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 2014 - 2015. 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

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 Science & Technology before settling on the current name of the Faculty of Science and Technology. 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.

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
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1. Dean	Colin Depradine B. Eng. (University College London), MSc. (Imperial College London), Ph.D. (UWI)	
2. Deputy Dean	Thea Scantlebury-Manning BSc, Ph.D. (Concordia)	
3. Deputy Dean	Jeanese Badenock Outreach & Reasearch BSc (UWI) PhD (Dartmouth)	
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I.T Technician	Maurice Beckles BSc (UWI)	417-4914
Mechanical Workshop	Glendon Pile Grantley Forde	417-4914 417-4914

Earth Science Technician	Damian Greaves BSc (UWI)	417-4914
Electronics Workshop	Andrew Phillips BSc (UWI)	417-4314
Electronics Workshop	Brian Haynes BSc (UWI)	417-4314

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

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Stenographer/Clerk	Pauline Moore
Stenographer/Clerk	Toni Russell

BIOLOGICAL SCIENCES

Professor of Plant Biology	C. M. Sean Carrington BSc (Edin.), DPhil (York-UK) 417-4330
Professor of Conservation Ecology	Julia A. Horrocks BSc. (Reading), PhD. (UWI) 417-4320

Professor of Ecology & Environmental Sciences & Pro-Vice Chancellor (Research)	Wayne Hunte BSc, PhD (UWI) 417-4129/ 4218
Emeritus Professor Of Biology	George E. Mathison BSc. (Bristol), PhD. (Nott.)
Senior Lecturer	Sarah L. Sutrina B.A. (Colorado), PhD (Johns Hopkins) 417-4360
Lecturer	Angela Alleyne BSc, MPhil, PhD (UWI) 417-4808
Lecturer	Angela Fields BSc, PhD (UWI) 417-4361
Lecturer	Marilaine Mota-Meira Ing. (Curitiba) MSc, PhD (Laval) 417-4859
Lecturer	Thea Scantlebury-Manning BSc, PhD (Concordia) 417-4356
Lecturer	Lyndon D. Waterman BSc, PhD (UWI) 417-4331
Lecturer	Suzanne Workman BSc (Manch.) MPhil, PhD (UWI) 417-4663

Lecturer	Henri Valles BSc (Univ. of Oviedo), MSc (UWI-Cermes), PhD (McGill). 417-4328
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
Lecturer	Leah Garner-O'Neale BSc, PhD (UWI) 417-4343
Lecturer	Srinivasa Popuri BSc (Nagarjuna), MSc (DAVV), PhD (Plymouth) 417-4334
Lecturer	Emma Smith BSc (Liverpool), MSc (Heriot-Watt), PhD (Plymouth) 417-4838

Lecturer	Avril Williams BSc PhD (UWI) 417-4342

EARTH SCIENCES

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, UK), MSc (Loughborough, UK) PhD (Nottingham, UK) 417-4158

DEPARTMENT OF COMPUTER SCIENCE, MATHEMATICS & PHYSICS

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Professor of Condensed Matter Physics & Head of Department	Upindranath Singh BSc, MPhil. (UWI) MSc, PhD (Delaware)
Administrative Assistant	Waveney Weekes
Stenographer/Clerk	Geniveve Harris
Stenographer/Clerk	Deidre Jemmott
Stenographer/Clerk	Tanya Taylor

COMPUTER SCIENCE

Senior Lecturer	Hadrian Peter BSc, MSc (Ohio), PhD (UWI) 417-4370
Lecturer	Adrian Als BSc, MPhil (UWI), PhD (Sheffield Hallam) 417-4793
Lecturer	John Charlery 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 BSc, MPhil (UWI), PhD (City) 417-4372

MATHEMATICS

Professor of Mathematical Statistics	Smail Mahdi BSc, MSc (Constantine), PhD (Montreal) 417-4367
Emeritus Professor of Mathematics	Charles Cadogan BSc (Lond-UCWI) PhD (UWI) FTICA 417-4363
Senior Lecturer	Jayaram Chillumuntala MSc (Andra), PhD (Madras) 417-4462
Lecturer	Peter Chami BSc, PhD (UWI) 417-4369
Lecturer	Jonathan R. Funk BSc, MSc (Sask.) PhD (McGill) 417-4383
Lecturer	Bernd Sing Dipl. (Tubingen), 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
Lecturer	Sujit Bag B.Tech. (IIT Kharagpur), PhD (Leic.) 417-4851
Lecturer	Carlos Hunte BSc, MPhil., PhD (UWI) 417-4382
Lecturer	Surujhdeo Seunarine BSc (UWI), DICTP (Trieste), MSc, PhD (Kansas) 417-4790
Temporary Lecturer	Andre Lynch BSc (UWI), MSc (Kingston Univ. [London]) 417-4129

THE CARIBBEAN INSTITUTE FOR METEOROLOGY & HYDROLOGY

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

Tel: (246) 425-1362
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Senior Lecturer	Adrian Trotman BSc (UWI), MSc (Reading), MPhil. (UWI) 425-1362
Lecturer	Shawn Boyce BSc (UWI), MSc (Newcastle) 425-1362
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Lecturer	Lawrence Pologne BSc (UWI), MSc (Florida State) 425-1362
Lecturer	Andrea Sealy BSc (Jackson State), MSc (Penn. State), PhD (Howard) 425-1362
Lecturer	Cherie Pounder BSc (UWI), MSc (Birmingham) 425-1362

PRINCIPAL OFFICERS OF THE UNIVERSITY OF THE WEST INDIES

Visitor

Her Majesty the Queen

Chancellor

The Hon Sir George Alleyne

OCC, MD, FRCP, FACP (Hons), Hon. DSc UWI

Vice-Chancellor

Professor E. Nigel Harris

BS Howard, MPhil Yale, MD U of Penn, DM UWI

Chairmen, Campus Councils

Mr Paul Altman

GCM, BCH, JP, LLD

Dr Marshal Hall

CD, BSc Col, PhD Wis

Mr Ewart Williams

BSc, MSc UWI

Sir K. Dwight Venner

CBE, KBE, BSc, MSc, LLD, UWI – Open Campus

Pro-Vice Chancellors

Professor Wayne Hunte

BSc, PhD UWI

Professor Ronald Edward Young

BSc, MSc UWI, PhD St Andrew

Professor Alvin Wint

BSc UWI, MBA Northeastern, DBA Harv

Professor Andrew Downes

BSc (Hons), MSc UWI, PhD Manc

Campus Principals

Professor Sir Hilary Beckles – Cave Hill
BA, PhD Hull

Ambassador Professor The Hon Gordon Shirley – Mona
BSc UWI, MBA, DBA Harv

Professor Clement Sankat – St. Augustine
BSc, MSc UWI, PhD, Guelph, MASEA, MAPETT, FIAgrE

Professor V. Eudine Barriteau – Open Campus
BSc UWI, MPA New York, PhD Howard

Deputy Campus Principals

Professor Pedro Welch – Cave Hill
BA., M.Sc., Cert. Ed. Admin., Ph.D

Mona – Vacant

Professor Rhoda Reddock – St Augustine
BSc UWI, MSc ISS The Hague , PhD Amst

Professor Vivienne Roberts – Open Campus
BSc, DipEd UWI, MSEd Tenn, PhD UWI

University Registrar

Mr C. William Iton
BSc UWI, LLM Essex

University Bursar

Mr Archibald Campbell
BSc MSc UWI, FAC

University Librarian

Ms Jennifer Joseph
BA, Dip LS, Dip HR UWI, MLS Columbia

Deputy University Registrar

Ms Cecile Clayton

BA UWI, Dip (Foreign Service) Oxf, MSc Amer Univ

Public Orators

Robert Leyshon – Cave Hill

BA. MA, Cert Ed PGCE Lond,

Brian Meeks – Mona

BSc, MSc, PhD UWI

Professor Surujpal Teelucksingh – St Augustine

MB BS, MBA UWI, FRCP Ed, PhD Edin

Francis Severin – Open Campus

(M) BA, MSc, PhD UWI

STUDENT AFFAIRS

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Fax: (246) 438-9145

Admissions:		
Assistant Registrar	Mr. Rommel Carter BA, MBA	417-4119
Administrative Assistant	Ms. Maria Dodson BSc	417-4862
Administrative Assistant, Admissions	Mrs. Deborah Knight	417-4122
Science & Technology Faculty Clerk	Mrs. Denise Greenidge	417-4471

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

Records:		
Administrative Assistant	Miss Nakita Squires, BSc	417-4140
Stenographer/Clerk	Ms. Esther Layne, BSc	417-4142
(Transcripts & Academic Records)		

School for Graduate Studies and Research:

Senior Assistant Registrar	Mrs. Gail Carter-Payne	417-4902
Administrative Assistant	Mrs. Anita Kinch, B.A.	417-4909
Administrative Assistant	Ms. Maureen Mullin	417-4910
Science & Technology Faculty Clerk	Miss Tara Moseley, BSc.	417-4905

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
FOUN 1101 – Caribbean Civilization
[2]FOUN 1210 – Science, Medicine & Technology in Society
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

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.

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.

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.

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

FPAS CREDIT TABLE

The following table describes the approximate weekly contact hours for one-semester (thirteen 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. A normal full-time load in Part I is 16-18 credits per semester (excluding Foundation courses). A normal load for a student in Part II (Advanced) is 16 credits (four 4-credit courses) per semester (excluding Foundation courses).

		LABORATORY COURSES			***NON-LABORATORY COURSES (WEEKLY HOURS)***		
		LECTURE	***TUTORIAL***	***LABORATORY***	***LECTURE***	***TUTORIAL***	***CREDITS***
PART I	***PRELIM***	3	1	4-6	5	1	6
	LEVEL I	3	0	4-6	5	1	6
		2	1	2-3	3	1	4
PART II	***LEVELS 2 & 3***	2	1	2-3	3	1	4
		2	0	4			4

APPENDIX V

GRADING SYSTEM

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

Grade	***Mark (%)***	***QP***		***Grade***	***Mark (%)***	***QP***
A+	90-100	4.30		C+	55-59	2.30
A	80-89	4.00		C	50-54	2.00
A-	75-79	3.70		F1	45-49	1.70
B+	70-74	3.30		F2	40-44	1.30
B	65-69	3.00		F3	0-39	0.00
B-	60-64	2.70				

Table 2: GPA to Honours Conversion

Class of Honours	***Cumulative GPA***
First	3.60 and above
Upper Second	3.00 - 3.59
Lower Second	2.50 - 2.99
Pass	2.00 - 2.49

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 & Economics
- Mathematics with Economics
- Mathematics and Accounting
- Mathematics with Accounting
- Science Major & Management
- Science Major with Management

COMPUTER SCIENCE AND ACCOUNTING:

LEVEL I

COMP1105 Computer Programming I

COMP1115 Computer Programming II

MATH1101 Basic Mathematics I

MATH1110 Applied Statistics

ACCT1002 Introduction to Financial Accounting

ACCT1003 Cost and Management Accounting I

ECON1001 Introduction to Microeconomics

ECON1002 Introduction to Macroeconomics

MGMT1001 Principles of Management

AND

ELET1110 Digital Electronics

OR

FOUR (4) Level I Credits from any Faculty

AND

FOUN1001 English For Academic Purposes

OR

FOUN1008 Rhetoric II: Writing for Special Purposes

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

FOUN1101 Caribbean Civilization

LEVEL II ACCOUNTING ELECTIVES

AND Six (6) Credits from Level 2 Management Courses

LEVEL III

COMP3100 Operating Systems

COMP3180 Algorithm Design and Analysis

ACCT2017 Intermediate Cost Accounting

ACCT3043 Auditing

FOUN1301 Law, Governance and Society

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:

COMPUTER SCIENCE WITH ACCOUNTING

LEVEL 1

COMP1105 Computer Programming I

COMP1115 Computer Programming II

MATH1101 Basic Mathematics I

MATH1110 Applied Statistics

ACCT1002 Introduction to Financial Accounting

ACCT1003 Cost & Management Accounting I

ECON1001 Introduction to Microeconomics

ECON1002 Introduction to Macroeconomics

MGMT1001 Principles of Management

AND

ELET1110 Digital Electronics

OR

FOUR (4) Level 1 Credits from any Faculty

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

LEVEL III

COMP3100 Operating Systems

COMP 3180 Algorithm Design and Analysis

ACCT3043 Auditing

AND

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

FOUN

FOUN 1008 Rhetoric II: Special Purposes

OR

FOUN 1001 English for Academic Purposes

AND

FOUN1101 Caribbean Civilization

FOUN1301 Law, Governance and Society

COMPUTER SCIENCE AND ECONOMICS

LEVEL I

COMP1105 Computer Programming I

COMP1115 Computer Programming II

MATH1101 Basic Mathematics I

MATH1110 Applied Statistics

ECON1001 Introduction to Microeconomics

ECON1002 Introduction to Macroeconomics

AND Eight (8) 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

ECON2008 Statistical Methods I

LEVEL III

COMP3100 Operating Systems

COMP3180 Algorithm Design and Analysis

ECON3049 Econometrics I

One Level III COMP course

One Level II/III COMP course

Four Level II/III ECON courses

FOUN

FOUN 1008 Rhetoric II: Special Purposes

OR

FOUN 1001 English for Acad. Purposes

AND

FOUN 1101 Caribbean Civilization

FOUN1301 Law, Governance and Society

COMPUTER SCIENCE WITH ECONOMICS

LEVEL I

COMP1105 Computer Programming I
COMP1115 Computer Programming II
MATH1101 Basic Mathematics I
MATH1110 Applied Statistics
ECON1001 Introd. to Microeconomics
ECON1002 Introd. to Macroeconomics

AND Eight (8) 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

One Level III COMP course

One Level II/III COMP course

And Thirteen (13) Level II/III credits

FOUN

FOUN 1008 Rhetoric II: Special Purposes

OR

FOUN 1001 English for Acad. Purposes

AND

FOUN 1101 Caribbean Civilization
FOUN1301 Law, Governance and Society

COMPUTER SCIENCE AND MANAGEMENT

LEVEL I

COMP1105 Computer Programming I

COMP1115 Computer Programming II

MATH1101 Basic Mathematics I

MATH1110 Applied Statistics

ACCT1002 Introduction to Financial Accounting

ACCT1003 Cost and Management Accounting I

ECON1001 Introduction to Microeconomics

ECON1002 Introduction to Macroeconomics

MGMT1001 Principles of Management

AND

ELET1110 Digital Electronics

OR

FOUR (4) Level I Credits from any Faculty

AND

FOUN1001 English for Academic Purposes

OR

FOUN1008 Rhetoric II: Writing for Special Purposes

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

MGMT2026 Production & Operations Management

AND

FOUN1101 Caribbean Civilization

LEVEL III

COMP3100 Operating Systems

COMP3180 Algorithm Design and Analysis

MGMT3017 Human Resources Management

AND

FOUN1301 Law, Governance and Society

AND

One Level III COMP course

One Level II/III COMP course

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

COMPUTER SCIENCE WITH MANAGEMENT

LEVEL I

COMP1105 Computer Programming I
COMP1115 Computer Programming II
MATH1101 Basic Mathematics I
MATH1110 Applied Statistics
ACCT1002 Introduction to Financial Accounting
ACCT1003 Cost & Management Accounting I
ECON1001 Introduction to Microeconomics
ECON1002 Introduction to Macroeconomics
MGMT1001 Principles of Management

AND

ELET1110 Digital Electronics

OR

FOUR (4) Level I Credits from any Faculty

AND

FOUN1001 English for Academic Purposes

OR

FOUN1008 Rhetoric II: Writing for Special Purposes

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
FOUN1101 Caribbean Civilization

LEVEL III

COMP3100 Operating Systems
COMP3180 Algorithm Design and Analysis
MGMT3017 Human Resources Management
FOUN1301 Law, Governance and Society

AND

One Level III COMP course

One Level II/III COMP course

AND

Thirteen (13) Level II/III credits

INFORMATION TECHNOLOGY AND ACCOUNTING

LEVEL I

COMP1105 Computer Programming I
COMP1115 Computer Programming II
MATH1101 Basic Mathematics I
MATH1110 Applied Statistics
ACCT1002 Introduction to Financial Accounting
ACCT1003 Cost and Management Accounting I
ECON1001 Introduction to Microeconomics
ECON1002 Introduction to Macroeconomics
MGMT1001 Principles of Management

AND

ELET1110 Digital Electronics

OR

FOUR (4) Level I Credits from any Faculty

AND

FOUN1001 English for Academic Purposes

OR

FOUN1008 Rhetoric II: Writing for Special Purposes

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
FOUN1101 Caribbean Civilization

AND Six (6) Credits From Level II Accounting Courses:

ACCT2018 Government Accounting
MKTG2001 Principles of Marketing
MGMT2005 Microcomputer Applications for Business
MGMT2008 Organizational Behaviour
MGMT2020 Managerial Economics

LEVEL III

FOUN1301 Law, Governance and Society
COMP3160 Database Management Studies
COMP3170 Web-Based Applications
ACCT2017 Intermediate Cost Accounting
ACCT3043 Auditing

AND

ACCT3040 Accounting Theory

OR

ACCT3041 Advanced Financial Accounting

AND

One Level III COMP course

One Level II/III COMP course

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

ACCT3015 Accounting Information Systems
ACCT3039 Cost & Management Accounting II
ACCT3040 Advanced Accounting Theory
ACCT3041 Advanced Financial Accounting
ACCT3044 Advanced Auditing
MGMT3023 Independent Study
MGMT3024 Managerial Communications
MGMT3048 Financial Management II
MGMT3049 Financial Institutions and Markets
MGMT3052 Taxation and Tax Management
MGMT3072 Services Sector Accounting
MGMT2006 Management Information Systems I
MGMT2021 Business Law I

INFORMATION TECHNOLOGY WITH ACCOUNTING

LEVEL I

COMP1105 Computer Programming I
COMP1115 Computer Programming II
MATH1101 Basic Mathematics I
MATH1110 Applied Statistics
ACCT1002 Introduction to Financial Accounting
ACCT1003 Cost & Management Accounting I
ECON1001 Introduction to Microeconomics
ECON1002 Introduction to Macroeconomics
MGMT1001 Principles of Management

AND

ELET1110 Digital Electronics

OR

FOUR (4) Level I Credits from any Faculty

AND

FOUN1001 English for Academic Purposes

OR

FOUN1008 Rhetoric II: Writing for Special Purposes

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
FOUN1101 Caribbean Civilization

LEVEL III

COMP3160 Database Management Studies
COMP3170 Web-Based Applications
ACCT3043 Auditing
FOUN1301 Law, Governance and Society

AND

One Level III COMP course

One Level II/III COMP course

AND

ACCT3040 Accounting Theory

OR

ACCT3041 Advanced Financial Accounting

AND

Thirteen (13) Level II/III Credits

INFORMATION TECHNOLOGY AND ECONOMICS

LEVEL I

COMP1105 Computer Programming I
COMP1115 Computer Programming II
MATH1101 Basic Mathematics I
MATH1110 Applied Statistics
ECON1001 Introd. to Microeconomics
ECON1002 Introd. to Macroeconomics

AND Eight (8) Level I Credits

LEVEL II

COMP2105 Discrete Mathematics
COMP2115 Information Structures
COMP2145 Software Engineering I
COMP2160 Object-Oriented Programming
ECON2000 Intermed. Microeconomics I
ECON2001 Intermed. Microeconomics II
ECON2002 Intermed. Macroeconomics I
ECON2003 Intermed. Macroeconomics II
ECON2008 Statistical Methods I

LEVEL III

COMP3160 Database Management Studies
COMP3170 Web-Based Applications
ECON3049 Econometrics I

One Level III COMP course

One Level II/III COMP course

Four Level II/III ECON courses

FOUN

FOUN 1008 Rhetoric II: Special Purposes

OR

FOUN 1001 English for Acad. Purposes

AND

FOUN 1101 Caribbean Civilization
FOUN1301 Law, Governance and Society

INFORMATION TECHNOLOGY WITH ECONOMICS

LEVEL I

COMP1105 Computer Programming I
COMP1115 Computer Programming II
MATH1101 Basic Mathematics I
MATH1110 Applied Statistics
ECON1001 Introd. to Microeconomics
ECON1002 Introd. to Macroeconomics

AND Eight (8) Level I Credits

LEVEL II

COMP2105 Discrete Mathematics
COMP2115 Information Structures
COMP2145 Software Engineering I
COMP2160 Object-Oriented Programming
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

COMP3160 Database Management Studies
COMP3170 Web-Based Applications

One Level III COMP course

One Level II/III COMP course

And Thirteen (13) Level II/III credits

FOUN

FOUN 1008 Rhetoric II: Special Purposes

OR

FOUN 1001 English for Acad. Purposes

AND

FOUN 1101 Caribbean Civilization
FOUN1301 Law, Governance and Society

INFORMATION TECHNOLOGY AND MANAGEMENT

LEVEL I

COMP1105 Computer Programming I
COMP1115 Computer Programming II
MATH1101 Basic Mathematics I
MATH1110 Applied Statistics
ACCT1002 Introduction to Financial Accounting
ACCT1003 Cost and Management Accounting I
ECON1001 Introduction to Microeconomics
ECON1002 Introduction to Macroeconomics
MGMT1001 Principles of Management

AND

ELET1110 Digital Electronics

OR

FOUR (4) Level I Credits from any Faculty

AND

FOUN1001 English for Academic Purposes

OR

FOUN1008 Rhetoric II: Writing for Special Purposes

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
MGMT2026 Production & Operations Management

AND

FOUN1101 Caribbean Civilization

LEVEL III

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

AND

FOUN1301 Law, Governance and Society

AND

One Level III COMP course

One Level II/III COMP course

AND Nine (9) Credits from Level III Management Courses.

INFORMATION TECHNOLOGY WITH MANAGEMENT

LEVEL I

COMP1105 Computer Programming I
COMP1115 Computer Programming II
MATH1101 Basic Mathematics I
MATH1110 Applied Statistics
ACCT1002 Introduction to Financial Accounting
ACCT1003 Cost & Management Accounting I
ECON1001 Introduction to Microeconomics
ECON1002 Introduction to Macroeconomics
MGMT1001 Principles of Management

AND

ELET1110 Digital Electronics

OR

FOUR (4) Level I Credits

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

LEVEL III

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

AND

One Level III COMP course

One Level II/III COMP course

AND

Thirteen (13) Level II/III credits

FOUN

FOUN 1008 Rhetoric II: Special Purposes

OR

FOUN 1001 English for Academic Purposes

AND

FOUN 1101 Caribbean Civilization
FOUN1301 Law, Governance and Society

MATHEMATICS AND ACCOUNTING

LEVEL I

ACCT1002 Introduction to Financial Accounting
ACCT1003 Cost & Mangt. Accounting I
ECON1001 Introduction to Microeconomics
ECON1002 Introduction to Macroeconomics
MGMT1001 Principles of Management
MATH1101 Basic Mathematics I
MATH1102 Basic Mathematics II
MATH1110 Applied Statistics
MATH1120 Calculus I
MATH1130 Calculus II

LEVEL II

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

AND Six (6) Credits From Level 2 Management Courses:

ACCT2018 Government Accounting
MKTG2001 Principles of Marketing
MGMT2005 Microcomputer Appl. for Business
MGMT2006 Management Inform. Systems I
MGMT2008 Organizational Behaviour
MGMT2020 Managerial Economics
MGMT2021 Business Law I

LEVEL III

Two Level III MATH courses

Two Level II/III MATH courses

ACCT2017 Intermediate Cost Accounting
ACCT3043 Auditing

AND

ACCT3040 Accounting Theory

OR

ACCT3041 Advanced Financial Accounting

AND Six (6) Credits From:

ACCT3015 Accounting Info. Systems
ACCT3039 Cost & Managt. Accounting II
ACCT3040 Advanced Accounting Theory
ACCT3041 Adv. Financial Accounting
ACCT3044 Advanced Auditing
MGMT3023 Independent Study
MGMT3024 Managerial Communications
MGMT3048 Financial Management II
MGMT3049 Fin. Institutions and Markets
MGMT3052 Taxation and Tax Mangt.
MGMT3072 Services Sector Accounting

FOUN

FOUN 1008 Rhetoric II: Special Purposes

OR

FOUN 1001 English for Academic Purposes

AND

FOUN 1101 Caribbean Civilization
FOUN1301 Law, Governance and Society

MATHEMATICS WITH ACCOUNTING

LEVEL I

ACCT1002 Introduction to Financial Accounting
ACCT1003 Cost & Mangt. Accounting I
ECON1001 Introduction to Microeconomics
ECON1002 Introduction to Macroeconomics
MGMT1001 Principles of Management
MATH1101 Basic Mathematics I
MATH1102 Basic Mathematics II
MATH1110 Applied Statistics
MATH1120 Calculus I
MATH1130 Calculus II

LEVEL II

MATH2100 Abstract Algebra
MATH2110 Linear Algebra
MATH2120 Analysis & Methods I
MATH2130 Ord. Differential Equations
ACCT2014 Financial Accounting I
ACCT2015 Financial Accounting II
ACCT2017 Intermediate Cost Accounting

LEVEL III

Two Level III MATH courses

Two Level II/III MATH courses

ACCT3043 Auditing

AND

ACCT3040 Accounting Theory

OR

ACCT3041 Adv. Financial Accounting

AND Thirteen (13) Level II/III credits

FOUN

FOUN 1008 Rhetoric II: Special Purposes

OR

FOUN 1001 English for Academic Purposes

AND

FOUN 1101 Caribbean Civilization
FOUN1301 Law, Governance and Society

MATHEMATICS AND ECONOMICS

LEVEL I

MATH1101 Basic Mathematics I

MATH1102 Basic Mathematics II

MATH1120 Calculus I

MATH1130 Calculus II

MATH1110 Applied Statistics

COMP1105 Computer Programming I

ECON1001 Introd. to Microeconomics

ECON1002 Introd. to Macroeconomics

LEVEL II

MATH2100 Abstract Algebra

MATH2110 Linear Algebra

MATH2120 Analysis & Methods I

MATH2130 Ord. Differential Equations

ECON2000 Intermed. Microeconomics I

ECON2001 Intermed. Microeconomics II

ECON2002 Intermed. Macroeconomics I

ECON2003 Intermed. Macroeconomics II

ECON2008 Statistical Methods I

LEVEL III

ECON3049 Econometrics I

Four Level II/III ECON courses

Two Level III MATH courses

Two Level II/III MATH courses

FOUN

FOUN 1008 Rhetoric II: Special Purposes

OR

FOUN 1001 English for Acad. Purposes

AND

FOUN 1101 Caribbean Civilization

FOUN1301 Law, Governance and Society

MATHEMATICS WITH ECONOMICS

LEVEL I

MATH1101 Basic Mathematics I
MATH1102 Basic Mathematics II
MATH1120 Calculus I
MATH1130 Calculus II
MATH1110 Applied Statistics
COMP1105 Computer Programming I
ECON1001 Introd. to Microeconomics
ECON1002 Introd. to Macroeconomics

LEVEL II

MATH2100 Abstract Algebra
MATH2110 Linear Algebra
MATH2120 Analysis & Methods I
MATH2130 Ord. Differential Equations
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

Two Level III MATH courses

Two Level II/III MATH courses

AND Thirteen (13) Level II/III credits

FOUN

FOUN 1008 Rhetoric II: Special Purposes

OR

FOUN 1001 English for Acad. Purposes

AND

FOUN 1101 Caribbean Civilization
FOUN1301 Law, Governance and Society

SCIENCE AND MANAGEMENT

LEVEL I

Required Level 1 Courses for Science Major plus

COMP1105 Computer Programming I
MATH1101 Basic Mathematics I
MATH1110 Applied Statistics
ACCT1002 Introd. to Financial Accounting
ACCT1003 Cost & Mangt. Accounting I
ECON1001 Introd. to Microeconomics
ECON1002 Introd. to Macroeconomics
MGMT1001 Principles of Management

LEVELS II & III

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

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

AND Nine (9) Credits from LEVEL III Management Courses

FOUN

FOUN1008 Rhetoric II: Special Purposes

OR

FOUN1001 English for Acad. Purposes

AND

FOUN1101 Caribbean Civilization
FOUN1301 Law, Governance and Society

SCIENCE WITH MANAGEMENT

LEVEL I

Required Level 1 Courses for Science Major plus

COMP1105 Computer Programming I

MATH1101 Basic Mathematics I

MATH1110 Applied Statistics

ACCT1002 Introd. to Financial Accounting

ACCT1003 Cost & Mangt. Accounting I

ECON1001 Introd. to Microeconomics

ECON1002 Introd. to Macroeconomics

MGMT1001 Principles of Management

LEVELS II & III

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

MKTG2001 Principles of Marketing

MGMT2006 Mangt. Info. Systems I

MGMT2008 Organizational Behaviour

MGMT2023 Financial Management

MGMT3017 Human Resources Management

And Thirteen (13) Level II/III Credits

FOUN

FOUN1008 Rhetoric II: Special Purposes

OR

FOUN1001 English for Acad. Purposes

AND

FOUN1101 Caribbean Civilization

FOUN1301 Law, Governance and Society

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 1 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)

FOUN

FOUN1008 Rhetoric II: Special Purposes

OR

FOUN1001 English for Acad. Purposes

FOUN1101 Caribbean Civilization

FOUN1301 Law, Governance and Society

* 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

FOUN

FOUN1008 Rhetoric II: Special Purposes

OR

FOUN1001 English for Academic Purposes

FOUN1101 Caribbean Civilization

FOUN1301 Law, Governance and Society

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 Business Spanish

SPAN3503 Spanish for Tourism

AND Thirteen (13) Level II/III credits

FOUN

FOUN1008 Rhetoric II: Special Purposes

OR

FOUN1001 English for Acad. Purposes

AND

FOUN1101 Caribbean Civilization

FOUN1301 Law, Governance and Society

SCIENCE WITH EDUCATION

LEVEL I

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

EDPS1001 Introduction to Human Development

LEVELS II & III

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

EDCU2101 Introduction to Curriculum, Theory, Planning & Practice

EDRS2201 Introduction to Research Methods

EDSO3102 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

EDTE3403 Issues in Teacher Education

AND Thirteen (13) Level II/III credits and

FOUN

FOUN1008 Rhetoric II: Special Purposes

OR

FOUN1001 English for Acad. Purposes

AND

FOUN1101 Caribbean Civilization

FOUN1301 Law, Governance and Society

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. 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

BSc Major in	***Required CAPE Passes***
Biochemistry	Biology & Chemistry
Biology [1]	Biology & Chemistry
Ecology	Biology & Chemistry
Microbiology	Biology & Chemistry
Chemistry [1]	Chemistry & another subject
Computer Science [1]	Mathematics & another subject
Information Technology (IT)	Mathematics & another subject
Mathematics [1]	Mathematics & another subject
Electronics	Mathematics & Physics or another subject
Physics	Mathematics & Physics or another subject
Meteorology	Mathematics & Physics
Engineering Physics	
BSc Options [2]	
Computer Science (or IT) & Accounting	Mathematics & another subject
Computer Science (or IT) & Management	Mathematics & another subject
Mathematics & Economics	Mathematics & another subject
Mathematics & Accounting	Mathematics & another subject
Science & Management	Mathematics & requirements as for the Science Major
Science & Psychology	Requirements as for the Science Major

[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.

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 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.

GLOSSARY TO THE REGULATIONS

TERM	***DEFINITION***
Anti-requisites	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.
Course	A body of knowledge circumscribed by a syllabus to be imparted to students by sundry teaching methods and usually followed by an examination.
Credit	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.
Cumulative GPA	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.
Discipline	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.
Elective	A course within a programme taken by choice of the student.
Faculty Courses	All courses except Foundation and Co-curricular courses.
Foundation Courses	Broad-based courses, three of which must be taken, and which provide a general foundation of knowledge.
Honours GPA	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 & 3) of the degree programme, weighted with respect to credits and to earned quality hours.
In-Faculty Courses	All Faculty courses originating in the Science Faculties.
Level	A measure of the standard of a course, designated at UWI by the first digit in the course number.

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
Level 2 and Level 3	60
Foundation courses	9
	93

(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 Cumulative 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 ***12*** credits of Level 1 courses.

13. (a) Full-time Part I students are required to register for a minimum of ***fourteen*** credits from Faculty courses and Foundation course, per semester. A student registering for less than fourteen 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 ***20*** credits in Level 1 Faculty courses. At least ***16*** 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: 35 credits over Semester I & II.

14. The maximum number of credits for which a student may register in any one semester is 20 credits, if full-time, and 13 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 ***eight*** credits may be gained through Supplementary Orals. *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.

(c) 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 during a semester 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 and 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 ***eight*** 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 ***16*** credits mentioned in (i) above arise from courses making up the candidate's major.

(iii) The Aegrotat degree will be awarded without Honours.

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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

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

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

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

a. where in concurrence with the report's identification of evidence of Level 2 plagiarism, report the matter to the Campus Registrar; or
b. where not concurring in the identification of evidence of plagiarism, reply to the examiner declining to proceed further on the report; or
c. where concluding that there is evidence of Level 1 plagiarism, reply to the examiner indicating that conclusion and the Examiner shall proceed as under Regulation 11.

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

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

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

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

a. the circumstances of the particular case;
b. the seniority of the student; and
c) whether this is the first or a repeated incidence of Level 2 plagiarism.

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

(i) awarded a fail mark;
(ii) excluded from some or all further examinations of the University for such period as it may determine;
(iii) be dismissed from the University, it shall make such recommendation to the Academic Board.

CLEARANCE ON A CHARGE OF LEVEL 2 PLAGIARISM

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

LEVEL 2 PLAGIARISM: APPEAL TO THE SENATE

21 A STUDENT MAY APPEAL TO THE SENATE FROM ANY DECISION AGAINST HIM OR HER ON A CHARGE OF PLAGIARISM MADE BY ACADEMIC BOARD.

DELEGATION BY DEAN OR HEAD OF DEPARTMENT

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

Conflict of interest disqualification

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

COURSES BY SEMESTER

SEMESTER I

PRELIMINARY

CHEM0615 Preliminary Chemistry I

BIOL0051 Biology I

YEAR I

BIOL1010 Basic Skills for Biologists

BIOL1020 Diversity of Life I

BIOL1025 Diversity of Life II

CHEM1010 Fundamentals of Chemistry

YEAR II

BIOC2351 Biochemistry I

BIOL2053 Physiology of Plants and Animals

BIOL2151 Genetics I

ECOL2451 Population Ecology

ECOL2453 Caribbean Island Biogeography

MICR2251 General Microbiology

CHEM2012 Practical Chemistry I

CHEM2100 Inorganic Chemistry I

CHEM2200 Organic Chemistry I

ERSC2001 Earth & Life

ERSC2002 Climatology

YEAR III

BIOC3251 Microbial Biochemistry

BIOC3354 Biochemistry of Human Disease

BIOL3152 Bioinformatics

ECOL3452 Behavioural Ecology

ECOL3453 Crop Ecology

MICR3253 Biology of Viruses

CHEM3100 Inorganic Chemistry II

CHEM3300 Physical Chemistry II

CHEM3415 Analytical Chemistry III

CHEM3500 Chemistry Project

CHEM3515 Environmental Chemistry

ERSC3001 Natural Hazards

SEMESTER II

PRELIMINARY

CHEM0625 Preliminary Chemistry II

BIOL0052 Biology II

YEAR I

BIOL1151 Introductory Genetics

BIOC1351 Introductory Biochemistry

CHEM1020 Introductory Chemistry

ERSC1001 Dynamic Earth

ERSC1003 Astronomy: Planets, Stars and Space

YEAR II

BIOC2352 Biochemistry II

BIOL2058 Tropical Ornamental Plants

BIOL2152 General Molecular Biology

ECOL2454 Marine Biology

ECOL2452 Community Ecology

MICR2252 Eukaryotic micro-organisms

CHEM2020 Practical Chemistry II

CHEM2300 Physical Chemistry I

CHEM2400 Analytical Chemistry I

ERSC2003 Oceanography

YEAR III

BIOC3053 Cell Signalling

BIOC3254 Biochemical Plant Pathology

BIOL3053 Developmental Physiology

ECOL3423 Coral Reef Ecology

ECOL3451 Human Ecology and Conservation

MICR3251 Food Microbiology

MICR3252 Microbial Ecology

MICR3258 Pathogenic Micro-organisms

CHEM3135 Bioinorganic Chemistry

CHEM3145 Bonding in Inorganic Chemistry

CHEM3200 Organic Chemistry II

CHEM3210 Bioorganic & Medicinal Chemistry

CHEM3500 Chemistry Project

YEAR-LONG COURSES

CHEM3505 Chemistry Research Project

BIOC3950 Biochemistry Research Project

BIOL3950 Biology Research Project

ECOL3950 Ecology Research Project

MICR3950 Microbiology 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 Biology. The Level II/III courses used for a Biology, Biochemistry, Ecology and/or Microbiology major cannot be used to simultaneously satisfy the requirements for a second biological major or a Biochemistry, Biology, Ecology or Microbiology minor.

MAJOR IN BIOCHEMISTRY: Course descriptions

LEVEL I

BIOC1015 Introduction to Biochemistry
BIOL1020 Diversity of Life I
BIOL1025 Diversity of Life II
BIOL1010 Basic Skills for Biologists
BIOL1030 Introduction to Genetics
CHEM1010 Fundamentals of Chemistry
CHEM1020 Introductory Chemistry

LEVEL II – Fourteen (14) Credits

BIOC2351 Biochemistry I
BIOC2352 Biochemistry II
BIOL2151 Genetics I
BIOL2152 General Molecular Biology

LEVEL III

BIOC3251 Microbial Biochemistry

AND Twelve (12) Credits from:

BIOC3254 Biochemical Plant Pathology
BIOC3354 Biochemistry of Human Disease
BIOC3950 Biochemistry Research Project
BIOL3152 Bioinformatics
CHEM3135 Bioinorganic Chemistry
CHEM3210 Bioorganic & Medicinal Chemistry

A Student Majoring in Biochemistry cannot also Major in Microbiology.

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

BIOC2352 Biochemistry II

AND Twelve (12) Credits from:

BIOC2351 Biochemistry I *
BIOC3053 Cell Signalling
BIOC3251 Microbial Biochemistry
BIOC3254 Biochemical Plant Pathology
BIOC3352 Biochemistry III
BIOC3354 Biochemistry of Human Disease
BIOC3950 Biochemistry Research Project
BIOL3152 Bioinformatics
CHEM3135 Bioinorganic Chemistry

* A student taking a major in Microbiology cannot use BIOC2351 or BIOC3251 to satisfy the requirements for a Biochemistry minor.

MAJOR IN BIOLOGY: Course descriptions

LEVEL I

BIOC1015 Introduction to Biochemistry
BIOL1020 Diversity of Life I
BIOL1025 Diversity of Life II
BIOL1010 Basic Skills for Biologists
BIOL1030 Introduction to Genetics

LEVELS II & III

BIOL2053 Physiology of Plants & Animals
BIOL3053 Developmental Physiology

AND

BIOL2151 Genetics I
MICR2251 General Microbiology

OR

BIOC2351 Biochemistry I
BIOC2352 Biochemistry II

OR

ECOL2451 Population Ecology
ECOL2452 Community Ecology

OR

BIOL2152 General Molecular Biology
BIOC2351 Biochemistry I

OR

MICR2251 General Microbiology
MICR2252 Eukaryotic Micro-organisms

Level II/III Electives – Sixteen (16) credits

Four (4) electives credits from:

Level II/III Biological (BIOC/BIOL/ECOL/MICR) courses

Twelve (12) elective credits from:

Level III Biological (BIOC/BIOL/ECOL/MICR) courses

AND Twelve (12) Credits from:

BIOC3053 Cell Signaling
BIOC3251 Microbial Biochemistry
BIOC3254 Biochemical Plant Pathology
BIOC3352 Biochemistry III
BIOC3354 Biochemistry of Human Disease
BIOC3950 Biochemistry Research Project
BIOL3023 Coral Reef Biology
BIOL3152 Bioinformatics
BIOL3950 Biology Research Project
ECOL3423 Coral Reef Ecology
ECOL3451 Human Ecology and Conservation
ECOL3452 Behavioural Ecology
ECOL3453 Crop Ecology
ECOL3454 Fisheries Biology
ECOL3950 Ecology Research Project
MICR3059 Immunobiology
MICR3251 Food Microbiology
MICR3252 Microbial Ecology
MICR3253 Biology of Viruses
MICR3258 Pathogenic Micro-organisms
MICR3950 Microbiology Research Project

AND Four (4) Credits from:

BIOC2351 Biochemistry I
BIOC2352 Biochemistry II
BIOL2050 Sustainability and Land Use
BIOL2055 Bio Processing and Tropical Energy
BIOL2058 Tropical Ornamental Plants
BIOL2151 Genetics I
BIOL2152 General Molecular Biology
BIOC3251 Microbial Biochemistry
BIOC3254 Biochemical Plant Pathology
BIOC3352 Biochemistry III
BIOC3354 Biochemistry of Human Disease
BIOL3053 Developmental Physiology
BIOL3152 Bioinformatics
BIOL3900 Interdisciplinary Project
ECOL2454 Marine Biology
ECOL3423 Coral Reef Ecology
ECOL3451 Human Ecology and Conservation
ECOL3452 Behavioural Ecology
ECOL3453 Crop Ecology
ECOL3454 Fisheries Biology
MICR3059 Immunobiology
MICR3251 Food Microbiology
MICR3252 Microbial Ecology
MICR3253 Biology of Viruses
MICR3258 Pathogenic Micro-organisms

DOUBLE MAJOR IN BIOLOGY: Course descriptions

LEVEL I

BIOC1015 Introduction to Biochemistry
BIOL1020 Diversity of Life I
BIOL1025 Diversity of Life II
BIOL1010 Basic Skills for Biologists
BIOL1030 Introduction to Genetics

LEVELS II & III

BIOL2053 Physiology of Plants & Animals
BIOL3053 Developmental Physiology

AND

BIOL2151 Genetics I
MICR2251 General Microbiology

OR

BIOC2351 Biochemistry I
BIOC2352 Biochemistry II

OR

ECOL2451 Population Ecology
ECOL2452 Community Ecology

OR

BIOC2351 Biochemistry I
BIOL2152 General Molecular Biology

OR

MICR2251 General Microbiology
MICR2252 Eukaryotic Micro-organisms

AND Eight (8) Credits from:

BIOC3950 Biochemistry Research Project
BIOL3950 Biology Research Project
ECOL3950 Ecology Research Project
MICR3950 Microbiology Research Project

AND Forty (40) Credits from:

BIOC2351 Biochemistry I
BIOC2352 Biochemistry II
BIOL2050 Sustainability and Land Use
BIOL2055 Bio Processing and Tropical Energy
BIOL2058 Tropical Ornamental Plants
BIOL2151 Genetics I
BIOL2152 General Molecular Biology
BIOL2950 Biology Elective
ECOL2055 Horticulture
ECOL2451 Population Ecology
ECOL2452 Community Ecology
ECOL2453 Caribbean Island Biogeography
ECOL2454 Marine Biology
MICR2251 General Microbiology
MICR2252 Eukaryotic Micro-organisms
BIOC3053 Cell Signalling
BIOC3251 Microbial Biochemistry
BIOC3254 Biochemical Plant Pathology
BIOC3352 Biochemistry III
BIOC3354 Biochemistry of Human Disease
BIOL3152 Bioinformatics
BIOL3900 Interdisciplinary Project
ECOL3423 Coral Reef Ecology
ECOL3451 Human Ecology and Conservation
ECOL3452 Behavioural Ecology
ECOL3453 Crop Ecology
ECOL3454 Fisheries Biology
MICR3059 Immunobiology
MICR3251 Food Microbiology
MICR3252 Microbial Ecology
MICR3253 Biology of Viruses
MICR3258 Pathogenic Micro-organisms

***MINOR IN BIOLOGY** [Sixteen (16) Credits]*: Course descriptions

BIOL2053 Physiology of Plants & Animals
BIOL3053 Developmental Physiology

AND Eight (8) Credits from:

BIOC2351 Biochemistry I
BIOC2352 Biochemistry II
BIOL2058 Tropical Ornamental Plants
BIOL2151 Genetics I
BIOL2152 General Molecular Biology
BIOL2950 Biology Elective
ECOL2055 Horticulture
ECOL2451 Population Ecology
ECOL2452 Community Ecology
ECOL2453 Caribbean Island Biogeography
ECOL2454 Marine Biology
MICR2251 General Microbiology
MICR2252 Eukaryotic Micro-organisms
BIOC3053 Cell Signalling
BIOC3251 Microbial Biochemistry
BIOC3254 Biochemical Plant pathology
BIOC3352 Biochemistry III
BIOC3354 Biochemistry of Human Disease
BIOL3023 Coral Reef Biology
BIOL3053 Developmental Physiology
BIOL3152 Bioinformatics
ECOL3451 Human Ecology and Conservation
ECOL3452 Behavioural Ecology
ECOL3453 Crop Ecology
ECOL3454 Fisheries Biology
MICR3059 Immunobiology
MICR3251 Food Microbiology
MICR3252 Microbial Ecology
MICR3253 Biology of Viruses
MICR3258 Pathogenic Micro-organisms

MAJOR IN ECOLOGY: Course descriptions

LEVEL I

BIOC1015 Introductory to Biochemistry

BIOL1020 Diversity of Life I

BIOL1025 Diversity of Life II

BIOL1010 Basic Skills for Biologists

BIOL1030 Introduction to Genetics

LEVEL II

ECOL2451 Population Ecology

ECOL2452 Community Ecology

ECOL2453 Caribbean Island Biogeography

AND

ECOL2055 Horticulture

OR

ECOL2454 Marine Biology

LEVEL III

ECOL3451 Human Ecology and Conservation

AND Twelve (12) Credits from:

ECOL3423 Coral Reef Ecology

ECOL3452 Behavioural Ecology

ECOL3453 Crop Ecology

ECOL3454 Fisheries Biology

ECOL3950 Ecology Research Project

MICR3252 Microbial Ecology

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

ECOL2451 Population Ecology

ECOL2452 Community Ecology

ECOL2453 Caribbean Island Biogeography

AND

ECOL2055 Horticulture

OR

ECOL2454 Marine Biology

MAJOR IN MICROBIOLOGY: Course descriptions

LEVEL I

BIOC1351 Introductory Biochemistry
BIOL1020 Diversity of Life I
BIOL1025 Diversity of Life II
BIOL1151 Introductory Genetics

LEVEL II

BIOC2351 Biochemistry I
BIOL2152 General Molecular Biology
MICR2251 General Microbiology
MICR2252 Eukaryotic Micro-organisms

LEVEL III

BIOC3251 Microbial Biochemistry
MICR3252 Microbial Ecology

AND Eight (8) Credits from:

BIOC3254 Biochemical Plant Pathology
MICR3059 Immunobiology
MICR3251 Food Microbiology
MICR3253 Biology of Viruses
MICR3258 Pathogenic Micro-organisms
MICR3950 Microbiology Research Project

A student taking a Major in Microbiology cannot also Major in Biochemistry

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

MICR2251 General Microbiology
MICR2252 Eukaryotic Micro-organisms

AND Eight (8) Credits from:

BIOC3251 Microbial Biochemistry
BIOC3254 Biochemical Plant Pathology
MICR3059 Immunobiology
MICR3251 Food Microbiology
MICR3252 Microbial Ecology
MICR3253 Biology of Viruses
MICR3258 Pathogenic Micro-organisms
MICR3950 Microbiology Research Project

CHEMICAL SCIENCES

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

MAJOR IN CHEMISTRY: Course descriptions

LEVEL I

CHEM1010 Fundamentals of Chemistry

CHEM1020 Introductory Chemistry

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

CHEM3500 Chemistry Project (4 credits)

OR

CHEM3505 Chemistry Research Project (8 credits)

(with special permission)

AND Eight (8) Credits from:

CHEM3100 Inorganic Chemistry II

CHEM3200 Organic Chemistry II

CHEM3300 Physical Chemistry II

MINOR IN CHEMISTRY (Sixteen (16) Credits): Course descriptions

CHEM2010 Practical Chemistry I (2 credits)

CHEM2020 Practical Chemistry II (2 credits)

CHEM2100 Inorganic Chemistry I

CHEM2200 Organic Chemistry I

CHEM2300 Physical Chemistry I

DOUBLE MAJOR IN CHEMISTRY: Course descriptions

LEVEL I

CHEM1010 Fundamentals of Chemistry

CHEM1020 Introductory Chemistry

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 Four (4) Credits From:

BIOC2351 Biochemistry I

ERSC2004 Renewable Energy Sources

EARTH SCIENCES

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

MINOR IN EARTH SCIENCES: Course descriptions

ERSC1001 Dynamic Earth
METE1200 (ERSC1002) Oceans & Climate

AND Sixteen (16) credits from:
ERSC2001 Earth & Life
ERSC2002 Climatology
ERSC2003 Oceanography
ERSC2004 Renewable Energy Sources
ERSC3001 Natural Hazards
ERSC3002 Climate Variability & Predictability
ERSC3900 Earth Science Research Project
ERSC3910 Sustainable Energy Research Internship

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

BIOL0051 - 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. ***Reproduction Systems:*** examples of bacterial and fungal reproduction and viral replication.Angiosperm sexual and asexual reproduction. Human reproduction.

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%

BIOL0052 - BIOLOGY II (6 CREDITS)

Pre-requisite: None

Syllabus: The organism and the environment: Acquisition of energy - autotrophic, holozoic, 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

Syllabus: Water and acid/base chemistry: properties of water and aqueous solutions, ionization of water, weak acids and bases, buffers, Henderson-Hasselbach equation. Structure and function of biological molecules: lipids, carbohydrates, amino acids and proteins. Cell biology: structure and function of bacterial, plant and animal cells, and membrane transport. Cell fractionation: differential and sucrose centrifugation. Thermodynamics/bioenergetics: free energy, energy changes in redox reactions, ATP, substrate-level phosphorylation. Electron transport-based phosphorylation: oxidative phosphorylation in mitochondria, photophosphorylation in chloroplasts, chemiosmotic theory. Biochemical techniques: chromatography, electrophoresis. Carbohydrate metabolism: glycolysis and TCA cycle.

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%

BIOL1010 - BASIC SKILLS FOR BIOLOGISTS (2 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

Restrictions: Restricted to students majoring in Biochemistry, Biology, Ecology or Microbiology

Syllabus: Scientific enquiry, data handling and simple statistics: The scientific method. Developing a research plan. Simple experimental design. Categorical and continuous variables. Mode, median, mean, range, quartiles, variance and standard deviation. Hypothesis testing using P-values and confidence intervals. Data handling and graph preparation in Excel. Excel applications useful for descriptive statistics. Dealing with numbers and simple mathematical relationships: The rules of exponents and logarithms and simple calculations involving these. Linear and non–linear functions. Deviations from the expected with experimental data. Appropriate graphical representation. Determination of a line of best fit Scientific writing: The format of scientific reporting- Abstract, Introduction, Material and Methods, Results, Discussion, References. Using library resources (including academic search engines) to find information. Citing and referencing sources. Understanding plagiarism. Use of text matching software, e.g. Turnitin.

Teaching: 12 lecture/tutorials (1h each) and 12 practical sessions (2h each).

Method of Examination:

Coursework tests & assignments	100%

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 and CSEC Biology

Anti-requisite: BIOL1051 Biodiversity I

Syllabus: Evolution: Evolutionary theories, mechanisms. The fossil record. Ecology: Introduction to ecology. Major terrestrial and aquatic ecosystems. Trophic structure, energy flow and nutrient cycling in ecosystems. The biodiversity concept. Two-species interactions. Classification: Cataloguing biodiversity. Principles of classification and taxonomy. Microbial diversity: Microscopy: theoretical and practical aspects. *Bacteria*, *Archaea*, eukaryotic microorganisms, viruses. Plant diversity: What is a plant? Green algae: diversity of form, life cycles and sexual reproduction. Mosses & liverworts: key features, life cycle, spore dispersal mechanisms. Ferns & Fern allies: key features, life cycles. Evolution of seeds. Cycads & conifers: key features, life cycles. Angiosperms: unique attributes, floral trends, adaptations.

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 and CSEC Biology

Anti-requisite: BIOL1052 Biodiversity II

Syllabus: Sponges – cell aggregate body plan; filter feeding. Cnidarians and ctenophores - diploblastic, blind sac, radially symmetrical body plan; polymorphism. Flatworms – acoelomate, triploblastic, bilaterally symmetrical blind sac body plan; comparison of parasitic and free-living. Nematodes and rotifers – pseudocoelomate tube-within-a-tube body plan; eutely; parthenogenesis; life cycles. Molluscs – soft-bodied coelomates with a shell; adaptive radiation. Annelids – segmented worms. Arthropods - factors responsible for their success. Echinoderms – their unique features. The invertebrate chordates. Fish - evolution of bone, jaws and paired fins; adaptations to life in water. Amphibians - challenges to life on land and how these were met. Amniotes – the amniote egg; comparisons of amniote integuments. Birds – adaptations for flight. Mammals - reproductive patterns.

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 and CSEC Biology

Anti-requisite: BIOL1151 Introductory Genetics

Syllabus: Heredity: Mendelism, epistasis and linkage. The Nature of the Genetic Material: Experimental evidence implicating the nucleic acids. DNA structure - experimental evidence & theory. DNA conformation. Organisation of eukaryotic chromatin. DNA Replication and Assortment: Semi-conservative replication. Modes of replication. The cell cycle. Mitosis and meiosis. The Genetic Material as an Information Carrier: The Central Dogma. Colinearity. Transcription and translation in prokaryotes & eukaryotes. Gene, chromosomal and genomic mutation. Population Genetics: Gene pools; Transmission of genes between generations; Hardy-Weinberg (2 and 3 alleles); Selection pressures; selection against a recessive allele; mutation and migration. Molecular Biology: Restriction enzymes, RFLP.

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

BIOC2351 - BIOCHEMISTRY I (4 CREDITS)

Pre-Requisites: BIOC1015 Introductory to Biochemistry or BIOC1351 Introductory Biochemistry and CHEM0625 Preliminary Chemistry II

Syllabus: Enzymes: Enzyme kinetics. Catalytic mechanisms. Use of kinetics to elucidate catalytic mechanisms. Models of allosteric enzymes. Regulation of enzyme activity. Vitamins: Structure and activity of watersoluble and lipid-soluble vitamins. Carbohydrate Metabolism: Metabolic pathways and their regulation including glycolysis, tricarboxylic acid cycle, gluconeogenesis, biosynthesis of polysaccharides, glyoxylate pathway and pentose phosphate pathway. Dark reactions of photosynthesis. Lipid Metabolism: Metabolic pathways and their regulation - β-oxidation, fatty acid biosynthesis. Biological membranes and transport. Nitrogen Metabolism: Overview of amino acid catabolism and biosynthesis.Urea cycle. Nitrogen fixation. Amino acids as biosynthetic precursors. Nucleic Acids: DNA replication. Protein synthesis. Regulation of prokaryotic gene expression.

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

Method of Examination:

Theory: Final Examination (3 hours)	60%
Theory: In-course test(s) and assignments	20%
Practical: reports	20%

BIOC2352 - BIOCHEMISTRY II (4 CREDITS)

Pre-requisite: BIOC2351 Biochemistry I

Syllabus: Metabolic regulation: Regulatory enzymes, control of enzyme activity. Hormonal regulation of Mammalian metabolism. Chemical classes of hormones. Molecular aspects of hormonal signal transduction. Integration of metabolic regulation. Regulation of fuel metabolism. Biochemical Methods: Molecular spectroscopic methods. Infrared, Raman, NMR, fluorescence UV-vis, circular dichroism. Mass Spectroscopic methods. Review of electrophoresis. Chromatographic methods. Radiotracer methods. Electrochemistry and sensors. Enzymatic methods. Toxicology: Overview of toxicology. Environmental

toxicology. Biological fate of pesticides and other potential environmental pollutants. Regulatory concerns. Metabolism and toxicology of xenobiotics, including pharmacologicals and food additives.

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

Method of Examination:

Theory: Final Examination (3 hours)	60%
Theory: In-course test(s)/ assignments	20%
Practical: reports	20%

BIOC2950 - BIOCHEMISTRY ELECTIVE (4 CREDITS)

Pre-requisites: None

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

BIOL 2050 - SUSTAINABILITY AND LAND USE (4 CREDITS)

Pre-requisite: Permission of Department

Syllabus: Land resources and environmental constraints to sustainable forage production in the tropics ; Presentation of the main tropical forage grass and legume species; Sustainable forage production systems in the tropics; Conservation of forages in the tropics ; Plant-herbivore interactions; Measurement of forage biomass and determination of botanical composition of pastures ; Assessment of grassland and pasture condition Evaluation of forage species and cultivars; Measurement of chemical composition and nutritive value of tropical forages ; Measurement of animal performance.

Teaching: The course will be taught over four weeks, with three 3-hour lectures and/or discussions and three laboratory/field trips per week. The theory and practical components of the course are integrated. Practical work will be conducted in the lab and/or in the field.

Method of Examination:

Method of Weekly quizzes	20%
Examination Oral presentation	30%
Final Examination (2 hours)	50%

BIOL2053 - PHYSIOLOGY OF PLANTS & ANIMALS (4 CREDITS)

Pre-requisites: BIOL1020 – Diversity of Life II or BIOL1052 Biodiversity II and
BIOC1015 Introductory to Biochemistry or BIOC1351Introductory Biochemistry

Syllabus: Plants: Functional anatomy of flowering plants. Water relations, mineral nutrition, transpiration, gas exchange. Photosynthesis and translocation. Animals: Physiological processes in animals. Circulation, gas exchange, osmotic regulation, acquisition of energy, thermoregulation.

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

Method of Examination:

Theory: Final Examination (3 hours)	70%
Theory: In-course test(s)/ assignments	10%
Practical: reports	20%

BIOL2055 - BIOPROCESSING AND TROPICAL ENERGY (4 CREDITS)

Pre-requisite: Permission of Department

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 bioproducts. Characterisation of raw material and products for biotechnological conversion; Utilisation of food residues for the production of bioproducts including sugars, antibiotics, amino acids, peptides; Bioprocessing for production of drug therapeutics, nutraceuticals and functional foods; The importance of potency for bioproducts, and its evaluation with a biological functioning bioassay.

Teaching: The course will be taught over four weeks, with three 3-hour lectures and/or discussions and three laboratory/field trips per week. The theory and practical components of the course are integrated. Practical work will be conducted in the lab and/or in the field.

Method of Examination:

Method of Weekly quizzes	20%
Examination: Oral presentation	30%
Final Examination (2 hours)	50%

BIOL2057 - BIOLOGY FIELD COURSE (2 CREDITS)

Pre-requisites: BIOL1020 Diversity of Life I or BIOL1051 Biodiversity I and
BIOL1025 Diversity of Life II or BIOL1052 Biodiversity II

Syllabus: A practical introduction to Caribbean flora and fauna, including the use of ecological methods.

Teaching: A five day residential course on a Caribbean island.

Method of Examination:

An assessment of the student's field note book	100%

BIOL2058 - TROPICAL ORNAMENTAL PLANTS (4 CREDITS)

Pre-requisites: BIOL1020 Diversity of Life I or BIOL1051 Biodiversity I and
BIOL1025 Diversity of Life II or BIOL1052 Biodiversity II

Syllabus: This course is a survey of tropical ornamental plants and their families. Students will learn the identification, horticultural classification, cultural requirements and best horticultural use of the cultivated garden flora. Cultivated, domesticated and wild plants will be compared. Morphological features necessary for plant identification will be taught.

Note: Field sessions will occur at Andromeda Botanic Gardens and other sites of horticultural interest around Barbados.

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

Method of Examination:

Theory: Final Examination (2 hours)	33%
Theory: Learning log	33%
Practical Examination	34%

BIOL2151 - GENETICS I (4 credits)

Pre-requisites: BIOC1015 Introduction to Biochemistry or BIOC1351Introductory Biochemistry and BIOL1030 Introduction to Genetics or BIOL1151 Introductory Genetics

Syllabus: Gene structure and expression: Themodern concept of the gene in prokaryotes and eukaryotes. Transcription and processing of RNA. Genome organisation: In prokaryotes and eukaryotes. Extranuclear genomes. Genetic mutation: Isolation and analysis of mutants. Mutagens. DNA repair. Transmission genetics: Mendelian principles. Linkage and recombination. Lysis, lysogeny and crossing in bacteriophages. Conjugation. Transduction and transformation in bacteria. Sexual and parasexual

analyses in fungi. Genetic analysis in higher eukaryotes. Maternal effects and extranuclear genetics. Genetic recombination: Breakage and reunion. Models for generalized recombination and gene conversion. Sitespecific recombination. Transposons.

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

Method of Examination:

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

BIOL2152 - GENERAL MOLECULAR BIOLOGY (4 CREDITS)

Pre-requisite: BIOL1030 Introduction to Genetics or BIOL1151 Introductory Genetics

Syllabus: Isolation and analysis of nucleic acids and proteins: Isolation methods. Detection and quantification of DNA, RNA and proteins. Electrophoretic techniques. Restriction and modification systems. Restriction endonucleases. Physical mapping. Hybridisation techniques. Sequencing. Genetic manipulation: Plasmid and bacteriophage doning vectors. Cloning strategies. Gene libraries. Gene transfer systems. In vitro mutagenesis. Gene Expression: Promoter-probe plasmids. Expression vectors. In situ Hybridization and Immunofluorescent detection methods. In vitro translation.

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

Method of Examination:

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

BIOL2950 BIOLOGY ELECTIVE (4 CREDITS)

Pre-requisites: None

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

ECOL2055 - HORTICULTURE (4 CREDITS)

Pre-requisites: BIOL1020 Diversity of Life I or BIOL1051 Biodiversity I and
BIOL1025 Diversity of Life II or BIOL1052 Biodiversity II

Syllabus: Horticulture is reviewed from a scientific base, exploring the environmental, genetic and cultural manipulation of plants for food (fruits and vegetables), pleasure (ornamentals) and recreation (turf). Sessions begin with a brief survey of horticulture and its significance locally and worldwide. These progress to study representative plant groups through stagesin plant production, from propagation to growth through development both of the whole plant and of the population. In lectures, tutorials and practicals, plant responses to variations in soil / substrate type, water, minerals, light temperature, genotype and the presence of other organisms (pest, diseases and weeds) as well as spacing, pruning and imposed stress will be considered. Methods for analysing plant productivity in terms of quality and quantity are introduced and discussed.

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

Method of Examination:

Theory: Final Examination (2 hours)	50%
Theory: Tutorial essays, case studies, presentations	30%
Practical: reports	20%

ECOL2451 - POPULATION ECOLOGY (4 CREDITS)

Pre-requisites: BIOL1020 Diversity of Life I or BIOL1051 Biodiversity I and BIOL1025 Diversity of Life II or BIOL1052 Biodiversity II

Syllabus: Evolution; Population demography and regulation; Life history strategies; Dispersal and migration; Habitat and habitat selection; Quantitative ecological methods.

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

Method of Examination:

Theory: Final Examination (3 hours)	70%
Theory: Project report/Essay	30%

ECOL2452 - COMMUNITY ECOLOGY (4 CREDITS)

Pre-requisite: ECOL2451 Population Ecology

Syllabus: Species interactions within communities; Community structure and function; Community patterns and processes; Quantitative ecological methods.

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

Method of Examination:

Theory: Final Examination (3 hours)	70%
Theory: Project report/Essay	30%

ECOL2453 - CARIBBEAN ISLAND BIOGEOGRAPHY (4 CREDITS)

Pre-requisites: BIOL1020 Diversity of Life I or BIOL1051 Biodiversity I and BIOL1025 Diversity of Life II or BIOL1052 Biodiversity II

Syllabus: Plate tectonics, island formation and Caribbean geology. Climate patterns (past and present). Equilibrium theory of island biogeography. Species turnover. Taxon cycle. The major habitat types found in the Caribbean - location, structure, anthropogenic influences and typical species. Reviews of distribution, evolution and ecology of selected.

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

Method of Examination:

Theory: Final Examination (3 hours)	50%
Theory: Mid-term test	10%
Field Notebook	40%

ECOL2454 - MARINE BIOLOGY (4 CREDITS)

Pre-requisite: ECOL2451 Population Ecology.

Syllabus: Basic oceanography - tidal cycles, waves, ocean circulation and seawater chemistry. Global distributions, zonation and adaptations of sublittoral, intertidal planktonic, nektonic and deep sea organisms. Sampling techniques.

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

Method of Examination:

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

ECOL2950 - ECOLOGY ELECTIVE (4 CREDITS)

Pre-requisites: None

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

MICR2251 - GENERAL MICROBIOLOGY (4 CREDITS)

Pre-requisites: BIOL1020 Diversity of Life I or BIOL1051 Biodiversity I and
BIOC1015 Introduction to Biochemistry or BIOC1351 Introductory Biochemistry

Syllabus: This course is an introduction to microorganisms: Bacteria, Archaea, Algae, Fungi, Protozoa and Viruses. Topics presented include: the structure and function of microorganisms, microbial reproduction, physiology, taxonomy, behaviour and ecology. Techniques for the isolation, cultivation, enumeration and control of microorganisms are introduced. Some aspects of applied microbiology are covered.

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%

MICR2252 – EUKARYOTIC MICROORGANISMS (4 CREDITS)

Pre-requisite: MICR2251 General Microbiology

Syllabus: An introduction to the biology of the eukaryotic microorganisms: algae, fungi, and protists. Structure and function, reproduction, physiology, behaviour, and ecology.

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%

MICR2950 MICROBIOLOGY ELECTIVE (4 CREDITS)

Pre-requisites: None

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

LEVEL III BIOLOGICAL COURSES

BIOC3053 - CELL SIGNALLING (4 CREDITS)

Pre-requisite: BIOL2152 General Molecular Biology.

Syllabus: Intracellular signalling: ion fluxes and electrical fields, establishment of cell polarity. Intercellular signalling: Chemical messengers in "lower" organisms. The evolution of hormones. General aspects of hormone action. Animal systems: signal transduction by G proteins. Steroid hormone action. Plant systems: the molecular basis of plant hormone action.

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%

BIOC3251 - MICROBIAL BIOCHEMISTRY (4 CREDITS)

Pre-requisite: BIOC2351 Biochemistry I.

Syllabus: Alternatives to the glycolytic pathway for sugar metabolism in micro-organisms. Fermentation; diversity of products in bacteria. Bacterial phosphoenolpyruvate: sugar phosphotransferase system. Glyoxylate cycle. Anaplerotic pathways unique to microorganisms. Anoxygenic photosynthesis. Lithotrophy. Anerobic respiration. Nitrogen fixation. Regulation of activities and cellular levels of microbial enzymes.

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

Method of Examination:

Theory: Final Examination (3 hours)	60%
Theory: In-course Test(s)/Assignment(s)	10%
Practical: reports	30%

BIOC3254 - BIOCHEMICAL PLANT PATHOLOGY (4 CREDITS)

Pre-requisites: MICR2251 General Microbiology or BIOL2152 General Molecular Biology.

Syllabus: Penetration of plants by pathogens. Role of pathogen-produced cell-wall degrading Enzymes and toxins in pathogenesis. Disease-induced changes in host metabolism and Physiology. Growth regulator imbalance in plant diseases. Crown gall tumor formation. Mechanisms of disease resistance. Specificity of plant-pathogeninter-actions.

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, 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%

BIOL3053 - DEVELOPMENTAL PHYSIOLOGY (4 CREDITS)

Prerequisite: BIOL 2053 Physiology of Plants & Animals

Syllabus: Plants: Internal and external regulation of flowering plant growth and development including phytohormones. Animals: Human growth and development. Reproduction. Overview of prenatal and postnatal development. Integrative systems. In depth analysis of selected processes in plant and animal development.

Teaching: Two one-hour lectures, one tutorial 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%

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:

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

BIOL3900 - INTERDISCIPLINARY PROJECT (8 CREDITS)

Pre-requisite: Permission of Department

Syllabus: Topics that address real-world problems related to food, nutrition or energy at the local, regional or international level. Suggestions for specific topics may be considered from students and others, subject to the Department being able to provide appropriate supervision in the chosen field of research.

Teaching: The course will be taught over 14 weeks: 2 hours/day for 13 weeks and 5 days/week for one week. The final report and oral presentation is due in the final week (week 14) of the course.

Method of Examination:

Method of Written proposal plus an interim report (written and oral presentation)	20%
Final report and illustrated summary (written and oral presentation)	80%

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, 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%

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 inter actions, 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: ECOL2451 Population Ecology and ECOL2452 Community Ecology.

Syllabus: Human population growth – Historical trends, the momentum of population growth, population projections, carrying capacity. Conservation - Conservation as sustainable exploitation of natural resources. Conservation as avoidance of environmental deterioration. Caribbean case studies of pollutants and land use and coastal zone practices as sources of environmental deterioration. Global trends in environmental deterioration. Conservation as maintenance of biological diversity - endangered habitats, endangered species.

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: ECOL2451 Population Ecology and ECOL2452 Community Ecology

Syllabus: Environmental and genetic effects on behaviour. Individual and group selection. Group living and social systems. Territoriality and dominance hierarchies. Kin and reciprocal altruism. Contest behaviour and evolutionary stable strategies. Mate choice and sexual selection. Parent-offspring conflict. Interspecific comparisons of parental investment.

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%
Project report	20%
Essay	20%

ECOL3454 - FISHERIES BIOLOGY (4 CREDITS)

Pre-requisites: ECOL2451 Population Ecology, ECOL2452 Community Ecology and ECOL2454 Marine Biology

Syllabus: Global trends in fisheries yields and consumption patterns. Caribbean fisheries and current legislation. Methods for determining stock structure, migration and stock abundance. Indices of abundance. Stock dynamics, Stock-recruitment relationships. Surplus production and yield per recruit models for predicting fishery yields.

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%

ECOL3950 - ECOLOGY RESEARCH PROJECT (8 CREDITS)

Pre-requisites: ECOL2451 Population Ecology, ECOL2452 Community Ecology and
ECOL2453 Caribbean Island Biogeography

Restrictions: Not to be taken with BIOL3950 Biology Research 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%

MICR3059 - IMMUNOBIOLOGY (4 CREDITS)

Pre-requisites: BIOC1015 Introduction to Biochemistry or BIOC1351 Introductory Biochemistry and BIOL2151 Genetics I

Syllabus: The mammalian immune system. Cells and organs involved in the immune response. Cell biology of phagocytosis. Structure and functions of the immunoglobulins. Phylogeny of the immune system. Immunoprophylaxis.

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

Method of Examination:

Final Examination (3 hours)	80%
In-course Test(s)/Assignment(s)	20%

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 intoxications.

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

Syllabus: Ecology and evolution. Ecology of individuals. Microbial population and community ecology. Biofilms. Biogeochemical cycles. Species interactions.

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

Syllabus: The nature of viruses. Structure of viruses. Viroids. Prions. Medical virology – viral diseases of humans, mode of transmission, symptoms, pathogenesis,control measures, vaccination, antiviral drugs, 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

Syllabus: The normal microbial flora of the human body. Opportunistic infections. The pathogenesis of infectious diseases. Special properties of pathogenic micro-organisms. Virulence determinants - aggressins, impedins. Identification of pathogenic microbes and laboratory diagnosis of infectious diseases. Epidemiology and control of infections. Principles of anti-microbial chemotherapy.

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 BIOC3950 Biochemistry Research Project, BIOL3950 Biology Research Project, ECOL3950 Ecology or CHEM3505 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:

Project report	70%
Seminar	15%
Supervisor assessment	15%

CHEMISTRY COURSES

PRELIMINARY CHEMISTRY COURSES

CHEM0615 - PRELIMINARY CHEMISTRY I (6 CREDITS)

Pre-requisite: None

Corequisite: CHEM0625 Preliminary Chemistry II or equivalent.

Syllabus: A course of about 39 lectures, associated tutorials and a maximum of 39 hours of laboratory work on the Fundamentals of Chemistry and Physical Chemistry. ***Fundamentals of Chemistry***: Review of basic concepts and definitions. The mole concept and its applications. Chemical equations and stoichiometry. Atomic theory of matter. Electron configuration of the elements: The periodic Table. Properties of isolated atoms. Energetics of bond formation. Bonding in covalent molecule: hybridization, valence bond theory and Valence Shell Electron Pair Repulsion (VSEPR) Theory. Classification of bonds. Interactions between molecules. ***Physical Chemistry:*** Properties of gases and solutions. Energy changes and chemical bonds. Hess's law and its applications. Bond dissociation energies. Bomb calorimetry. Dynamic and Ionic Equilibria. Buffers. Solubility Product. Kinetics. Principles of electrochemistry.

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%

CHEM0625 - PRELIMINARY CHEMISTRY II (6 CREDITS)

Pre-requisite: None

Co-requisite: CHEM0615 (Preliminary Chemistry I) or its equivalent.

Syllabus: A course of about 39 lectures, associated tutorials and a maximum of 39 hours o flaboratory work on elementary Organic Chemistry and Inorganic Chemistry. **Organic Chemistry*:*** Structures, formulae and nomenclature of organic compounds. Introduction to reaction mechanisms. Functional groups and their reactions: hydrocarbons, halides, alcohols, amines, carbonyl compounds, carboxylic acids and their derivatives, including aliphatic and aromatic systems. Polymers. **Inorganic Chemistry*:*** Periodicity. Propeties and reaction of main group elements and their compounds: hydrogen, Group 1 and 2, Al, C and Si, N and P, O and S and the halogens. First row transition metals and coordination complexes. Rusting. Industrial processes and environmental considerations.

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

CHEM1010 - FUNDAMENTALS OF CHEMISTRY (6 CREDITS)

Pre-requisite: CHEM0615 Preliminary Chemistry I and CHEM0625 Preliminary Chemistry II, or
CAPE Chemistry Units 1 & 2, or equivalent.

Syllabus: This course seeks to provide the student with knowledge of the fundamental principles of chemistry with an emphasis on atomic and molecular structures and properties. Introduction to the chemical kinetics, electrochemistry, fundamentals of spectroscopy and organic chemistry will also be explored. The student will also be introduced to fundamental laboratory techniques required in the Organic, Inorganic and Analytical sub-disciplines.

Teaching: Three lectures, one tutorial and four 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%

CHEM1020 - INTRODUCTORY CHEMISTRY (6 CREDITS)

Pre-requisite: CHEM0615 Preliminary Chemistry I and CHEM0625 Preliminary Chemistry II, or CAPE Chemistry Units 1 & 2, or equivalent.

Syllabus: The second half of this course covers three disciplines of chemistry - Inorganic, Organic and Physical and pesents introductory information on structures, nomenclature, properties, and reactions of monofunctional and poly functional carbon bases compounds; the chemistry of the main group and transition elements; thermodynamics, energetic and the packing arrangements of ionic strutures. Additionally, students will become acquainted with the industrial and commercial applicability of certain elements and their compounds.

Teaching: Three lectures, one tutorial and four 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 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 andCHEM1020 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 d- 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. **Stereochemistry*:*** Stereoisomerism and chirality. Fischer convention. Conformation and stereochemistry of ring compounds. Dynamic stereochemistry. Spectroscopy: The application of spectroscopic techniques in elucidating the structures

of organic molecules. **Aromatics*:*** Aromatic and heteroaromatic chemistry. Electrophilic and nucleophilic substitution. Polynuclear aromatic hydrocarbons (PAH's). Radical halogenations and oxidation of alkyl benzenes. **Synthesis*:*** Principles of organic synthesis: carbanions and their use in carbon-carbon bond formation. Organometallic reagents in organic synthesis.

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: methodology and sampling; statistical methods; the use of spectroscopic, electrochemical, and chromatographic techniques.

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%

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 sodium, potassium and chlorine. The chemistry of thallium, lead and chromium, 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

Syllabus: Laws of groups and their application to symmetry elements and symmetry operations, character tables, irreducible and reducible representations, LGO/MO approach to bonding in small molecules including examples with pi bonding and with bridging atoms and transition metal complexes. Applications of group theory to spectroscopy. Bonding dissociation energies. Electronegativity and its effects, Van Arkel- Ketalaar bond triangle. Use of d-orbitals in bonding by main group elements. Charge distribution in molecules and complex ions: methods of calculation. Group electronegativities.

Teaching: Three lectures and one two-hour 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:

Final Examination (3 hours)	60%
In-course test(s)/Assignment(s)	20%
Weekly assignments	10%
Presentations	10%

CHEM3210 - BIOORGANIC & MEDICINAL CHEMISTRY (4 CREDITS)

Pre-requisites: CHEM2200 Organic Chemistry I or CHEM2215 Basic Organic Chemistry
Restrictions: Not available to persons who have passedCHEM3225 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:

Final Examination (2 hours)	60%
In-course test(s)/Quizzes	20%
In-course assignments	20%

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 three hour practicals 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)

Pre-requisites: CHEM2100 Inorganic Chemistry I, CHEM2200 Organic Chemistry I, CHEM2300 Physical Chemistry I, CHEM2400 Analytical Chemistry I, CHEM2010 Practical Chemistry I and CHEM2020 Practical Chemistry II

Restriction: Not to be taken with CHEM3505 Chemistry Research Project

Syllabus: The course consists of a research project carried out under the supervison 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)

Pre-requisites: CHEM2100 Inorganic Chemistry I, CHEM2200 Organic Chemistry I, CHEM2300 Physical Chemistry I, CHEM2400 Analytical Chemistry I, CHEM2010 Practical Chemistry I and CHEM2020 Practical Chemistry II

Restrictions: 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

Syllabus: **The atmosphere**: Regions of the atmosphere, reactions and properties. Stratospheric chemistry - ozone formation and turnover. Tropospheric chemistry - smog, otochemical smog, exhaust gases, precipitation, composition of rain, acid rain. Atmospheric aerosols. Urban pollution, indoor air pollution. The chemistry of global climate – greenhouse gases, climate change. **The hydrosphere**: Physical and chemical properties of water. Distribution of species in aquatic systems. Acid base chemistry. CO_2 carbonate equilibrium. Organic matter and metals. Environmental chemistry of colloids and surfaces. Microbiological processes. Water pollution and waste-water treatment chemistry. The terrestrial environment: Soil properties – soil formation and properties, chemical and physical. Soil pollution and soil quality. **The biosphere and xenobiotics**: Global biogeochemical cycles. Persistent organic pollutants, toxic metals, pesticides. Toxicological Chemistry. Emerging Issues – e.g. personal care products, nanoparticles. Other environmental concerns e.g. energy issues, waste, recycling, Caribbean issues. Sampling and analysis – an overview of the fundamentals of environmental samplingdesign, sampling techniques and quality assurance/quality control (QA/QC) essential to acquire quality environmental data.

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

Method of Examination:

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

LEVEL I EARTH SCIENCES COURSES

ERSC1001 - DYNAMIC EARTH (4 CREDITS)

Pre-requisites: None

Syllabus: An introduction to geology with specific reference to the Caribbean. Earthquakes, magnetism and the structure of the Earth. The geological processes that shape the Earth's surface – volcanism, weathering, erosion, transport and deposition; large-scale dynamic processes – plate tectonics. The Earth through geological time. Introduction to rocks, minerals and geological maps

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

Method of Examination:

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

ERSC1003 ASTRONOMY: PLANETS, STARS AND SPACE (4 CREDITS)

Pre-requisite: None

Syllabus: Foundations - Constellations and the celestial sphere, Earth's orbital motion, Lunar motion and eclipses, Light and matter, Telescopes; The solar system - The formation of the solar system, The Earth-Moon system, Terrestrial planets, The Jovian planets, Moons, rings and dwarf planets; Stars - Our closest star: The Sun, Stellar measurements: Giants, dwarfs and the main sequence, Stellar evolution: the lives and deaths of stars, Neutron stars and black holes; Galaxies and the Universe, - The Milky Way Galaxy, Normal and active galaxies, Galaxies and Dark Matter, Cosmology: the Big Bang and the Fate of the Universe, Life in the Universe

Teaching: Two (2) lectures and One (1) tutorial per week, and 26 hours of practical work

Method of Examination:

Final Examination (2 hours)	60%
Coursework & Practical	40%

ERSC2001 - EARTH & LIFE (4 CREDITS)

Pre-requisites: ERSC1001 Dynamic Earth

Syllabus: What is life? Atoms & molecules. The formation of the solar system. Hypotheses on the origins of life. Factors that make the earth hospitable to life. Temperature regulation of the earth. The carbon cycle. The impact of volcanism on the Earth system. The role of plate tectonics as an influence on climate. Climate modelling of atmospheric oxygen during the Phanerozoic. Development of the Earth's atmosphere during the Cryptozoic. Regulation of atmospheric oxygen during the Phanerozoic. The importance of ozone in shielding life from harmful radiation. Climate modelling of atmospheric carbon dioxide during the Phanerozoic. Life in the Phanerozoic.The links between the evolution of land plants and global atmospheric conditions. Case studies for environmental conditions during two scenarios.

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

Method of Examination:

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

ERSC2002 - CLIMATOLOGY (4 CREDITS)

Pre-requisites: ERSC1002 Oceans & Climate or METE1200 Oceans & Climate

Syllabus: Climate system. Annual and seasonal temperature distribution. Annual and seasonal precipitation distribution. Atmospheric circulation. Global climate. Regional climate. Climate oscillations. Ocean/ atmosphere interactions. Climate change.

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

Method of Examination:

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

ERSC2003 - OCEANOGRAPHY (4 CREDITS)

Pre-requisites: CSEC Chemistry and ERSC1002 Oceans & Climate or METE1200 Oceans & Climate.

Syllabus: Introduction to oceanography. Distribution and formation of the Oceans. Marine sediments. Descriptive chemical oceanography. Physical chemistry of seawater. Dissolved gases in seawater. The carbonate cycle. Nutrients. Minor and trace elements. Biological productivity in the marine environment. The organic carbon cycle. Metal geochemistry. Tracers of processes. Ocean and atmospheric circulation. Waves and tides. Coasts and coastal processes. Anthropogenic impacts & coastal pollution. Marine data interpretation.

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

Method of Examination:

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

ERSC2004 - RENEWABLE ENERGY SOURCES (4 CREDITS)

Pre-requisite: 16 Level 1 FST credits

Restriction : Available only to FPAS students

Syllabus: Current and future energy generation systems. Resources, extraction, conversion, and end-use, with emphasis on meeting regional and global energy needs in the 21st century in a sustainable manner. Aspects of energy production and consumption. Patterns of national, regional and global energy patterns of supply and utilization. Environmental effects of energy and the energy-prosperity-environmental dilemma. Mathematical representations of sustainability. Allowability, efficiency, and production rates of different renewable energy sources - solar energy, wind energy, tidal power, wave energy, geothermal energy, hydroelectricity, and bio-energy. Energy systems and sustainability systems in the renewable energy context. Major economic issues of production, storage, transportation, and distribution of energy.

Teaching: Two hours of lecture, one hour of tutorial, and three hours of project work per week

Method of Examination

Final Examination (3 hrs)	50%
Project:	25%
In-course Test(s):	25%

ERSC3001 - NATURAL HAZARDS (4 CREDITS)

Pre-requisites: ERSC1001: The Dynamic Earth and ERSC2003: Oceanography or ERSC2002: Climatology

Syllabus: The following topics, concepts and issues will be discussed in this course:

1. Hazard, risk and disaster
2. The role of plate tectonics in natural hazards
3. Earthquakes distribution, magnitude, intensity, hazard assessment and mitigation
4. Tsunami causes, speed, amplitude, hazards and mitigation
5. Volcanoes distribution, eruptive styles, hazards monitoring and mitigation
6. Flooding and drought
7. Mass wasting
8. Subsidence
9. Severe weather events
10. Hurricanes distribution, structure, hazards intensity and mitigation
11. Coastal processes waves, vulnerable regions, coastal erosion, mitigation
12. Climate and Climate Change
13. The economic and human cost of Disaster
14. The assessment and management of natural hazard risks
15. Reducing the impact of disaster
16. The human response to hazard

Teaching: Two lectures, one tutorial, three hours of research/practical work each week

Method of Examination:

Final Examination (3 hrs)	60%
In-Course & Practical work	40%

ERSC3002 - CLIMATE VARIABILITY & PREDICTABILITY (4 CREDITS)

Pre-requisite: ERSC2002 Climatology

Syllabus: Climate system and variability, mean state, cycle, trend; Concepts of variability, solar radiation and the role of aerosols on climate processes. Data used in climate analysis: observation, reconstruction, modeling. Model simulation and limitations of the climate models. Skill, robustness and reliability of the climate models. Climate response to external and internal forcings. North Atlantic Oscillation and sea surface temperature forcing. ENSO and climate predictability in the north Atlantic region. Oscillations in the climate system. Monthly and seasonal predictability. Past climate variability. Short term and Long term climate prediction.

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

Method of Examination:

Final Examination (3 hours)	60%
Laboratory	20%
In-course assignments/tests	20%

ERSC3900 - EARTH SCIENCE RESEARCH PROJECT (8 CREDITS)

Pre-requisites: ERSC1001: The Dynamic Earth, METE1200: Oceans and Climate, 12 credits from the following second level 4 credit courses: ERSC2001: Earth and Life, ERSC2002: Climatology, ERSC2003: Oceanography ERSC2004: Renewable Energy Resources

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:

Supervisor's Assessment	15%
Seminar	15%
Project Report	70%

ERSC3910 SUSTAINABLE ENERGY RESEARCH INTERNSHIP (4 CREDITS)

Pre-requisite: ERSC2004 Renewable Energy Sources or PHYS3107 Fundamentals of Photovoltaic Physics, and Minimum GPA of 2.5

Syllabus: A list of potential internship placements will be made available during semester II. Students are expected to apply for internship placements by submitting their curriculum vitae with a covering letter. Successful applicants will then join the host organisation over a 2-month summer period. Working alongside supervisors from the host organisation and the FPAS, students will gain practical exposure to a workplace environment and apply what they have learned in their studies to enhance their knowledge and research skills in the field of sustainable energy

Teaching: Students must submit an inception report, a mid-term report and final internship report; these reports will aid the supervisors in their final assessment report. As well as the research project report, students must give a seminar on their findings.

Method of Examination:

Supervisor assessment by both the host and FST supervisor	15%
A 20-minute seminar on internship and research findings	15%
Research Project Paper	70%

This course is only offered subject to availability.

STUDENT MAY ONLY TAKE ONE OF ERSC3900 OR ERSC3910.

DEPARTMENT OF COMPUTER SCIENCE, MATHEMATICS AND PHYSICS

SEMESTER I

PRELIMINARY

COMP0001 Preliminary Computer Science I
MATH0101 Preliminary Mathematics I
PHYS0070 Preliminary Physics I

LEVEL I

COMP1105 Computer Programming I
COMP1115 Computer Programming II
COMP1125 Introduction to UNIX
ELET1110 Digital Electronics
ELET1120 Basic Electronics
MATH1101 Basic Mathematics I
MATH1110 Applied Statistics
MATH1120 Calculus I
PHYS1100 Mechanics

LEVEL II

COMP2105 Discrete Mathematics
COMP2115 Information Structures
COMP2125 Computer Architecture
COMP2145 Software Engineering I
COMP2150 Computer Networks I
COMP2155 Building Web Applications
COMP2160 Object-Oriented Programming
ELET2100 Microprocessors I
ELET2130 Digital Communications I
MATH2100 Abstract Algebra
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
ERSC2004 Renewable Energy Sources

LEVEL III

COMP3100 Operating Systems
COMP3135 Programming Languages

SEMESTER II

PRELIMINARY

COMP0002 Preliminary Computer Science II
MATH0102 Preliminary Mathematics II
PHYS0071 Preliminary Physics II

YEAR I

COMP1105 Computer Programming I
COMP1115 Computer Programming II
COMP1125 Introduction to UNIX
COMP1130 Web Technology Fundamentals
ELET1100 Circuit Analysis
ELET1110 Digital Electronics
MATH1100 Basic Mathematics
MATH1102 Basic Mathematics II
MATH1110 Applied Statistics
MATH1130 Calculus II
PHYS1101 Electricity and Magnetism
PHYS1102 Optics, Thermodynamics & Modern Physics

YEAR II

COMP2105 Discrete Mathematics
COMP2115 Information Structures
COMP2125 Computer Architecture
COMP2145 Software Engineering I
COMP2150 Computer Networks I
COMP2160 Object-Oriented Programming
ELET2110 Circuit Simulation
ELET2120 Discrete Device Electronics
ELET2140 Medical Instrumentation
MATH2110 Linear Algebra
MATH2130 Ordinary Differential Equations
MATH2150 Mathematical Statistics
PHYS2103 Classical Mechanics
PHYS2105 Computational Physics I
PHYS2107 Advanced Physics / Technology Laboratory II

YEAR III

COMP3115 Information Systems

COMP3140 Software Engineering II
COMP3180 Algorithm Design and Analysis
COMP3210 Electronic Commerce
COMP3220 Human-Computer Interaction
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
MATH3120 Matrix Analysis
MATH3220 Sampling Theory
MATH3375 Discrete & Computation Geometry
MATH3450 Statistical Theory I
PHYS3100 Quantum Mechanics
PHYS3102 Optics and Lasers
PHYS3106 Physics Research Project

COMP3125 Artificial Intelligence
COMP3155 Computer Networks II
COMP3160 Database Management Systems
COMP3165 Software Quality Assurance
COMP3170 Web-based Applications
COMP3230 Network & Computer Security
COMP3910 Computer Science Research Project
COMP3930 Computer Science Group Research Project
ELET3041 Microcontrollers & Applications
ELET3120 Communication Circuits
ELET3151 Digital Communications II
ELET3210 Sensors & Actuator Technology
MATH3100 Multivariate Analysis
MATH3120 Numerical Analysis
MATH3150 Complex Variables I
MATH3170 Advanced Algebra
MATH3460 Statistical Theory II
PHYS3101 Electrodynamics
PHYS3103 Astrophysics
PHYS3105 Statistical Mechanics
PHYS3106 Physics Research Project
PHYS3107 Fundamental of Photovoltaic Physics

METEOROLOGY

SEMESTER I

METE1000 Introduction to Physical Meteorology & Weather Observations
METE1200 Oceans & Climate
METE2000 Physical Meteorology I
METE2100 Dynamic Meteorology I
METE2300 Hydrometeorology
METE3100 Dynamic Meteorology II
METE3200 Synoptic Meteorology II

SEMESTER II

METE1100 Introduction to Dynamic Meteorology and Weather Systems
METE1300 Climate Change, Education and Awareness
METE2001 Physical Meteorology II
METE2200 Synoptic Meteorology I
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

COMP1105 Computer Programming I
COMP1115 Computer Programming II
MATH1101 Basic Mathematics I

AND

ELET1110 Digital Electronics (Not required but strongly recommended)

OR

Four (4) Level I credits from this Faculty

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: Course descriptions

LEVEL I

COMP1105 Computer Programming I

COMP1115 Computer Programming II

MATH1101 Basic Mathematics I

AND

ELET1110 Digital Electronics (Not required but strongly recommended)

OR Four (4) Level I credits from this Faculty

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

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

At Least Eight (8) Credits From:

COMP2105 Discrete Mathematics
COMP2115 Information Structures
COMP2145 Software Engineering I
COMP2160 Object-Oriented Programming
COMP3160 Database Management Systems
COMP3170 Web-Based Applications

AND At Most Eight (8) Credits From:

COMP2125 Computer Architecture
COMP2150 Computer Networks I
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 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.

DOUBLE MAJOR IN COMPUTER SCIENCE: Course descriptions

LEVEL I

COMP1105 Computer Programming I

COMP1115 Computer Programming II

MATH1101 Basic Mathematics I

AND

ELET1110 Digital Electronics (Not required but strongly recommended)

OR

Four (4) Level I credits from this Faculty

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:

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

ELECTRONICS

The Department of Computer Science, Mathematics & Physics offers a Major and Minor in Electronics.

MAJOR IN ELECTRONICS: Course descriptions

LEVEL I

ELET1100 Circuit Analysis
ELET1110 Digital Electronics
ELET1120 Basic Electronics
MATH1120 Calculus I
And 32 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

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
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 MEDICAL ELECTRONICS [SIXTEEN (16) CREDITS]: Course descriptions

ELET2120 Discrete Device Electronics

ELET2140 Medical Instrumentation

ELET3041 Microcontrollers & Applications

ELET3210 Sensor and Actuator Technology

A student with a Minor in Medical Electronics cannot count any of these courses as part of their Major or Minor in Electronics

MATHEMATICS

The Department of Computer Science, Mathematics & Physics offers a Double Major, Major and Minor in Mathematics as well as a Minor in Statistics. 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

MATH1101 Basic Mathematics I
MATH1102 Basic Mathematics II
MATH1120 Calculus I
MATH1130 Calculus II

LEVEL II

MATH2100 Abstract Algebra
MATH2110 Linear Algebra
MATH2120 Analysis & Methods I
MATH2130 Ordinary Differential Equations

LEVEL III

Sixteen (16) Credits from Levels II and III courses (including AT LEAST two Level III courses) from:

MATH2140 Probability Theory
MATH2150 Mathematical Statistics
MATH3100 Multivariate Analysis
MATH3110 Design of Experiments
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
MATH3220 Sampling Theory
MATH3300 Mathematics Research Project
MATH3450 Statistical Theory I
MATH3460 Statistical Theory II
MATH3375 Discrete and Computational Geometry

MINOR IN MATHEMATICS [SIXTEEN (16) CREDITS]: Course descriptions

MATH2100 Abstract Algebra

MATH2120 Analysis & Methods I

AND Eight (8) Credits From:

MATH2110 Linear Algebra

MATH2130 Ordinary Differential Equations

MATH2140 Probability Theory

MATH2150 Mathematical Statistics

MATH3100 Multivariate Analysis

MATH3110 Design of Experiments

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

MATH3220 Sampling Theory

MATH3375 Discrete and Computational Geometry

MATH3450 Statistical Theory I

MATH3460 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

MATH1101 Basic Mathematics I

MATH1102 Basic Mathematics II

MATH1120 Calculus I

MATH1130 Calculus II

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

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

METE1200 Oceans & Climate

MATH1120 Calculus I

MATH1130 Calculus II

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:

METE3100 Dynamic Meteorology II

METE3200 Synoptic Meteorology II

METE3300 Tropical Meteorology

PHYSICS

The Department of Computer Science, Mathematics & Physics offers a Major and Minor in Physics.

MAJOR IN PHYSICS: Course descriptions

LEVEL I

PHYS1100 Mechanics
PHYS1101 Electricity and Magnetism
PHYS1102 Optics, Thermodynamics & Modern Physics
MATH1120 Calculus I

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.

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

COMP1105 - COMPUTER PROGRAMMING I (4 Credits)

Pre-requisite: None

Syllabus: Basic Computer Architecture (Central processor, main and secondary memory, Input/output devices), Integrated Development Environments (Editors, Compilers, debuggers, libraries), Problem Solving (top-down design, stepwise refinement, sorting and searching), Files (Standard input/output, sequential text files) Data Types (integers, reals, characters, strings), Operators (Assignment, arithmetic, relational, Boolean, precedence rules), control Structures (Sequencing, iteration, selection), Data Structures (Linear arrays) Modules (Functions, Values and reference parameters, scope rules)

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%

COMP1115 - COMPUTER PROGRAMMING II (4 Credits)

Pre-requisite: COMP1105 Computer Programming I

Syllabus: Problem Solving (Recursion, randomness), Files (Direct and indexed files), Data Types (Enumerated types, type definitions), Data Structures (Structures, multidimensional arrays, systems, pointers), Basic Abstract Data Types (Lists, stacks, queues), Pointers (Dynamic memory allocation), Classes and Data Abstraction

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%

COMP1125 - INTRODUCTION TO UNIX (4 Credits)

Pre-requisite: None

Syllabus: The role of UNIX, its current uses and applications and the UNIX family of operating systems. Interacting with UNIX – graphical and command line interfaces. File creation and their management. Navigating Directories - UNIX directory hierarchy, maintaining directories and locating files. Working with the C shell – wildcards, command history facility. Developing and executing shell scripts. Accessing servers remotely and transferring data. Data manipulation – selecting, searching, sorting, counting and trimming. Customizing and monitoring of the system.

Teaching: Three lectures and two hours of lab per week.

Method of Examination:

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

COMP1130 - WEB TECHNOLOGY FUNDAMENTALS (4 Credits)

Pre-requisite: None

Syllabus: The Internet, Overview of Web Application Architectures, Hypertext Markup Language (HTML), Web Server Applications, Java in the Enterprise, E-Business, Security.

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%

LEVEL II COMPUTER SCIENCE COURSES

COMP2105 - DISCRETE MATHEMATICS (4 Credits)

Pre-requisite: MATH1100 Basic Mathematics OR MATH1101 Basic Mathematics I

Syllabus: Predicate Calculus (Universal and existential quantifiers, proofs, logical equivalences and inferences), Asympotic 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:

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

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 tutorial 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

Syllabus: Data Communication Fundamentals, The ISO References Model, Transmission Media, Interface Standards, Asynchronous and Synchronous Transmission, Communications Control Devices, Data Compression, Error Detection Methods, Framing Methods, Flow Control, Network Topology, LAN Technologies – including Wireless LANs.

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%

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:

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

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 (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 (Processes 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

Syllabus: Evolution of Information Technology, Impact of Information Technology on Business, Information and Information Systems, Systems Planning, Development and Implementation, Delivery of Information Services.

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 back-tracking), 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

Syllabus: Application of Project Management to Software Projects, Approaches to Project Management, Project Selection and Feasibility Analysis, Project Cost Estimation, Planning and Resource Scheduling, Control Techniques, Quality Assurance, Team Management.

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) lectures and one tutorial 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:

In-course Tests/Assignments 40%
Final Theory Examination (2 hours) 60%

COMP3165 SOFTWARE QUALITY ASSURANCE (4 Credits)

Pre-requisite: COMP2145 Software Engineering I

Syllabus: What Is Software System Quality; Software Development Process Models; Fundamentals in Measurement Theory; Software Quality Product and Process Metrics; Applying the Seven Basic Quality Tools in System Development; Defect Removal Effectiveness; The Rayleigh Model; Models for Pre- and Post-Release Quality Management; Measuring and Analyzing Customer Satisfaction Fundamentals; Testing as Measurement of System Quality

Teaching:

Method of Examination:

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

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

(GGI, 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:

In-course Tests/Assignments	40%
Final Theory Examination (2 hours)	60%

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.

Method of Examination:

In-course Tests/Assignments	40%
Final Theory Examination (2 hours)	60%

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:

In-course Tests/Assignments:	40%
Final Theory Examination (2 hours):	60%

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:

Oral Presentation	20%
Written Report	60%
Proposal and Literature Review	20%

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

ELET1100 - CIRCUIT ANALYSIS (4 Credits)

Pre-requisite: CAPE Physics Units I & II or CAPE Pure Mathematics Units I & II

Syllabus: Kirchhoff's laws, DC circuits, alternating voltages. Phasor and complex representation of sinusoids. Impedance and power in AC circuits. Series and parallel circuits. Admittance, impedance and resonance. Mesh current and node voltage analysis. Thevenin's and Norton's theorems, superposition and maximum power transfer theorem. Mutual inductance, circuit transients, bode plots. Operational amplifier circuits - amplifiers, integrators, differentiators, adders, subtractors, multivibrators, waveform generators, power op-amps.

Teaching: Two (2) lectures, one tutorial per week and 26 hours of pratical work.

Method of Examination:

Final Theory Examination (2 hours)	70%
In-course Tests/Assignments	20%
Laboratory	10%

ELET1110 - DIGITAL ELECTRONICS (4 Credits)

Pre-requisite: None

Syllabus: Binary systems. Logic gates, truth-tables. Combinational logic. Boolean algebra. Karnaugh mapping, minimization, NAND/NOR logic. Binary arithmetic, binary codes, encoders, decoders, code conversion, multiplexer, data selector, de-multiplexer, clocks, one-shot Asynchronous & synchronous circuits (latches, flip-flops, asynchronous counters, synchronous counters, applications of counters, shift registers). Design and analysis of asynchronous & synchronous circuits. IC families. Bipolar, MOS, TTL, CMOS, Tristate, Schmitt trigger. Recent advances of ICs, Analog-to-Digital and Digital-to-Analog conversion, sample & hold, D/A & A/D ICs, introduction to the microprocessor, number systems, floating point representation.

Teaching: Two (2) lectures, one tutorial per week and 26 hours of pratical work.

Method of Examination:

Final Theory Examination (2 hours)	70%
In-course Tests/Assignments	20%

	Laboratory	10%

ELET1120 BASIC ELECTRONICS (4 Credits)

Pre-requisite: None

Syllabus: Resistors, capacitors, inductors & their applications in circuits. Characteristics and applications of diodes including photodevices. Other semiconductor devices and their applications (SCR, TRIACS, etc...). Transistors (BJT & FETS), how they work and their application in circuits. Simple amplifiers, their design and properties. Basic filters, power supplies and regulators. Analysis of some standard electronic circuits.

Teaching: Two (2) lectures, one tutorial per week and 26 hours of pratical work.

Method of Examination:

Final Theory Examination (2 hours)	70%
In-course Tests/Assignments	20%
Laboratory	10%

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:

Final Theory Examination (2 hours)	60%
In-course Tests/Assignments	20%
Laboratory	20%

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

Syllabus: Hybrid & hybrid-pi equivalent circuits. Difference & Cascode amplifiers. Darlington configuration, complementary symmetry amplifiers. Types of feedback & their effects. High & low frequency response of RC coupled amplifiers. Tuned amplifiers, oscillators.

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

Syllabus: Fundamentals of digital communications, Fourier analysis, Energy and power spectral density, frequency response, Analog to Digital conversion, Information Theory, Baseband Transmission, Error Control Coding (Block).

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%

ELET2950 - ELECTRONICS ELECTIVE (4 credits)

Pre-requisites: None

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:

Final Theory Examination (2 hours)	50%
In-course Tests/Assignments	20%
Laboratory/Mini-Project	30%

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:

Final Theory Examination (2 hours)	60%
In-course Tests/Assignments	20%
Laboratory	20%

ELET3120 - COMMUNICATION CIRCUITS (4 Credits)

Pre-requisite: ELET2120 Discrete Device Electronics

Syllabus: High frequency transistors, transformers and filters. HF construction techniques. RF amplifiers, oscillators and frequency synthesisers. Mixers, IF amplifiers. Circuits for modulation and demodulation. Simulating communication circuits.

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

Syllabus: Sampling, Z-Transforms, discrete convolution, DFT, FFT, DCT and related transforms. IIR and FIR digital filters. Approximations to analog filters. Practical implementation of digital filters.

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

Syllabus: Measurement Systems, Measurements of Displacement and Strain, Force and Torque Measurement, Pressure Measurement, Flow Measurement, Measurement of Temperature, Measurement of other non electrical quantities, Transducer Theory, construction and use of various transducers, Temperature, Magnetic, Electrical, Mechanical, Acoustic, Optical, Chemical, Image, and Bio sensors. Electrical, Mechanical, Pneumatic, Hydraulic, Piezoelectric, and Polymer Actuators.

Teaching: Two lectures, one tutorial, 3 hours of Practical per week

Method of Examination:

In course test(s) / Assignment(s)	20%
Laboratory/ Mini-Project	40%
Final Theory Examination (2 hrs)	

MATHEMATICS

PRELIMINARY MATHEMATICS COURSES

MATH0101 - 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, intermediatevalue 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%

MATH0102 PRELIMINARY MATHEMATICS II (6 Credits)

Pre-requisite: CXC Mathematics or equivalent

Syllabus: Sequences and Series: Use of Σ notation, arithmetic and geometric progressions, binomial theorem. Special functions: Exponential and logarithmic functions as solutions of initial value problems, definition of arbitrary exponential, coordinate transformations, differential and integral calculus applied to transcendental functions. Elementary first and second order differential equations: Classification, techniques of solution, linear ordinary differential equations with constant coefficients. Combinatorics and Matrices: Elementary combinatorics, matrices of arbitrary size, determinants. Mathematical modeling; Ordinary differential equations of Physics, Biology, Economics, applications of Mathematics.

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

MATH1101 - BASIC MATHEMATICS I (4 Credits)

Pre-requisites: CAPE Pure Mathematics Units 1 & 2 or MATH0101 & MATH0102 or equivalent.

Syllabus: The following topics, concepts or issues will be discussed in this course: Logic, Sets, Relations, Functions, Number and Mathematical Systems

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

Final Theory Examination (2 hours)	75%
In-class Test(s)/Assignment(s)	25%

MATH1102 - BASIC MATHEMATICS II (4 Credits)

Pre-requisites: MATH1101 Basic Mathematics I

Syllabus: The following topics, concepts or issues will be discussed in this course: Vector Spaces, Matrices & Determinants, Equations, Euclidean spaces, Conic sections and quadratic surfaces

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

Final Theory Examination (2 hours)	75%
In-class Test(s)/Assignment(s)	25%

MATH1110 - APPLIED STATISTICS (4 Credits)

Pre-requisites: CAPE Pure Mathematics Units 1 & 2 or MATH0101 & MATH0102 or equivalent.

Syllabus: Data presentation types of dates, tables and graphs. Numerical summary measures, measure of central tendency, measure of dispersion and Cebychev's inequality. Probability, operations on events, conditional probability and Bayes' theorem. Probability distributions, binomial, Poisson and normal distributions. Point estimation and confidence interval. Hypotheses testing general concepts, types of errors, power, sample size, one-sided and two-sided tests. Comparisons of means, paired samples and

independent samples. Analysis of variance, one-way analysis of variance and multiple comparisons procedures. Contingency tables, chi-square test and odds ratio. Correlation, two-way scatter plot and Pearson's correlation coefficient. Linear regression, concepts, the model and its evaluation. Nonparameric methods, sign tests, Wilcoxon rank sum test and applications. Sampling methods and sources of bias.

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

Final Theory Examination (2 hours)	75%
In-course Tests/Assignments	25%

MATH1120 - CALCULUS I (4 Credits)

Pre-requisite: CAPE Pure Mathematics Units 1 & 2 or MATH0101 & MATH0102 or equivalent.

Syllabus: Functions and graphs, limits, continuity, differentiability, the concept of an extremum, curve sketching, antiderivatives, the definite integral, fundamental theorem of calculus, improper integrals, sequences and series.

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

In-class Tests/Assignments	25%
Final Theory Examination (2 hours)	75%

MATH1130 - CALCULUS II (4 Credits)

Pre-requisite: MATH1120 Calculus I

Syllabus: Function of several variables, vector functions, limits, continuity, and sketching, differentiation, partial derivatives, extrema for functions of 2 and 3 variables, Lagrange multipliers, change of variable and Jacobian, polar, spherical and cylindrical coordinates, double and triple integrals, line and surface integrals.

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

In-class Tests/Assignments	25%
Final Theory Examination (2 hours)	75%

LEVEL II MATHEMATICS COURSES

MATH2100 - ABSTRACT ALGEBRA (4 Credits)

Pre-requisite: MATH1101 Basic Mathematics and MATH1102 Basic Mathematics II

Syllabus: Elements of logic. Elements of set theory. Relations and functions. Finite permutations. Isomorphisms. Elementary theory of groups, rings and fields.

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

In-class Tests/Assignments	30%
Final Theory Examination (2 hours)	70%

MATH2110 - LINEAR ALGEBRA (4 Credits)

Pre-requisite: MATH1101 Basic Mathematics I, MATH1120 Calculus I & MATH1130 Calculus II

Syllabus: Elements of sets and functions. Vector spaces, Linear forms. Linear transformations Matrices and determinants. Systems of linear equations. Quadratic forms.

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 Rieman 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

Syllabus: Techniques of solution, applications, and theory of first-order differential equations. Theory and methods of solution for higherorder linear equations. Applications of second-order linear equations from the sciences and engineering. Power series methods for solutions to linear equations. Laplace transform theory, techniques and applications.

Teaching: Three (3) lectures and one tutorial per week.

Method of Examination:

In-class Tests/Assignments	30%
Final Theory Examination (2 hours)	70%

MATH2140 - 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%

MATH2150 - MATHEMATICAL STATISTICS (4 Credits)

Pre-requisite: MATH2140 Probability Theory

Syllabus: Sampling distributions including chi-square, t, order statistics. Estimation of parameters, likelihood, Sufficiency, significance tests. Simple linear regression and correlation. Analysis of Variance. Non-Parametric procedures, elementary principles of experimental design.

Teaching: Three (3) lectures and one tutorial per week.

Method of Examinations:

In-class Tests/Assignments	30%
Final Theory examination (2 hours)	70%

MATH2950 - 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.

Syllabus: Notions of multivariate distributions, Bivariate normal distributions, conditional distribution and multiple correlation coefficients, moments. Estimation of the mean vector and covariance matrix of the multivariate normal distributions; Inferences concerning the mean vector. Introduction to the T2 statistics and its uses. Discriminant analysis and its applications. Principal components analysis. Cluster analysis.

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

Syllabus: Orthogonal systems (Fourier, Haar, Bessel, Sturm-Lioville etc.). Periodic functions, Fourier expansion, Fourier coefficients, periodic extension. Fourier series for odd and even functions. Problem of convergence. Drichlet theorem. Minimal property of partial sums. Bessel's inequality. Parseval's identity. Integration and differentiation of Fourier series. Fourier series in complex form. Multiple Fourier series. Fourier transform its properties. Convolution. Partial differential equations, their classification. Basic differential equations of mathematical physics: wave equation; Laplace equation, heat equation. Application of the Fourier method to the solution of the PDE. The Discrete Fourier transform. The Fast Fourier transform.

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.

Syllabus: Complex numbers, their analysis and geometry. Functions of a complex variable, limits, continuity. Analytic functions and harmonic functions. Complex integration, contour integrals, Cauchy theorems and consequences. Power series, Taylor series and Laurent series. Residue theory and applications.

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

Syllabus: Number systems. Peano's axioms for N and extensions. Mathematical Induction. Equivalence relations. Quotient systems. Euclidean Algorithm. Linear Diophantine Equations. Congruences. Wilson's theorem. Chinese remainder theorem. Euler totient function. Elements of Cryptography.

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

Syllabus: Normal subgroups. Factor groups. Isomorphism theorems. Cayley's theorem Sylow's theorems. Rings and ideals. Fields.

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

Syllabus: Definition of a topological space, examples, continuous functions. Connected spaces and compact spaces. Topology of the real line and Euclidean space. Countability of topological spaces and separation axioms.

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

Syllabus: Complex matrices, The eigenvalue problem, Simultaneous reduction of quadratic forms, Cayley Hamilton theorem, The Spectral Theorem, Jordan Canonical Forms. Applications to difference and 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%

MATH3220 - SAMPLING THEORY (4 Credit)

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%

MATH3300 - 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%

MATH3375 - 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:

In-class Test(s)/Assignment(s)	40%
Final Theory Examination (2 hour)	60%

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:

Class tests/computer assignments	40%
Final Theory Examination (2 hour)	60%

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:

Class tests/computer assignments	40%
Final Theory Examination (2 hour)	60%

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:

Final Theory Examination (3 hours)	70%
In-course Tests/Assignments	20%
Practical Reports	10%

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 power, resistors in series and parallel. Kirchhoff's laws, Wheatstone bridge and potentiometer. The magnetic field, lines of force, magnetic flux, motion in a magnetic field. Thomson's measurement of e/m, isotopes and spectrography. Force on conductor. Torque on a current loop. The d.c. motor, pivoted-coil galvanometer. Magnetic field of a long straight wire. Force between parallel conductors, the ampere, induced EMF. Faraday's law, Lenz's law. Eddy currents. The nature of light, speed of light (experimental). Waves and rays. Refraction and reflection. Snell's law. Total internal reflection. Dispersion. Single surface images Reflection from plane and spherical surfaces, refraction at plane and spherical surfaces. Focal point and length. Graphical and analytical methods. Images as objects. Thin lens, diverging lens, lensmaker equation. Aberrations, the eye, defects of vision. Magnifier, camera, projector, compound microscope, telescope, etc. Atomic nucleus, nuclear radiation. Isotopes and isobars, binding energy and stability. Alpha, beta and gamma rays. Decay law, decay constant. Half life, activity, radioactivity series, radioactive shielding, radiation and the life sciences.

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

PHYS1100 - MECHANICS (4 Credits)

Pre-requisite: CAPE Physics Unit 1 or CAPE Pure Mathematics Units 1 & 2.

Syllabus: Kinematics in 1-, 2- and 3-dimensions, full vector analysis. Projectiles, Circular motion, dynamics of circular motion. Polar co-ordinates. Newton's laws. Friction. Conical pendulum. Inertial frames of reference. Centripetal forces, velocity-dependent forces (terminal velocity). Gravitation. Kepler's laws. Kinetic and potential energy, work-energy theorem, conservation of energy, power. Linear momentum, elastic and inelastic collision in 1-, 2- and 3-dimensions. Impulse, variable-mass systems. Rotational kinematics, rotational kinetic energy. Torque, angular momentum, rigid bodies. Equilibrium conditions, physical systems as examples of simple harmonic motion. Transverse and longitudinal waves (1-D), intensity, standing waves, sound waves, vibrational resonance, beats. Doppler effect.

Teaching: Three (3) lectures, one tutorial per week and 26 hours of practical work.

Method of Examination:

Final Theory Examination (2 hours)	70%
In-class Tests/Assignments	20%
Practical Reports	10%

PHYS1101 - ELECTRICITY & MAGNETISM (4 Credits)

Pre-requisite: CAPE Physics Unit 1 or CAPE Pure Mathematics Units 1 & 2.

Syllabus: Electric charge, Coulomb's law, electric field. Charge and dipole in an electric, Field Motion of charged particles in uniform and non-uniform electric fields. Calculation of E for point charges and charge distributions. Electric flux, Gauss' law. Calculation of E for symmetrical charge distributions using Gauss's law. Electric potential, potential difference, work, potential energy, calculation of potential for point charges and charge distributions. Capacitance, RC circuits. Magnetic fields, force on charges and currents in a magnetic field, Hall effect, motion of charged particles in uniform and non-uniform magnetic fields, Ampere's law, Calculation of magnetic field B for simple field configurations, Biot and Savart law, induced EMF. Lenz's law, time varying magnetic field and relative motion, inductance, LR circuits. Displacement current and Maxwell's equations. EM waves, E & B fields, energy density and energy flow in EM radiation.

Teaching: Three (3) lectures, one tutorial per week and 26 hours of practical work.

Method of Examination:

Final Theory Examination (2 hours)	70%
In-class Tests/Assignments	20%
Practical Reports	10%

PHYS1102 - OPTICS, THERMODYNAMICS & MODERN PHYSICS (4 CREDITS)

Pre-requisite: CAPE Physics Unit 1 or CAPE Pure Mathematics Units 1 & 2.

Syllabus: Physical Optics: Fermat's principle and the derivation of laws of reflection and refraction. Interference of light: Path and phase difference, Young's double-slit experiment and interference in thin films. Diffraction of light: Single and double slit diffraction, Raleigh's criteria and the resolution of singleslit and circular aperture. Resolving power of optical instruments. Diffraction grating and missing orders. Polarization of light: Methods of generating polarized light. Double refraction and optical activity. Thermodynamics: Zeroth law of thermodynamics. Heat, work and the first law of thermodynamics. Applications of the first law to ideal gases. Heat engines and calculations for reversible and irreversible processes. Modern Physics: Early quantum theory: Blackbody radiation and Planck's hypothesis. Experimental evidence to support the photon theory of light. Wave-particle duality of light. Wave nature of matter and de Broglie's hypothesis. Experimental evidence to support de Broglie's hypothesis. Uncertainty Principle. Early models of the atom and their limitations.

Teaching: Three (3) lectures, one tutorial per week and 26 hours of practical work.

Method of Examination:

Final Theory Examination (2 hours)	70%
In-class Tests/Assignments	20%
Practical Reports	10%

LEVEL II PHYSICS COURSES

PHYS2100 - MATHEMATICAL METHODS IN PHYSICS (4 credits)

Prerequisites: MATH 1120 Calculus I

Syllabus: Taylor's Expansion, Partial Differentiation of Multivariate Functions, diagonalization of Matrices, Eigenvectors, Eigenvalues, Elementary functions of Complex Variables, Divergence Theorem, Stokes' Theorem, line Integrals, Surface and Volume Integrals, Fourier Series, Ordinary differential Equations, Laplace Transforms, Introduction to Special functions, Wave Equation, Diffusion Equation.

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

Syllabus: Superposition of states, Wave mechanics, Matrix mechanics, Uncertainty relations, Complementarity, Wave-particle duality, Wave equation, Wave packets. Group velocity, Momentum and position operators, operators. Measurement, expectation values, TISE, Free particle, I-D potentials – square well, Finite square well, Step potential, barrier penetration, Numerical solution of the S.E, Ether hypothesis, Einstein's relativity, Lorentz transformation, Time dilation, Fitzgerald contraction, combination of velocities, Relativistic energy and momentum.

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

Syllabus: Miller indices, Brillouin zones X-ray diffraction: Solid-state bonding: electrons in periodic potential Kronig-Penney model. Fermi Level: Thermal properties of solids. Electrical conductivity, Intrinsic and extrinsic semiconductors, Insulators, Thermoelectric and galvomagnetic effects, Factors affecting the properties of semiconductors, Basic semiconductor devices, Types of magnetism and magnetic materials.

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

Syllabus: Full treatment of classical harmonic oscillator: damped and forced oscillations, jerk, coupled oscillators - normal modes (secular equation, normal frequencies, normal coordinates), simulation of 1-D crystal as linear array of coupled oscillators. General wave equation, phase and group velocity. Mechanics of

continuous media: waves on a string, surface waves, sound waves, boundary effects. Fluids: statics,kinematics and dynamics of steady flow. Lagrange and Hamiltonian equations of motion. Non inertial frames of reference: accelerated and rotating, Coriolis effect. Rotation of a rigid body, Euler equations of motion. Dynamics of a particle in a central field of force, scattering.

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

Syllabus: Algorithms, flowcharts and pseudocode, organisation, control structures and standards for scientific programming, FORTRAN, C/ C++, MATLAB and MAPLE, Introduction to UNIX, error, accuracy and stability, Introduction to numerical methods, practical implementation, Roots of equations, interpolation and extrapolation, numerical differentiation and integration, numerical solution of differential equations, Fourier methods, Introduction to computer modeling in Science.

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:

Written Laboratory Reports (5)	80%
Oral Examination	20%

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:

Written Laboratory Reports (5)	80%
Oral Examination	20%

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

Syllabus: Operators and eigenvectors, eigenvalue equations, vector spaces, Dirac bra-ket formulation, axioms of quantum mechanics, compatible observables, uncertainty relations. Evolution of states in time. Hamiltonian operator, Ehrenfest's equations, representations and transformations of state vectors. Factorisation method. Harmonic oscillator, general Hamiltonian, normalisation. Free particle in 3-D, angular momentum, parity. Central potentials, isotrophic harmonic oscillator, hydrogen atom. Fermions and bosons, the Exclusion Principle. Electron spin, magnetic moment, Perturbation theory. Time-dependent perturbations, transitions to the continuum, density of states. Elastic scattering in 1-D,

scattering by a square well, resonances. Interpretation of Q. M. Copenhagen interpretation, alternative interpretations of wave-function collapse, EPR paradox, Bell's theorem.

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

Syllabus: Spatial and temporal coherence. Fraunhofer and Fresnel diffraction. Image formation and processing. Basic principles of lasers, population inversion, stimulated emission, A & B coefficients, etc. Gas, solid-state, liquid & dye lasers. Production of tunable, highpower, high-stability and short-pulse lasers. Applications.

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

Syllabus: Models of thermal systems. Probability. Entropy. Internal energy. Temperature Contact with thermodynamics. Chemical potential. Free energy. Heat capacities. Microcanonical Canocial and grand canocial distributions (Boltzmann and Gibbs sums). Quantum statistics. F-D, B-E and Planck distributions. Blackbody radiation. Ideal gas. Fermi gas Density of states. Superfluidity. Bose-Einstein condensation. Phase transitions. Thermodynamics of the superconducting transition.

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:

Final Written Project Report	80%
Oral Presentation	20%

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:

Final Examination (2 hours)	50%
Laboratory Work	25%
Assignments	25%

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).

Syllabus: The Atmosphere: composition and structure. Weather elements and instruments. Energy and heat transfer. Radiation and the Earth's atmosphere. Seasonal and daily temperatures. Energy budget. Clouds and precipitation. Thermodynamics. Simple thermodynamics chart analysis; Weather observations. Scalar analysis.

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%

METE1200 - OCEANS AND CLIMATE (4 Credits)

Pre-requisites: None.

Restriction: Not to be taken with ERSC1002 Oceans & Climate.

Syllabus: The climate system components and interactions. Timescales and responses of the climate system. The basic global radiation budget. The atmosphere: evolution and composition. The greenhouse effect The biosphere – atmosphere interaction. The biosphere – hydrosphere interaction. Classification of oceans and seas. Topography of ocean floor. Chemistry of the ocean: temperature, salinity and density. The circulations of the oceans: wind driven and thermohaline circulation. Ocean and atmospheric interactions: tropical cyclones, monsoon circulation, upwelling, ENSO. Waves and tides. Drivers of natural climate variability and anthropogenic climate change.

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: 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%

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.

Syllabus: The biosphere: definition, evolution and contributions to climate and climate change. The greenhouse effect. Climate change scenarios: definition and uses. Changing climate scenarios and challenges to man's health. Climate change and energy consumption and sustainability. Climate change and water availability, distribution and usage. The cost of changing climate. Climate change and Caribbean industries: sustainability, adaptation and mitigation. Preparing for climate change: global and regional mitigation and adaptation strategies.

Teaching: Three (3) lectures, one (1) tutorial hour per week.

Method of Examination:

Final Theory Examination (2 hours)	60%
In-course Tests/Assignments	40%

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.

Syllabus: T hermodynamics of dry air and moist air. Thermodynamic diagrams. Hydrostatics, instability and convection. Mixing of air masses. Formation and growth of cloud droplets by diffusion and condensation. Droplet growth by collision and coalescence. The growth and structure of ice crystals. The size and distribution of droplets and crystals. Widespread and convective precipitation, thunderstorms.

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.

Syllabus: Fundamental physics, quantification and laws of radiation. Solar and terrestrial radiation. The heat balance of the earth and atmosphere. The atmospheric greenhouse effect. Fundamentals of atmospheric electricity. Elementary atmospheric optics. Ozone in the atmosphere.

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 co-ordinate 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.

Syllabus: The characteristics, structure and evolution of mid- latitude frontal systems and cyclones. Kinematics of horizontal motion and the computation of kinematic parameters of divergence, vorticity and deformation. Analysis of scalar and vector fields. Analysis of mid-latitude synoptic systems. Methods of estimating vertical motion. Evaluation of advection.

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.

Syllabus: The hydrological cycle. Water balance concepts. Precipitation measurement and analysis. Interception and interception loss. Evaporation and evapo-transpiration. Infiltration measurement and estimation. Rainfall-runoff processes. Hydrologic simulation.

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%

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

Syllabus: Radar Meteorology: Brief historical review. Radar components and related features. Electromagnetic waves. Radar beam characteristics. Propagation of radar waves. Formulation of the radar equation. Precipitation measurements. Principles of Doppler radar. Interpretation of radar echoes. Applications and use of radar data. Satellite Meteorology: Brief History and basic concepts. Instrumentation and receiving systems. Identification of cloud and weather systems. Atmospheric temperature and water vapor profiles. Satellite wind estimation. Precipitation estimation. Analysis of tropical cyclones. Satellite detection of aerosols. Applications and use of satellite information. Use of satellite data in combination with radar data.

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 FPAS Level II/III credits.

Syllabus: Characteristics of Caribbean climate; interseasonal, inter-annual and inter-decadal climate variability. Role of climate in vegetation distribution. Influence of weather parameters on vegetation and terrestrial ecosystems. Bioclimatic indices and natural ecosystems. Weather, climate and coastal and marine ecosystems. Climate change and terrestrial, coastal and marine ecosystems. Role of vegetation in determining climate (biogeochemical cycles, albedo, roughness and fluxes). Carbon trading, cleandevelopment mechanism (CDM).

Teaching: Two (2) lectures, one (1) tutorial and two (2) hours of practical per week.

Method of Examination:

Final Theory Examination (2hours)	60%
In-course Tests	10%
Essay Assignments & Computer Exercises	30%