/Assignments 20%

PHYS2102 - SOLID STATE PHYSICS (4 Credits)

Pre-requisite: PHYS1101 Electricity & Magnetism


Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:
- Final Theory Examination (2 hours) 80%
- In-class Tests/Assignments 20%
PHYS2103 - CLASSICAL MECHANICS (4 Credits)
Pre-requisite: PHYS1100 Mechanics & MATH1120 Calculus I


Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:
Final Theory Examination (2 hours) 80%
In-class Tests/Assignments 20%

PHYS2105 - COMPUTATIONAL PHYSICS I (4 Credits)
Pre-requisite: PHYS1100 Mechanics, PHYS1101 Electricity & Magnetism and MATH1120 Calculus I


Teaching: Two (2) lectures and four (4) hours of laboratory per week.

Method of Examination:
Final Theory Examination (2 hours) 40%
In-class Tests/Assignments 60%

PHYS2106 - ADVANCED PHYSICS / TECHNOLOGY LABORATORY I (2 Credits)
Pre-requisite: PHYS1100 Mechanics, PHYS1101 Electricity & Magnetism and
PHYS1102 Optics, Thermodynamics & Modern Physics
Syllabus: A minimum of five (5) experiments will be performed, researched and written up in a report format specified by the lecturer. Students will not be allowed to repeat experiments carried out in PHYS2107. At least two (2) experiments will be chosen from each of the following two (2) categories: (i) Classical Physics Experiments (ii) Experiments in New Technology.

Teaching: Four hours of laboratory per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Written Laboratory Reports (5)</th>
<th>80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Examination</td>
<td>20%</td>
</tr>
</tbody>
</table>

PHYS2107 - ADVANCED PHYSICS / TECHNOLOGY LABORATORY II (2 Credits)

Pre-requisite: PHYS1100 Mechanics, PHYS1101 Electricity & Magnetism and PHYS1102 Optics, Thermodynamics & Modern Physics

Syllabus: A minimum of five (5) experiments will be performed, researched and written up in a report format specified by the lecturer. Students will not be allowed to repeat experiments carried out in PHYS2106. At least two (2) experiments will be chosen from each of the following two (2) categories: (i) Classical Physics Experiments (ii) Experiments in New Technology.

Teaching: Four hours of laboratory per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Written Laboratory Reports (5)</th>
<th>80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Examination</td>
<td>20%</td>
</tr>
</tbody>
</table>

PHYS2950 - PHYSICS ELECTIVE (4 Credits)

Pre-requisites: None

Syllabus: An advanced course in Physics taken as an exchange student at an approved institution and pre-approved by the Dean.

LEVEL III PHYSICS COURSES

PHYS3100 - QUANTUM MECHANICS (4 Credits)

Pre-requisite: PHYS2101 Quantum Mechanics & Special Relativity

Teaching: Three (3) lectures and one tutorial per week

Method of Examination:

Final Theory Examination (2 hours) 80%
In-class Tests/Assignments 20%

PHYS3101 - ELECTRODYNAMICS (4 Credits)

Pre-requisite: PHYS1102 Optics, Thermodynamics & Modern Physics and PHYS2101 Quantum Mechanics & Special Relativity

Syllabus: Development of Maxwell's equations. Potentials. E-m waves in free space, conducting medium, plasmas. Reflection of e-m waves from dielectric and metallic boundaries, waveguides, special relativity and electrodynamics. Transformation of electric and magnetic fields.

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

Final Theory Examination (2 hours) 80%
In-class Tests/Assignments 20%

PHYS3102 - OPTICS & LASERS (4 Credits)

Pre-requisite: PHYS2101 Quantum Mechanics & Special Relativity

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

Final Theory Examination (2 hours) 80%
In-class Tests/Assignments 20%

**PHYS3103 - ASTROPHYSICS (4 Credits)**
Pre-requisite: PHYS2101 Quantum Mechanics & Special Relativity

Syllabus: Structure of the sun and planets. Introduction to General Relativity Stellar Evolution Types and evolution of galaxies Cosmological models

Teaching: Three (3) lectures and one tutorial per week

Method of Examination:

Final Theory Examination (2 hours) 80%
In-class Tests/Assignments 20%

**PHYS3105 - STATISTICAL MECHANICS (4 Credits)**
Pre-requisite: PHYS2101 Quantum Mechanics & Special Relativity


Teaching: Three (3) lectures and one tutorial per week

Method of Examination:

Final Theory Examination (2 hours) 80%
In-class Tests/Assignments 20%

**PHYS3106 - PHYSICS RESEARCH PROJECT (4 Credits)**
Pre-requisite: Restricted to Final Year students, Majoring in Physics.

Syllabus: In consultation with and under the supervision of a Faculty member, students are expected to define, investigate and report on an applied or theoretical research topic in Physics. The project itself is equivalent to a single Faculty course and must therefore reach that standard in terms of content and
research effort. The project should contain some originality in material and evidence of extensive reading and comprehension of the subject area. A proposal and literature review must be submitted no later than the fourth week of Semester II and a final written report must be submitted and presented orally to a panel of at least three Faculty members no later than the last week of classes in Semester II. N.B. Limited to those students who have demonstrated a sound academic background and an aptitude for research.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Written Project Report</td>
<td>80%</td>
</tr>
<tr>
<td>Oral Presentation</td>
<td>20%</td>
</tr>
</tbody>
</table>

**PHYS3107 - FUNDAMENTALS OF PHOTOVOLTAIC PHYSICS (4 Credits)**

Pre-requisites: PHYS1101 Electricity & Magnetism & MATH1120 Calculus I

Syllabus: Group III-V semiconductors, p-n junctions, and wide-band-gap metal-oxide semiconductors with good optical properties. Fundamentals of photoelectric conversion, i.e. charge photoexcitation and separation, charge conduction and transport (diffusion and drift), and charge collection. First, second, and third generation photovoltaic technologies. Characterization of photovoltaic cells: open-circuit photovoltage, short-circuit photocurrent, fill factor, photoconversion efficiency, charge recombination, and charge trapping and detrapping are discussed. Photovoltaic cells manufacturing, systems, reliability, life-cycle analysis, and risk analysis. The economics of photovoltaic technology evolution in the context of markets, policies, society, and environment.

Teaching: Two lectures, one hour of tutorial, and 26 hours of practical work.

Method of Examination:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Examination</td>
<td>50%</td>
</tr>
<tr>
<td>Laboratory Work</td>
<td>25%</td>
</tr>
<tr>
<td>Assignments</td>
<td>25%</td>
</tr>
</tbody>
</table>
METEOROLOGY

LEVEL I METEOROLOGY COURSES

METE1000 - INTRODUCTION TO PHYSICAL METEOROLOGY & WEATHER OBSERVATIONS (4 Credits)
Pre-requisites: CAPE Pure Mathematics Units 1 & 2 (or equivalent) & CAPE Physics Unit 1 (or equivalent).


Teaching: Two (2) lectures, one (1) tutorial and two (2) hours of practical per week.

Method of Examination:
- Final Theory Examination (2 hours) 70%
- In-course Tests/Assignments 30%

METE1100 - INTRODUCTION TO DYNAMIC METEOROLOGY & WEATHER SYSTEMS (4 Credits)
Pre-requisites: CAPE Pure Mathematics Units 1 & 2 (or equivalent) & CAPE Physics Unit 1 (or equivalent).

Syllabus: Air pressure and winds. Wind: small-scale and local systems. Wind: global systems. Air masses and fronts. Middle-latitude cyclones. Thunderstorms and tornadoes. Tropical weather systems. Laboratory classes will include basic scalar analysis, computation exercises of geostrophic gradients and thermal winds, frontal analysis utilizing surface and upper air charts.

Teaching: Two (2) lectures, one (1) tutorial and three (3) hours of practical per week.

Method of Examination:
- Final Theory Examination (2 hours) 60%
- In-course Tests/Assignments 40%

METE1110 - INTRODUCTION TO OCEANS AND CLIMATE (3 Credits)
Pre-requisites: None

Restriction: Not to be taken with ERSC1002 Oceans and Climate

Syllabus: The climate system components and interactions. Timescales and responses of the climate system. The basic global radiation budget.

Laboratory classes will involve basic analysis of earth science datasets by hand, and using the Grid Analysis and Display System (GrADS). A computer based application for manipulation and visualization of earth science datasets.

Teaching: One (1) lecture; one (1) tutorial and two (2) hours of practical per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Examination Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Theory Examination (2 hours)</td>
<td>60%</td>
</tr>
<tr>
<td>Theory: In-course Tests/Assignments</td>
<td>40%</td>
</tr>
</tbody>
</table>

**METE1300 - CLIMATE CHANGE EDUCATION AND AWARENESS (4 Credits)**

Pre-requisites: None

Restriction: Cannot be taken by majors and minors in Meteorology. Students are not allowed to take BOTH METE1200 and METE1300 for credit.


Teaching: Three (3) lectures, one (1) tutorial hour per week.

Method of Examination:

<table>
<thead>
<tr>
<th>Examination Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Theory Examination (2 hours)</td>
<td>60%</td>
</tr>
<tr>
<td>In-course Tests/Assignments</td>
<td>40%</td>
</tr>
</tbody>
</table>
LEVEL II METEOROLOGY COURSES

METE2000 - PHYSICAL METEOROLOGY I (4 Credits)
Pre-requisites:  METE1000 Introduction to Physical Meteorology and Weather Observations, METE1100 Introduction to Dynamic Meteorology and Weather Systems and METE1200 Oceans and Climate and MATH1120 Calculus I & MATH1130 Calculus II.


Teaching:  Two (2) lectures, one (1) tutorial and two (2) hours of practical per week.

Method of Examination:
   Final Theory Examination (2 hours)  70%
   In-course Tests/Assignments  30%

METE2001 - PHYSICAL METEOROLOGY II (4 Credits)
Pre-requisites:  METE1000 Introduction to Physical Meteorology and Weather Observations, METE1100 Introduction to Dynamic Meteorology and Weather Systems and METE1200 Oceans and Climate and MATH1120 Calculus I & MATH1130 Calculus II.


Teaching:  Two (2) lectures, one (1) tutorial and two (2) hours of practical per week.

Method of Examination:
   Final Theory Examination (2 hours)  70%
   In-course Tests/Assignments  30%

METE2100 - DYNAMIC METEOROLOGY I (4 Credits)
Pre-requisites:  METE1000 Introduction to Physical Meteorology and Weather Observations, METE1100 Introduction to Dynamic Meteorology and Weather Systems and METE1200 Oceans and Climate and MATH1120 Calculus I & MATH1130 Calculus II.
Syllabus: Elementary vector methods in meteorology. Derivation of the equation of motion from Newton's law. The equation of motion in various coordinate systems. Simplification of the equation of motion. The conservation of mass and the conservation of total energy. The basic equations with pressure as the vertical coordinate. Horizontal balanced motions; the geostrophic thermal wind. Concepts of circulation and vorticity; the circulation theorems and the vorticity equation and their applications. Structure and dynamics of the planetary boundary layer.

Teaching: Three (3) lectures and one (1) tutorial per week.

Method of Examination:
- Final Theory Examination (2 hours) 70%
- In-course Tests/Assignments 30%

METE2200 - SYNOPTIC METEOROLOGY I (4 Credits)

Pre-requisites: METE1000 Introduction to Physical Meteorology and Weather Observations, METE1100 Introduction to Dynamic Meteorology and Weather Systems and METE1200 Oceans and Climate and MATH1120 Calculus I & MATH1130 Calculus II.


Teaching: Two (2) lectures and four (4) hours of practical per week.

Method of Examination:
- Final Theory Examination (2 hours) 60%
- In-course Tests/Assignments 40%

METE2300 - HYDRO-METEOROLOGY (4 Credits)

Pre-requisites: MATH1120 Calculus I & MATH1130 Calculus II.


Teaching: Two (2) lectures, one (1) tutorial and two (2) hours of practical per week.
METE2950 METEOROLOGY ELECTIVE (4 Credits)
Pre-requisites: None
Syllabus: An advanced course in Meteorology taken as an exchange student at an approved institution and pre-approved by the Dean.

LEVEL III METEOROLOGY COURSES

METE3100 - DYNAMIC METEOROLOGY II (4 Credits)
Pre-requisites: METE2100 Dynamic Meteorology I & METE2200 Synoptic Meteorology I
Syllabus: The dynamics of developing synoptic scale systems in mid-latitudes. The theory and behaviour of pure wave motions in the atmosphere. Introduction to numerical weather prediction; barotropic and filtered baroclinic models; primitive equation models. The physical basis of baroclinic instability and cyclogenesis. The energy cycle and momentum budget of the atmosphere.
Teaching: Three (3) lectures and one (1) tutorial per week.
Method of Examination:
Final Theory Examination (2 hours) 70%
In-course Tests/Assignments 30%

METE3200 - SYNOPTIC METEOROLOGY II (4 Credits)
Pre-requisites: METE2100 Dynamic Meteorology I and METE2200 Synoptic Meteorology I
Syllabus: The Polar front jet stream - structure and characteristics and its role in mid-latitude development. The pressure tendency equation and its applications. Four-dimensional analysis of mid-latitude synoptic systems; use of thickness maps, sounding and cross-sections. Theories of mid-latitude cyclone development; Characteristic and formation of cut-off cyclones, upper level anticyclones, and blocking systems; Development theories associated with polar lows and dry lines; Familiarization with and use of numerical products and satellite and radar data in analysis and forecasting.
Teaching: Two (2) lectures and four (4) hours of practical per week.

Method of Examination:
- Final Theory Examination (2 hours) 60%
- In-course Tests/Assignments 40%

**METE3300 - TROPICAL METEOROLOGY (4 Credits)**

**Pre-requisites:** METE2100 Dynamic Meteorology I and METE2200 Synoptic Meteorology I

**Syllabus:** General circulation of the tropics. The role of the tropics in the heat, energy and momentum budgets of the earth-atmosphere system. Tropical jet streams. Structure and characteristics of the tropical boundary layer and the trade wind inversion. Cumulus convection and scale interaction in the tropics. Structure and characteristics of synoptic scale systems in the tropics. Structure, behaviour and dynamics of tropical cyclones. Analysis of the evolution of tropical weather systems.

Teaching: Two (2) lectures and four (4) hours of practical per week.

Method of Examination:
- Final Theory Examination (2 hours) 60%
- In-course Tests/Assignments 40%

**METE3400 - WEATHER RADARS AND SATELLITES (4 Credits)**

**Pre-requisites:** METE2000 Physical Meteorology I, METE2001 Physical Meteorology II and METE2200 Synoptic Meteorology I


Teaching: Two (2) lectures, one (1) tutorial and two (2) hours of practical per week.
Method of Examination:

- Final Theory Examination (2 hours) 60%
- In-course Tests/Assignments 40%

**METE3500 - BIOCLIMATOLOGY (4 Credits)**

**Pre-requisites:** METE1200 Oceans & Climate or BIOL1051 Biodiversity 1 and 28 FST Level II/III credits.


**Teaching:** Two (2) lectures, one (1) tutorial and two (2) hours of practical per week.

Method of Examination:

- Final Theory Examination (2 hours) 60%
- In-course Tests 10%
- Essay Assignments & Computer Exercises 30%