



UWI

ST. AUGUSTINE
CAMPUS

UNDERGRADUATE

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Includes revisions to programmes from the Department of Chemistry and the Department of Life Studies. Revisions are highlighted as blue text.

FACULTY OF Science & Technology REGULATIONS & SYLLABUSES

2014/2015

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MESSAGE FROM THE DEAN

Welcome to the Faculty of Science & Technology (FST), The University of the West Indies, St. Augustine. We are extremely proud and delighted that you have chosen the FST for your tertiary education. This Faculty which partially replaces the former Faculty of Science & Agriculture, will continue to focus on traditional and important disciplines in science such as Mathematics, Physics, Chemistry, Computer Science and Biological Sciences. We have also begun new programmes in exciting and important areas of technology such as, Environmental Technology, Information Technology, and Renewable Energy Technology and are in the process of introducing new programmes in Biotechnology, Electronics, Computer Science & Technology, Environmental Science, and Biomedical Technology.

The FST is the second largest faculty at the St Augustine Campus and also the most diverse in terms of academic programmes offered. At the FST there are highly qualified and competent academic, administrative, technical and support staff, and many state-of-the-art laboratories. We promise to offer you an educational experience that is second to none.

This booklet contains important information on Faculty Regulations as well as details on our various programmes and courses. We encourage you to become very familiar with it. We have put in place several support systems in order to facilitate your success in your chosen field of study. We encourage you to visit your academic advisor on a regular basis to seek assistance in planning your academic programme of study. We also have a Student Services Unit and a dedicated Deputy Dean (Student Matters) who is readily available to assist in addressing problems that you may encounter from time to time.

On behalf of the staff of the FST, I wish you a warm welcome as well as an enjoyable and successful stay in our Faculty.

Professor Indar Ramnarine
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UNDERGRADUATE REGULATIONS & SYLLABUSES 2014-2015
THE FACULTY OF SCIENCE & TECHNOLOGY

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SECTION II – INTRODUCTION

A. PROGRAMME OFFERING IN THE FACULTY OF SCIENCE AND TECHNOLOGY

1. The Faculty of Science and Technology (FST) offers the following undergraduate programmes leading to the award of BSc degrees:

BSc IN THE FOLLOWING SPECIAL OPTIONS:

- i. Actuarial Science
- ii. Biology with specialisations in:
 - a) Plant Biology
 - b) Zoology
 - c) Ecology & Environmental Biology
 - d) Biotechnology

- iii. Biomedical Technology
- iv. Chemistry
- v. Chemistry and Management
- vi. Computer Science
- vii. Computer Science and Management
- viii. Environmental Science & Sustainable Technology
- ix. Information Technology
- x. Mathematics
- xi. Statistics and Economics

The Faculty also offers a **BSc (General)** degree with major(s) and minor(s) in various disciplines as shown in **TABLE 1**.

TABLE 1 - FACULTY OF SCIENCE AND TECHNOLOGY: MAJORS AND MINORS		
DISCIPLINE	MAJORS	MINORS
Biochemistry	Biochemistry	Biochemistry
Biology	Biology	Biology
Chemistry	Chemistry Industrial Chemistry	Chemistry Analytical Chemistry Applied Chemistry* Industrial Chemistry Chemical Biology Materials Chemistry (*Final year being offered)
Computer Science	Computer Science	Computer Science
(Multidisciplinary)	Environmental	
Information Technology	Information Technology	
Mathematics	Mathematics	Mathematics Statistics Actuarial Science
Physics	Electronics Physics	Electronics Environmental Physics Materials Science Medical Physics & Bioengineering
NOTE: For detailed information on special options/ majors/ minors, please refer to the relevant Departmental sections of this booklet.		

2. The degree of Bachelor of Science is awarded on the basis of a programme of studies selected from

courses in the Science disciplines together with certain Foundation courses and in some cases a number of approved courses from other Faculties.

3. FST offers the following BSc degrees (the terms Major, Minor, and Special Option are defined in the Glossary):

- (a) **A BSc (General) degree with**
- i. a single major in a FST discipline.
 - ii. a joint major in two disciplines only, one of which may be from a Faculty other than the FST.
 - iii. double majors in a single FST discipline, currently offered only in Mathematics
 - iv. a single major in a FST discipline PLUS one or two minors from FST and/or other Faculties.
- (b) **BSc Special Option** comprising a prescribed set of departmental, inter-departmental FST or out-of-faculty courses.
- (c) All students admitted to the FST to read the BSc Special Options listed hereunder are required to register for courses in the Faculty of Social Sciences and must be familiar with the list of cross faculty pre-requisites and equivalencies listed in Appendix 1.
- i. BSc Actuarial Science
 - ii. BSc Chemistry and Management
 - iii. BSc Computer Science and Management
 - iv. BSc Statistics and Economics

B. COURSES OFFERED AND THEIR WEIGHTING

4. The following courses which may consist of both theoretical and/or practical components are offered by the University:

- (a) **FST FACULTY COURSES:**
These are courses offered by the FST (in-faculty courses). These include Level O (or Preliminary) courses in Physics, Chemistry, Mathematics and Biology), Level I (or Introductory) and Levels II & III (or Advanced) courses. Preliminary courses may be used to satisfy matriculation requirements or pre-requisites for Level I, II or III courses.
Preliminary courses, however, do not contribute towards the credit requirements for the award of the BSc degree but contribute towards a semester credit loading.
- (b) **SERVICE COURSES:**
These provide students with basic technical and

analytical skills.

(c) **OUT-OF-FACULTY COURSES:**

These are courses offered by Faculties other than FST which may contribute towards the requirements for the award of a degree. Approval must be granted by the Dean before a student can pursue an out-of-Faculty course if such course is not part of the candidate's degree programme.

(d) **FOUNDATION COURSES:**

- i. In order to qualify for the award of a BSc degree in the FST, all students must complete a minimum of nine (9) credits of Foundation Courses. These courses are Level I courses and are designed to augment the general education of students.
- ii. The three Foundation Courses (3 credits each) required to be taken by the FST students are:
 - FOUN 1101 - Caribbean Civilisation
 - FOUN 1105 -Scientific and Technical Writing
 - FOUN 1301 - Law, Governance, Economy and Society
- iii. The Foundation Course, FOUN 1210 (Science, Medicine and Technology in Society) will NOT count for credit towards programmes in FST.
- iv. On entry into the FST a student may be required to pass the English Language Proficiency Test (ELPT) before s/he can register for FOUN 1105. However, students with the following qualifications can register directly for FOUN 1105.
 - Grade I in CSEC English Language, or
 - Grade I or II in CAPE Communication Studies, or
 - Grade A or B in General Paper in the GCE A-Level Examination.

5. Courses normally extend over one (1) semester, but in special cases may extend over two (2) semesters.
6. The weight of a course is expressed in terms of credit hours, and the credit-weighting of a course is determined by the Faculty which administers the courses. In general, a course with one contact hour per week for one semester has a weighting of one credit.

C. CO-CURRICULAR CREDITS

7. Courses involving independent, supervised activities

which would earn the student co-curricular credits may be pursued upon approval by the Campus Academic Board. The co-curricular programme allows you to choose from a range of non-academic courses that help you to acquire characteristics to excel in life in the 21st century. These courses are practical in nature and help you to develop attributes which are critical for your success.

- i. Students are eligible to register for co-curricular credits after their first semester of studies.
- ii. Each student is eligible to count no more than three (3) credits towards his/her degree for involvement in co-curricular activities.
- iii. The programme of co-curricular activities must have the approval of the Faculty and Academic Board before it is undertaken by the student.
- iv. The Deputy Dean with responsibility for Outreach (Dr. Donna Comissiong) is the Faculty's Coordinator for the co-curricular programme. Please consult with the Coordinator if you are interested in pursuing co-curricular activities.
- v. Co-curricular credits will be awarded on the following basis:
 - students must be involved in the activity for at least one (1) semester
 - explicit learning outcomes must be identified for each activity
 - there must be clearly defined mode(s) of assessment for each activity
- vi. The grading of co-curricular activities will be on a pass/fail basis and will not contribute to a student's GPA
- vii. The three Level I credits earned for involvement in co-curricular activities may be included as part of the overall general credit requirement for the award of the BSc General Degree. However, such credits earned shall NOT be used in the computation of a student's Weighted Grade Point Average for determining the Class of Honours.

- viii. For further details on co-curricular offerings, please consult the Deputy Dean (Outreach) or visit the website at
<http://sta.uwi.edu/cocurricular/>

The following Co-curricular credits are available:

LEVEL 1

Course Code	Course Title	Credits
COCR 1001	Minding SPEC: Exploring Sports, Physical Education and Health & Wellness	3
COCR 1012	Workplace Protocol for Students	3
COCR 1013	Financial Literacy and Training	3
COCR 1030	Technology Literacy	3
COCR 1031	Managing My High (MY High): Alcohol, Drugs and Addictive Behaviours	2
COCR 1032	Living and Learning: Professional development through community service	2
COCR 1033	Mind the Gap: Towards Psychological Health & Wellness	1
COCR 1034	Public Speaking and Voice Training: Towards a More Confident You	3
<i>Microsoft Office 2013</i>		
COCR1025	Microsoft Word	2
COCR1026	Microsoft Excel	2
COCR1027	Microsoft PowerPoint	2
COCR1028	Microsoft Outlook	2
COCR1029	Microsoft Access	2

D. EVENING UNIVERSITY

8. Currently, the FST offers only the BSc in Information Technology through the Evening University. Please consult the section under the Department of Computing and Information Technology in this booklet for specific details of the programme offered.
9. Students in the Evening University Programme will normally be required to register for a maximum of 9 credits of courses per semester. There will be three semesters per year in the Evening University. Classes will normally be held during the hours of 5:00-10:00 p.m. on weekdays and also on Saturdays. For further general information about the Evening University Programmes, please contact the Office of the Evening University or visit the website
<http://sta.uwi.edu/evening/introduction.asp>

E. DEAN'S HONOUR ROLL

10. Eligibility for inclusion on the Dean's Honour Roll

The following guidelines are applicable:

- (a) Inclusion on the Dean's Honour Roll will be on a Semester basis. The Summer School Programme will not be considered.
- (b) Students must obtain a Semester GPA of 3.8 and above in any semester
- (c) Full-time students must have passed a minimum of 12 Faculty credits in the semester. Part-time and Evening University students must have passed a minimum of 6 credits of Faculty courses in the semester.

Credits gained for the following will NOT be taken into consideration in computing the Dean's Honour Roll:

- Foundation courses
- Co-curricular offerings
- Internship programmes
- Audited courses
- Summer courses
- Not-for-credit courses

- (d) Repeat courses will be included in the computation of the Semester GPA towards the Dean's Honour Roll
- (e) Special consideration will be given to students who are differently-abled and who have obtained a semester GPA of 3.8 and above but who have registered for less than 12 Faculty credits.

Such students must declare and provide supporting documents as evidence of their disability at the start of the semester.

Decisions for inclusion of such differently-abled students in the Dean's Honour Roll will be taken at the Faculty's Board of Examiners Meeting. In addition, such students must be registered with the Academic Support/Disabilities Liaison Unit (ASDLU).

F. ACADEMIC SUPPORT/DISABILITIES LIAISON UNIT (ASDLU)

- 11. The Unit is the first and most important stop for high quality academic support for the diverse population of students throughout the University including full-time, part-time and evening students, international students, student athletes and students with special needs.

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

- Provision of aids and devices such as laptops, USB drives, tape recorders and special software
- Special accommodations for examinations
- Classroom accommodations
- Academic support
- Liaison with faculties and departments

Students with special needs should make contact before or during registration. Every effort will be made to facilitate your on-campus requirements in terms of mobility, accommodation, coursework, examinations, and other areas.

No student of The UWI will be discriminated against on the basis on having special needs. Sharing your needs before registration will enable us to serve you better as a part of the Campus community.

(b) Academic Support Services for ALL STUDENTS

- Educational Assessment – LADS (dyslexia) – LASSI (Study Skills)
- Examination Strategies
- Workload Management
- Career Planning
- Study Skills
- Peer Tutoring

(c) How do I register at ASDLU?

- Visit ASDLU to make an appointment to meet the Co-ordinator.
- Complete the required registration form
- Students with disabilities must submit a medical report from a qualified medical professional
- An assessment of the student's needs will be conducted
- The required assistance will be provided

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

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

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

Email: **ASDLU.Office@sta.uwi.edu**

Registration forms are available at the office or from the website at **www.sta.uwi.edu/asdlu**

**G. INFORMATION RESOURCES AT
THE ALMA JORDAN LIBRARY**

A crucial part of your undergraduate training is learning when you need information, what kind of information you need, what information is available and how to search for, select and obtain relevant information. Such information literacy skills will equip you well for your assignments, examinations and career.

Our wide-ranging collection spans several subject areas relevant to the Faculty of Science and Technology, including Agricultural Sciences, Astronomy, Chemistry, Computer Science, Information Technology, Life Sciences, Mathematics, Physics and Statistics.

Aside from holding over 400,000 books and 800 journal titles, we offer access to more than 60,000 electronic journals, 30,000 e-books and 240 databases – much of this material is not available freely on the Internet. Online resources can be accessed on and off-campus.

Moreover, a sizeable body of regional research may be accessed from maps, newspapers, theses and other materials in the West Indiana and Special Collections Division.

In addition to providing resources you may consult and borrow, the Library offers audio-visual, computing, photocopying and printing facilities, as well as areas for quiet study and seminars. Our Reference Service will assist you with your research questions.

You may attend specialist information literacy training and arrange for consultation sessions that will help you to improve your research and citation skills. Do attend our Library orientation session and tour to ensure, from the start, that you have access to essential support for your studies.

For further information, please visit the second floor of the Alma Jordan Library or contact:

Mrs Shamin Renwick
BSc, MPhil, MLIS (UWI), FCLIP
Faculty Liaison Librarian (Food and Agriculture)
Science and Agriculture Division
The Alma Jordan Library
Tel.: 662 2002, ext. 83596, 83395
Email: shamin.renwick@sta.uwi.edu

Alma Jordan Library: <http://libraries.sta.uwi.edu/ajl>

Food and Agriculture – Library page:
<http://libraries.sta.uwi.edu/ajl/index.php/food-and-agriculture>

SECTION III - GLOSSARY

TERM	DEFINITION
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Anti-requisite	Two mutually exclusive courses of which credit may be granted for only one.
Co-requisite	A course which must be taken along with another specified course, in order to ensure the attainment of the complementary and/or independent competencies.
Course	A body of knowledge circumscribed by a syllabus to be imparted to students by sundry teaching methods and usually followed by an examination. A course may be either compulsory or elective.
Credit	A measure of the workload required of students. 1 Credit Hour is equivalent to 1 hour lecture/tutorial/problem class per week OR 2 hours of 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 distinguishable from other such bodies on the basis of criteria such as method of enquiry, axioms, area of application.
Elective	A course within a programme taken by choice of the student.

Faculty courses	All courses except Foundation and Co-curricular courses
In-faculty courses	All faculty courses originating in the Science Faculties
Level	A state in a programme for which courses are designed (at UWI it is denoted by the first digit in a course code). For example BIOL 2062 is a Level II course whereas BIOL 3864 is a Level III course.
Major	A specified number of credits (normally 30) including prescribed courses from Level II & III from a single discipline (see Departmental course listing).
Marginal failure	45% to 49% in the overall examination.
Minor	A specified number of credits (normally 15) including prescribed courses from Levels II & III from a single discipline
Option	A prescribed combination of Levels I, II and III courses, within the Faculty or across Faculties, leading to a degree.
Out-of-faculty courses	All faculty courses originating in faculties other than the Faculty of Science and Technology
Part	Portion of a programme defined by the regulations governing the programme.
Plagiarism	The unauthorized and/or unacknowledged use of other person's intellectual efforts and creations howsoever recorded, without proper and unequivocal attribution of such source(s), using the conventions for attributions or citing used in this University.
Pre-requisite	A course which must be passed before the course for which it is required may be pursued.

UNDERGRADUATE REGULATIONS & SYLLABUSES 2014-2015
THE FACULTY OF SCIENCE & TECHNOLOGY

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 regulation) makes a candidate eligible for the award of a degree/ diploma/ certificate.	Full-time Student	A full-time student will normally be expected to register for 12 to 15 credits per semester.
		Evening Student	A student registered in an Evening University Programme will be required to attend classes on weekdays between the hours of 5:00pm - 10:00pm and on Saturdays between the hours of 8:00am - 8:00pm.
Preliminary Course	A Level 0 course used to satisfy entry requirements but does not contribute towards the requirements for the award of the degree.	Specially Admitted Student	Students admitted to pursue a limited number of courses.
Remedial Course	A course that is offered in Summer School only for students who have failed this course during the semester.	Study Abroad/ Student	An exchange programme which allows students to spend one or two semesters at universities Exchange abroad in order to broaden their experience, understanding and perception of science in a different environment where a wider range of courses is available including independent study projects.
Science Faculties	The Faculties of Science and Technology.		
Semester GPA	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, Honours GPA, Cumulative GPA and Quality Points are defined in the UWI Grade Point Average Regulations Booklet).	Supplemental Oral	An oral examination, offered on recommendation of Departments and Faculty, to students who have registered a marginal failure in an advanced course.
Subject	An area of study traditionally assigned to the purview of a department.	Weighted 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.
Students: Part-Time Student	A part-time student will normally be expected to register for 6 to 9 credits of courses per semester. These courses may be scheduled at any time of the day on the timetable.		

SECTION IV - FACULTY REGULATIONS

All students of the University are subject to University Regulations 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.

H. QUALIFICATIONS FOR ADMISSION INTO THE FACULTY

11. In order to be admitted to the three-year degree programme, candidates must satisfy the University requirements for Matriculation (see the University Regulations for Undergraduate Students) and have passed the CSEC General Proficiency Level

examination at Grades I, II or, since 1998, Grade III (or equivalent qualifications) in Mathematics, English Language and three additional subjects listed in Appendix 2.

12. Candidates must also:
- have obtained passes in a minimum of two two-unit subjects at CAPE (or GCE A-Level or equivalent qualification), **OR**
 - have an approved Associate Degree or equivalent certification with a minimum GPA of 2.5 in a relevant programme from a tertiary level institution recognised by UWI, **OR**
 - have any other appropriate qualifications acceptable to the FST.
13. **In addition to the above general qualifications for admission, candidates must also satisfy the specific subject requirements for entry into the various FST programmes they wish to pursue.** These are listed in **TABLE 2**:

TABLE 2 : CAPE (GCE A-LEVEL OR EQUIVALENT) QUALIFICATION FOR ENTRY INTO VARIOUS FST PROGRAMMES*	
PROGRAMME	CAPE SUBJECT(S) (GCE A-LEVEL OR EQUIVALENT) REQUIREMENT
BSc General with majors in:	
• Biochemistry	Chemistry and Biology
• Biology	Two (2) subjects including Biology
• Chemistry	Two (2) subjects including Chemistry
• Industrial Chemistry	Two (2) subjects including Chemistry
• Computer Science	Two (2) subjects including Mathematics
• Electronics	Two (2) subjects including Physics or Mathematics
• Environmental Science	Two (2) subjects including Biology, Geography or Environmental Science
• Information Technology	Two (2) subjects including one (1) science subject
• Mathematics	Two (2) subjects including Mathematics
• Physics	Two (2) subjects including Physics OR Mathematics with CSEC Physics or equivalent (Minimum Grade II)
BSc Special Options:	
• BSc Actuarial Science	Two (2) subjects including Mathematics (Minimum Grade II)
• BSc Biology with specialisations	Two (2) subjects including Biology
• BSc Biomedical Technology	Two (2) subjects including Physics OR Mathematics with CSEC Physics or equivalent (Minimum Average Grade II)
• BSc Chemistry	Two (2) subjects including Chemistry
• BSc Chemistry and Management	Two (2) subjects including Chemistry – (Minimum Average Grade III or equivalent)
• BSc Computer Science	Two (2) subjects including Mathematics
• BSc Computer Science and Management	Two (2) subjects including Mathematics
• BSc Environmental Science & Sustainable Technology	Two (2) science subjects – (Minimum Average Grade III or B). Passes in Biology, Chemistry, Mathematics, Geography and Physics at CSEC level
• BSc Information Technology	Two (2) subjects including one (1) science subject
• BSc Mathematics	Two (2) subjects including Mathematics
• BSc Statistics and Economics	Two (2) subjects including Mathematics (Minimum Average Grade II)
<i>For a list of approved science CAPE/GCE A-Level subjects, see Appendix 2.</i>	

I. APPLICATION PROCEDURE

14. Applications for entry to the FST must be received by the Admissions Section of the Registry by January 31st of the year in which the applicant wishes to enter and shall be accompanied by certified evidence of all relevant examinations passed. Students are encouraged to apply online at <http://www.uwi.edu/students/admissions.aspx>.

J. LIST OF EXEMPTIONS

15. Provided that requirements to Statute 47 are fulfilled, students admitted to the FST may be exempted **with or without credits** from Level I and/or Level II or Level III courses if they:
- are holders of degrees from approved universities; or
 - have partially fulfilled the requirements of such degrees; or
 - are holders of Associate Degrees from approved tertiary level institutions; or
 - have transferred from different BSc degree programmes or from other programmes of study within the University.

Application for **EXEMPTIONS** must be made upon entry to the Registry (Admissions Section).

16. Where **EXEMPTIONS WITHOUT CREDITS** are granted, students will be required to pursue alternative courses as approved by the Head of Department. The following is a list of exemptions with/without credits currently offered by the FST:
- (d) COSTAATT Associate in Science Degree in BIOLOGY:
Students entering the Faculty with a GPA of 2.75 and above in the COSTAATT Associate in Science Degree in Biology will be exempted **WITH CREDIT** from the following:
- CHEM 1062, BIOL 1262, BIOL 1263, BIOL 1362, BIOL 1364
- (e) COSTAATT Associate in Science Degree in CHEMISTRY:
Students entering the Faculty with a GPA of 2.75 and above in the COSTAATT Associate in Science Degree in Chemistry will be exempted **WITH CREDIT** from the following:
- CHEM 1065, CHEM 1066, CHEM 1067 and CHEM 1068
- (f) COSTAATT Associate in Science Degree in PHYSICS:
Students entering the Faculty with a GPA of 2.75 and above in the COSTAATT Associate in Science Degree in Physics will be exempted **WITH CREDIT** from the following:
- PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 and PHYS 1216.

- (g) Students who have The UWI ROYTEC Associate Degree in Information Systems Management (ADISM) **with a minimum GPA of 2.50** will be accepted for entry **without exemption/credits** into the following programmes:
- BSc General (Major/Minor (Computer Science)
 - BSc Computer Science
 - BSc Computer Science and Management
 - BSc Information Technology

- (h) UWI ROYTEC Associate Degree in Information Systems Management (ADISM).
Students with a **GPA of 2.75 or better** admitted into the BSc INFORMATION TECHNOLOGY programme will be exempted **with credits** from the following courses:
- INFO 1500, INFO 1501, INFO 1502, INFO 1503, INFO 1504, INFO 1505, INFO 1506, INFO 1507.
- and **will be permitted to register for Level II courses.**

K. REGISTRATION

17. (a) A student pursuing a degree in the FST may register as a full-time student, a part-time student or as an Evening University student. A student may apply to change his/her status during the tenure of the degree.
- (b) A student who is in full-time employment may pursue a degree as a part-time student or as an Evening University student only.
- (c) Full-time students may take up employment for not more than 12-hours per week without losing their full-time status. A student who is employed for more than 12-hours per week shall be registered as a part-time or an Evening University student.
- (d) A full-time student is normally expected to register for 12 to 15 credits per semester at Level I and 12 to 16 credits per semester at Levels II/III.
- (e) A part-time student is normally expected to register for 6 to 9 credits per semester offered under the day programme.
- (f) An Evening University student is normally expected to register for 6 to 9 credits per semester at Level I and 6 to 12 credits per semester at Levels II/III.
18. (a) Students must register for courses that they wish to pursue by the dates prescribed by the Campus Registrar.
- (b) Changes to registration (add/drop courses) will be permitted only within the prescribed periods at

- the start of Semesters I and II. (Refer to the Campus Web Site and Notice Boards for actual dates)
- (c) A student's registration for a course is complete only after his/her financial obligations to the University have been fulfilled.
19. (a) Registration for any course constitutes registration for the associated examination. A student will therefore have failed the course if s/he does not attend the examination without having previously been allowed to withdraw from the course or without having tendered evidence of illness at the time of the examination, certified by a medical practitioner recognised by the University. **In the latter case, the medical report must reach the Campus Health Service Unit (HSU) no later than seven days after the date of the relevant examination.**
- (b) Medical Certificate/Report forms are available online at <http://sta.uwi.edu/onlineForms.asp>
- (c) In cases where the medical submitted for a missed coursework examination is approved by the Campus HSU, the candidate shall be granted a substitute coursework examination at a date prescribed by the relevant Department.
- (d) In cases where the medical submitted for a missed final examination is approved by the Campus HSU, the grade designation of AM (Absent Medical) will apply provided that the student has passed the coursework in that particular course. The designation AM carries no penalty.
20. (a) A student who has passed a course will not be permitted to re-register for that course.
- (b) A student may not be allowed to register for a course on the grounds of repeated failure or poor performance in that course.
- CAPE/GCE A-Level courses (or equivalent) previously passed.
- (c) Full-time students are required to register for Level I Faculty courses equivalent to a MINIMUM of twelve credits, per semester.
- (d) Part-time students are required to register for courses equivalent to a MINIMUM of 6 credits per semester.
- (e) Evening University students are required to register for courses equivalent to a MINIMUM of 6 credits per semester.
- (f) In order to satisfy the minimum requirement for entry to the advanced part of the programme (Level II and III), a student must normally record passes in Level I courses equivalent to a minimum of twenty-four (24) credits of Faculty courses.
- (g) A student who has obtained passes in Level I Faculty courses equivalent to twelve (12) credits in the first two (2) semesters of full-time study may, on the approval of the Dean, be allowed to register for a **limited number of Level II courses in addition to those courses required to complete Level I requirements. However, the total credit loading per semester must not be exceeded.**
- (h) Full-time students who require **NOT MORE THAN TWENTY (20) CREDITS** in order to graduate, who have satisfied all Foundation course requirements, and are exempted from laboratory coursework in at least one course, may be allowed to register for twenty (20) credits of Faculty courses with the permission of the Dean.

M. STUDY ABROAD/EXCHANGE PROGRAMMES

L. PROGRESS THROUGH THE PROGRAMME

21. (a) Students admitted to the three-year programme, in addition to registering for the required Level 1 courses, may also register for a **maximum of 12 credits in ONE of the Preliminary** subjects offered (Biology, Chemistry, Mathematics or Physics) for the purpose of obtaining pre-requisites for entry into a programme of choice. **However, the total permissible credit loading per semester must not be exceeded.**
- (b) Students may not register for preliminary courses in a subject which overlaps substantially with

22. UWI students, while **at exchange Universities**, will continue as regular full-time students of the University of the West Indies. Such students will pay UWI tuition fees and pursue matching and/or approved courses for credit. Credits earned abroad will be transferred to UWI and applied to regular Faculty degree requirements in accordance with Regulations 47.

23. (a) FST students who wish to participate in an exchange programme at an approved institution and desire to have the credits obtained used toward a UWI degree, must obtain written approval in advance from the Dean and register for equivalent courses offered by FST. **Failure to do so may preclude the acceptance of the credits earned at the exchange institution.**

- (b) Students must normally have a minimum Cumulative GPA of 3.0 and have spent at least two semesters of full-time study at UWI to qualify for the Exchange Programme.
- (c) Where the course to be taken is to be substituted for a UWI course, the content of the course must be certified in advance by the relevant Department as being equivalent to the UWI course. Course outlines and syllabuses must be provided by the student in order to facilitate the evaluation process.
- (d) **Only grades earned at the exchange institution and not the marks shall be used in the computation of the student's GPA.**

Students are advised to visit the website of the Office of Institutional Advancement and Internationalization (International Office) for a current list of Universities with which UWI has entered into cooperative arrangements for study exchanges at <http://sta.uwi.edu/international> or contact:

The Director
Office of Institutional Advancement and
Internationalization
The University of the West Indies
St. Augustine Campus
Trinidad and Tobago, W.I.
Tel: 663-3348 Exts. 84184, 84151
Fax: (868) 662- 6930
Skype: uwi-sta-lo
Email: internationaloffice@sta.uwi.edu

N. EXAMINATIONS

- 24. In order to pass a course, a student must have satisfied the examiners in the associated examinations and must have attended at least 75% of classes associated with that course.
- 25. The Academic Board on the recommendation of the Faculty Board concerned, may debar a student from writing the examination associated with a course, based on attendance of less than 75% of lectures /laboratory classes/tutorials. The designation recorded for such a candidate in that course will be DB (debarred).
- 26. 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. However, oral examinations as well as performance in coursework 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. (Refer to individual course outlines and the departments for the specific modes of assessment and their weightings)

- 27. 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 (unless specified otherwise). On the basis of performance in the practical part of the course, students may, on the recommendation of the Department concerned, be exempted from the practical part of the final examination.
- 28. (a) A student may be granted supplemental oral examinations in failed Level II/III courses accounting for **not more than eight (8) credits** provided that the student has completed all level I requirements and passed a minimum of 30 levels II/III credits.
(b) Students passing such oral examinations will be awarded the minimum pass mark of 50% (Grade C, Quality Point 2.0) and will not have any right of appeal or review of the outcome.
(c) Students offered oral examinations may choose to decline the offer.
- 29. A student who fails the examination associated with a course may be given permission to repeat the course and the examination on subsequent occasions.
- 30. In the event that such a student has satisfied the examiners in the practical coursework component of the failed course, the candidate may, on the recommendation of the relevant Department, be exempted from the laboratory coursework
- 31. A **Remedial course** in FST offered as part of the Summer School Programme is considered a repeat of the course.

O. PLAGIARISM DECLARATION

- 32. A declaration must be made in accordance with the University Regulations on Plagiarism (First Degrees, Diplomas and Certificate) and must be attached to all work submitted by a student to be assessed as part of, or the entire requirement of the course, other than work submitted in an invigilated examination. By signing this declaration, a student is declaring that the work submitted is original and that it does not contain any plagiarised material. See Appendix 3 at the back of this booklet for the Plagiarism Declaration and the University's Regulations regarding Plagiarism.

P. GENERAL REQUIREMENTS FOR THE AWARD OF THE DEGREE

33. In order to be eligible for the award of the BSc degree in FST, students must have:

- i. been in satisfactory attendance for a period equivalent to at least six (6) semesters of full-time study from entry at Level I
- ii. obtained passes in Levels I, II and III and Foundation Courses amounting to the number of credits shown in **TABLE 3**
- iii. a minimum Weighted Grade Point Average of 2.00

iv. the minimum 93 credits required for the award of a BSc General Degree, a MINIMUM of 24 Level I credits of which 12 must be FST credits and at least a major from FST, or

v. a minimum of two years of full-time study and 60 credits provided that they possess qualifications from another recognised tertiary level institution.

PLEASE NOTE CAREFULLY THAT THE CREDIT REQUIREMENT FOR THE AWARD OF THE BSc DEGREES VARIES DEPENDING UPON THE PROGRAMME YOU ARE PURSUING

TABLE 3: CREDIT REQUIREMENT FOR THE VARIOUS DEGREES

DEGREE	LEVEL I CREDITS	LEVEL II - III CREDITS	FOUNDATION COURSES CREDITS	TOTAL
BSc (General) with majors/minors	24	60	9	93*
<i>BSc (Special Options):</i>				
BSc Actuarial Science	30	65	9	104
BSc Biology with Specialisations	24	60	9	93
BSc Biomedical Technology	24	60	9	93
BSc Chemistry	24	60	9	93
BSc Chemistry and Management	24	63	9	96
BSc Computer Science	24	60	9	93
BSc Computer Science and Management	30	60	9	99
BSc Environmental Science & Sustainable Technology	24	60	9	93
BSc Information Technology	24	60	9	93
BSc Mathematics	24	60	9	93
BSc Statistics and Economics	28	62	9	99

** NB: This is the MINIMUM REQUIREMENT and may vary depending upon the credit requirements for the major/minor you are pursuing*

34. Students will be granted credits only once for the same course offered under different majors/minors. In such cases students will be required to pursue alternative courses which must be approved by the Dean.

35. Exemptions from specific parts of the degree programme may be obtained under the provision of Regulations 15 and 16.

(b) Students must make a final declaration of their proposed majors/minors/special options by the end of the registration period of the semester in which they intend to graduate.

(c) Students who have met the requirements for the degree for which they have registered/declared may not register for further courses in pursuit of that degree.

Q. DECLARATION OF MAJORS, MINORS AND SPECIAL OPTIONS

36. (a) Students are required to register for a major/special option upon initial entry into the Faculty. However, students may request a change in major/minor/option as they progress along their degree. Students desirous of pursuing majors in a Faculty other than FST must apply for and obtain official approval from that Faculty before pursuing such majors.

R. TIME LIMITS FOR COMPLETION AND ENFORCED WITHDRAWALS

37. (a) A Semester grade point average (GPA) based on grades earned on all approved courses for which the student is registered in a semester, will be used as the basis for the determination of his/her academic standing.

- (b) A student whose GPA in any Semester is less than 2.00 will be placed on warning.
 - (c) A Dean's Hold will be placed on a student on warning. Such a student will have to seek academic advising from the Dean before the Dean's hold can be removed. This **MUST** be done within the prescribed registration period at the start of the Semester. A reduced academic load may be recommended.
 - (d) **A STUDENT WHO IS ON WARNING AND WHO FAILS TO OBTAIN A SEMESTER GPA OF AT LEAST 2.00 IN THE SUCCEEDING SEMESTER WILL BE REQUIRED TO WITHDRAW FROM THE FACULTY.**
38. For the purposes of Regulation 39 below, any semester in which a student is registered part-time, will be counted as half of a semester of full-time study.
39. (a) Full-time students will normally be required to complete the requirements for the degree in a minimum of six or a maximum of ten semesters of full-time study.
- (b) Students who do not complete the programme within the maximum period stated in Regulation 39 (a) above will normally be required to withdraw from the Faculty at the end of the academic year in which the maximum time limit is reached.
40. In the event that a student has exhausted the maximum period stated in Regulation 39(a), but still requires for the completion of the degree programme:
- (a) passes in courses totaling no more than eight (8) credits, **AND/OR**
 - (b) passes in Foundation courses only,
- approval may be sought from the Board for Undergraduate Studies for an extension of the period of study by one or two consecutive semesters.
41. For the purposes of Regulation 39(a) any semester for which a student has obtained Leave of Absence from the Faculty shall not be counted.
42. A student who was required to withdraw for reasons of failure to progress may be re-admitted to the Faculty on the following conditions:
- (a) A minimum of two consecutive semesters has elapsed since the date of withdrawal.
 - (b) The FST is satisfied that the contributing circumstances for the withdrawal have altered substantially.
- (c) All grades previously obtained, (except those for courses that have been deemed outdated), shall continue to apply for the purpose of determining the student's GPA.
 - (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 Faculty.
43. (a) **A student who was required to withdraw from the Faculty MUST APPLY for re-entry by the date prescribed by the Campus Registrar. A student will not be admitted before a year has elapsed. Application for re-entry must be done prior to the deadline for applications as follows:**
- (b) A student who is required to withdraw at the end of Semester I of an academic year must reapply **by 15th December of the following academic year** for readmission in Semester II of that academic year.
 - (c) A student who is required to withdraw at the end of Semester II or Summer Session of an academic year must reapply **by 30th January of the following academic year** for readmission in Semester I of that academic year.
 - (d) A student who was required to withdraw and was re-admitted and then required to withdraw for a second time, will not normally be considered for re-admission again until a minimum period of five years has elapsed.
- ### **S. LEAVE OF ABSENCE AND VOLUNTARY WITHDRAWAL**
44. (a) A student who wishes to be absent from the Faculty for a semester or more may apply for Leave of Absence.
- (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 of Absence.
 - (c) Leave of Absence will not be granted for more than two consecutive years.
 - (d) Applications for Leave of Absence should normally be submitted no later than the end of the prescribed change in registration period in the relevant semester.

45. A student who does not register for any course during a semester without having obtained Leave of Absence will be deemed to have withdrawn from the University and will have to re-apply for entry to the University if s/he so desires.
46. A student who voluntarily withdraws from the University and then applies for re-admission within five (5) 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.

T. GPA AND CLASS OF DEGREE AWARDED

47. (a) All students in the FST, irrespective of their date of entry into the FST, are subject to the current GPA regulations.
- (b) A Cumulative Grade Point Average based on all courses completed for which grades have been obtained (excluding Preliminary courses, those taken on a Pass/Fail basis, audited courses and courses designated I or IP), will be calculated and recorded on the student's transcript.
- (c) A Weighted Grade Point Average based on grades obtained on **ALL LEVEL II AND III COURSES** registered for, including all courses in the declared major(s)/minor(s)/option whether passed or failed, will be used in the calculation for determination of the class of the degree. (See Regulations 48 and 49 for the relationship between marks, Grade Point Average and Class of Honours).
- (d) First Class Honours, Second Class Honours (Upper and Lower Division), or a Pass degree will be awarded on the basis of the Weighted Grade Point Average (GPA) of all Level II/III courses taken (passed and failed).

U. GRADING SCHEME

48. The Grading Scheme used in the FST is shown in **TABLE 4:**

V. CLASS OF HONOURS

49. A student's class of degree will be based on his/her Weighted Grade Point Average (GPA) of all Level II/III courses as follows:

Honours	Weighted GPA
First	3.60 – 4.3
Upper Second	3.0 – 3.59
Lower Second	2.50 – 2.99
Pass	2.0 – 2.49

TABLE 4 – GRADING SCHEME

GRADE	MARK	GRADE DESCRIPTOR	QUALITY POINT
A+	90-100	Exceptional	4.3
A	80-89	Outstanding	4
A-	75-79	Excellent	3.7
B+	70-74	Very Good	3.3
B	65-69	Good	3
B-	60-64	Satisfactory	2.7
C+	55-59	Fair	2.3
C	50-54	Acceptable	2
F1	45-49	Unsatisfactory	1.7
F2	40-44	Weak	1.3
F3	0-39	Poor	0

W. AEGROTAT DEGREE

50. (a) A candidate who, by virtue of illness, was prevented from attending examinations or part of the examinations associated with one or more Level II/III courses 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 only be granted if all the following conditions are satisfied:
- The relevant 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 coursework.
 - The application reaches The University Registrar not later than thirty (30) days after the date of the last paper in the examination concerned.
 - The application is accompanied by a medical certificate attesting to the illness and issued by a medical practitioner recognised 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 Prerequisite for other Level II/III courses.
- (c) A candidate, having satisfactorily completed the

degree programme, who includes Aegrotat passes in courses counted for the degree programme, will be eligible for the award of an Aegrotat degree, provided that both of the following conditions are satisfied:

- i. the courses in which the Aegrotat passes have been granted (and which need to be counted towards the award of the degree) are equivalent to no more than twenty-four (24) credits.
- ii. no more than sixteen (16) credits mentioned in c (i) above arise from courses making up the candidate's major.

- (f) The Aegrotat degree will be awarded without Honours.

- *Registered UWI students from other UWI campuses.*

- c. Students of the University who have been granted (a) leave of absence for Semester 1 and/or 2 preceding the Summer School Programmes, or (b) permission to Write "Examinations Only", or (c) who have been asked to withdraw and are desirous of continuing with their programme of study
- d. Other persons, not students of the University, who are eligible to matriculate at either the normal or lower level or as a mature student

2. APPLICATIONS

Please visit the Campus Website for further information.

3. FEE PAYMENT

Students will be required to pay a fee for each course registered for in the Summer School Programme. This fee is subject to change. Please visit the university website for current fees

3. ATTENDANCE

MINIMUM ATTENDANCE of 75% of Lectures/Tutorials is required. Attendance at laboratory classes/field trips is compulsory

4. COURSE SELECTION AND REGISTRATION

Persons desirous of pursuing courses in the Faculty's summer programme are required to visit the website at <http://www.sta.uwi.edu/> or consult the Faculty Notice Boards and timetables for a list of courses being offered in the Summer School Programme before registering.

5. LATE REGISTRATION

- a. Students may be permitted to register up to the end of the 2nd week of the start of the Summer School Session on payment of an additional late registration fee of TT\$150.
- b. In cases where examination results for Semester II are declared after May 31, students may be permitted to register up to the end of the 2nd week of the start of the Summer School session.
- c. Summer School students may apply for a change of registration by no later than the end of the 2nd week of the start of the Summer School session.

6. EXAMINATIONS & COURSE LOADS

- a. Examinations for courses taught in the Summer School shall be conducted in accordance with the University Examination Regulations.

SECTION V - REGULATIONS GOVERNING THE FST SUMMER SCHOOL PROGRAMME

The FST generally offers **remedial courses** for students who are repeating laboratory-based and/or non laboratory-based courses during the Summer School. The FST may also offer a limited number of full courses that are non laboratory-based in the Summer School. The maximum number of credits for which a student may register in Summer School is normally nine (9).

1. ELIGIBILITY FOR ADMISSION TO THE SUMMER SCHOOL PROGRAMME

The following categories of students are eligible for admission to the Summer School Programme:

- a. Registered students of the University who have to repeat any of the course(s) offered.
- b. Registered students of the University who have not taken the course(s) previously but fall into one of the following categories:-
 - *Students of the University who have not yet completed the requirements for the degree, diploma or certificate programme for which they are registered.*

- b. Summer School students shall write the University Examinations appropriate to the course(s) for which they are registered.
- c. Students shall not normally be permitted to register for more than THREE one-semester courses (usually 9 credits) in any given Summer School Session. Students are advised to check the timetable before registering.
- d. Finalising students may apply, to the Faculty Dean to pursue up to a maximum of 12 credits.
- e. A student is deemed as finalising if that student has only a maximum of 12 credits left to complete the degree/certificate/diploma requirement.
- f. Students may request permission to carry forward coursework marks for courses pursued in Semester I and/or II to the Summer Programme.
- g. All such requests must be submitted, through the Faculty Dean, to the Assistant Registrar, Student Affairs (Admissions) before the student is allowed to register.
- e. Students who do not satisfy normal matriculation may not use the credits gained in the Summer School for both matriculation and degree purposes.

8. APPLICATION FOR WITHDRAWAL

- a. Students may withdraw from a course by applying to the Senior Assistant Registrar (Admissions) in writing and copying the Faculty Dean or Summer School Coordinator. The student should clearly state the reasons for the withdrawal and complete the required application form for refund where applicable.
- b. Applications for withdrawal from a course must reach the Senior Assistant Registrar (Admissions) no later than two (2) weeks after teaching has begun. Students, who wish to withdraw from a course after the deadline date, must apply to Academic Board, through their respective Faculty Office.

9. REFUND POLICY

- a. A refund penalty is charged as follows:
 - i. No penalty before May 30th, 2015
 - ii. 25% of tuition fees up to June 2, 2015 (up to the end the 1st week of teaching)
 - iii. 30% of tuition fees up to June 9, 2015 (up to the end of the 2nd week of teaching)

10. PAYMENT OF FEES

- a. Part payment of fees is NOT allowed
- b. Fees must be paid at any Branch of Republic Bank Ltd. using the bank deposit slip provided
- c. Registration in the summer session will carry a non-refundable registration fee
- d. Courses not dropped by the deadline date will be counted and the student would be billed accordingly.
- e. Late registration fee/late payment penalty includes the registration fee PLUS the Late Registration fee/late payment penalty.

NOTE: Registration for a course offered in the Summer School implies registration for the examination of that course.

7. AWARD OF CREDITS

- a. Credits for courses successfully completed in the Summer School shall be granted to registered students of the University including those on approved leave of absence.
- b. Persons wishing to pursue a course(s) to be considered as 'Not for Credit' (NFC) must seek approval prior to registering for the course. All such requests must be made, in writing, or on the required form, to the Dean of the Faculty. Students will not subsequently have such credit altered.
- c. Summer School students who have not been offered a place at the University have no automatic right of acceptance into any Faculty of the University.
- d. Persons who are accepted into the University may be granted credit/exemption for courses successfully completed in the Summer School provided that five (5) years have not elapsed since the completion of the relevant course(s).

SECTION VI - PRIZES

A number of prizes are offered on an annual basis to students in the Faculty based on outstanding academic performance. The following is a list of such prizes. Note that this list is subject to alteration.

FACULTY PRIZES

These prizes are awarded to all First Class Honours students within the Faculty by the Office of the Dean.

DEPARTMENT OF CHEMISTRY

THE WESTERN SCIENTIFIC PRIZE

Awarded for the best Year I performance in Chemistry

THE BERGER PAINTS TRINIDAD LTD. PRIZE

Awarded for the best Year II performance in Chemistry

THE CHROMASPEC LTD. PRIZE

Awarded for the best Year II performance in Chemistry & Management

THE INDUSTRIAL GASES LTD. PRIZE

Awarded for the best Year III performance in Chemistry

THE SOUTHERN SYSTEMS LTD. PRIZE

Awarded for the best graduating student in Chemistry

THE PERKIN ELMER/SCALAR SCIENTIFIC PRIZE

Awarded for the best performance in Analytical Chemistry

THE WESTERN SCIENTIFIC PRIZE

Awarded for the best Year III performance in Chemistry & Management

THE CHERYL BOWLES CHALLENGE TROPHY PRIZE

Awarded for the best Final Year Analytical Chemistry Project

THE ANIL DEISINGH PRIZE

Awarded for the best Graduating Student entering the Chemistry Postgraduate Programme

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

THE IBM WORLD TRADE CORPORATION PRIZE

Awarded for the best Year I performance in Computer Science

MINDBASE CONSULTING LTD. PRIZE

Awarded for the best Year I performance in Information Technology

THE TUCKER ENERGY SERVICES HOLDINGS LTD. PRIZE

Awarded for the best Year II performance in Computer Science

THE RBC ROYAL BANK OF TRINIDAD & TOBAGO LTD. PRIZE

Awarded for the best Year II performance in Information Technology

THE FUJITSU TRANSACTION SOLUTION LIMITED PRIZE

Awarded for the best Year III performance in Computer Science

THE DIGI DATA SYSTEMS LTD. PRIZE

Awarded for the best Year III performance in Information Technology

ATLANTIC CO. OF TRINIDAD AND TOBAGO PRIZE

Awarded to the most outstanding graduate: B.Sc. General (Major in Computer Science)

DR MARGARET BERNARD MEDULLAN AWARD

Awarded to the graduate in Computer Science with the highest GPA

DEPARTMENT OF LIFE SCIENCES

PLANT SCIENCE

THE PROFESSOR E.J. DUNCAN PRIZE

Awarded for the best Research Project in Plant Science

BIOCHEMISTRY

THE BRYDEN PI CARIBBEAN PRIZE

Awarded for the best Year II performance by a student majoring in Biochemistry

THE ANGOSTURA LIMITED PRIZE

Awarded for the best Year III performance by a student majoring in Biochemistry

BIOLOGY

THE REPUBLIC BANK LTD. PRIZE

Awarded for the best Year I performance in Biology

THE NEAL AND MASSY PRIZE

Awarded for the best Year II performance in Biology

THE NEAL AND MASSY PRIZE

Awarded for the best Year III performance in Biology

THE SEETERRAM BOOK CENTRE PRIZE

Awarded for the best overall performance in Biology – Book Voucher Prize

**ENVIRONMENTAL & NATURAL RESOURCE
MANAGEMENT**

**THE ASA WRIGHT NATURE CENTRE-JULIAN DUNCAN
PRIZE**

Awarded for the best Year I performance in Environmental
& Natural Resource Management

**THE ASA WRIGHT NATURE CENTRE - THOMAS CARR
PRIZE**

Awarded for the best Year II performance in Environmental
& Natural Resource Management

THE ASA WRIGHT NATURE CENTRE – IAN LAMBIE PRIZE

Awarded for the best Year III performance in Environmental
& Natural Resource Management

**THE ENVIRONMENTAL MANAGEMENT AUTHORITY
(EMA) PRIZE**

Awarded for the Best Research Project

SPECIAL PRIZE:

THE JULIAN KENNY PRIZE IN NATURAL HISTORY

Awarded to the final year undergraduate student majoring
in a Life Science discipline and displaying a strong interest
in Natural History

**DEPARTMENT OF MATHEMATICS &
STATISTICS**

THE POWERGEN PRIZE

Awarded for the best Year I performance in Mathematics

THE GUARDIAN LIFE OF TRINIDAD & TOBAGO PRIZE

Awarded for the best Year II performance in Mathematics

THE TATIL GROUP PRIZE

Awarded for the best Year III performance in Mathematics

THE WINSTON A. RICHARDS PRIZE IN STATISTICS

Awarded for the best Year II and Year III performance in
Statistics

HEAD OF DEPARTMENT PRIZE

Awarded for the best Year II performance in Actuarial
Science

HEAD OF DEPARTMENT PRIZE

Awarded for the best Year II performance in Actuarial
Mathematics Courses

THE HAROLD RAMKISSOON PRIZE

Awarded for the best Year II and Year III performance in
Mathematics

DEPARTMENT OF PHYSICS

**THE RUSSELL BARROW MEMORIAL PRIZE IN
ASTRONOMY**

Awarded to the student showing the most initiative and
effort in Astronomy outside the formal classroom

THE VICAR ENTERPRISES LIMITED PRIZE

Awarded for the best Year I performance in Physics

THE AZAD W. HARRIPAUL PRIZE

Awarded to the student with the highest marks in the level
II of the programme for the course Bioengineering

THE BERGER PAINTS TRINIDAD LTD. PRIZE

Awarded for the best Year II performance in Physics

THE DEVA SHARMA PRIZE

Awarded for the best performance by a female student
graduating with a major in Physics

THE P.C.S. NITROGEN PRIZE

Awarded for the best Year II performance in Materials
Science

THE ANTHONY CAMPBELL MEMORIAL AWARD

Awarded for the best performance in the Physics Major
Research Project

THE TRINIDAD AGGREGATE PRODUCTS PRIZE

Awarded for the best performance in Ceramics Science

THE CARIRI PRIZE

Awarded for the best Year III performance in Materials
Science

THE BRUNO MITCHELL PRIZE

Awarded for the best performance in Astrophysics Course

DIAGNOSTIC NUCLEAR MEDICINE LTD. PRIZE

Awarded to the most outstanding student in Introduction
to Medical Physics

THE FREDERICK IGNATIUS CAMPAYNE PRIZE

Awarded for best performance in Quantum Mechanics

SECTION VII - PROGRAMME OUTLINES

DEPARTMENT OF CHEMISTRY

List of Courses offered in the Department of Chemistry for the 2014/2015 academic year.

COURSE LISTING

SEMESTER 1

Course Code	Course Title	Credits
CHEM 0060	Preliminary Chemistry I	0
CHEM 1062	Basic Chemistry for Life Sciences	3
CHEM 1066	Introduction to Chemistry I	3
CHEM 2170	Fundamentals of Inorganic Chemistry I	3
CHEM 2270	Organic Chemistry I	3
CHEM 2370	Physical Chemistry I	3
CHEM 2470	Introduction to Analytical Chemistry	3
CHEM 2770	Introduction into Research in Chemistry Learning (<i>Elective</i>)	3
CHEM 3162	Chemistry of Metal-Catalyzed Transformations (<i>Elective</i>)	3
CHEM 3268	Chemistry of Natural Products (<i>Elective</i>)	3
CHEM 3367	Thermodynamics & Statistical Thermodynamics (<i>Remedial only</i>)	3
CHEM 3560*	Environmental Chemistry (<i>Elective</i>)	4
CHEM 3561*	Introduction to Polymer Chemistry (<i>Elective</i>)	4
CHEM 3870	Principles of Chemical Biology (<i>Elective</i>)	3
CHEM 3660	Research Project	4

(*These courses are only for students already registered for the Applied Chemistry Minor and are repeating or have passed at least two of these so far.)

NEW COURSES INTRODUCED SEMESTER I - 2014/15

Course Code	Course Title	Credits
CHEM 1070	Introductory Chemistry Laboratory (<i>Yearlong</i>)	3
CHEM 2672	Core Chemistry Laboratory I	3
CHEM 3273#	Synthesis of Blockbuster Drugs	3
CHEM 3573#	Contemporary Chemistry	3
CHEM 3470	Analytical Methods in Chemistry II (<i>Elective</i>)	3
CHEM 3564	Principles of Polymer Chemistry (<i>Elective</i>)	3
CHEM 3570	Chemistry of the Environment (<i>Elective</i>)	3
CHEM 3575	Chemistry and Industry I (<i>Elective</i>)	3
CHEM 3577	Green Chemistry (<i>Elective</i>)	3
CHEM 3670	Research Project for Chemistry Majors	3
CHEM 3671	Research Project for BSc Chemistry (<i>Yearlong</i>)	6

(# This is a core course for the BSc. Chemistry degree but can also be used as an Elective for other programmes)

SEMESTER 2

Course Code	Course Title	Credits
CHEM 0061	Preliminary Chemistry II	0
CHEM 1067	Introduction to Chemistry II	3
CHEM 1068	Introduction to Chemistry III	3
CHEM 2471	Analytical Methods in Chemistry (<i>Elective</i>)	3
CHEM 2472	Analytical Chemistry Laboratory (<i>Elective</i>)	3
CHEM 3163	Chemistry of Technologically Important Materials (<i>Elective</i>)	3
CHEM 3170	Fundamentals of Inorganic Chemistry II	3
CHEM 3270	Organic Chemistry II	3
CHEM 3370	Physical Chemistry II	3
CHEM 3562 *	Corrosion Science (<i>Elective</i>)	4
CHEM 3569 *	Industrial Chemistry I (<i>Elective</i>)	4
CHEM 3660	Research Project	4

(*These courses are only for students already registered for the Applied Chemistry Minor and are repeating or have passed at least two of these so far.)

NEW COURSES INTRODUCED SEMESTER 2 - 2014/15

Course Code	Course Title	Credits
CHEM1070	Introductory Chemistry Laboratory (<i>Yearlong</i>)	3
CHEM2673	Core Chemistry Laboratory II	3
CHEM 3172#	Advanced Inorganic Chemistry	3
CHEM 3373#	Advanced Topics in Physical Chemistry	3
CHEM 3563	Environmental Degradation of Materials (<i>Elective</i>)	3
CHEM 3576	Chemistry of Medicines (<i>Elective</i>)	3
CHEM 3578	Energy for a Sustainable Future (<i>Elective</i>)	3
CHEM 3579	Chemistry and Industry II (<i>Elective</i>)	3
CHEM 3670	Research Project for Chemistry Majors	3
CHEM 3671	Research Project for BSc Chemistry (<i>Yearlong</i>)	6
CHEM 3871	Methods in Chemical Biology (<i>Elective</i>)	3

(# This is a core course for the BSc. Chemistry degree but can also be used as an Elective for other programmes)

Please note:

- I. Preliminary Chemistry I (CHEM 0060) and II (CHEM 0061) are offered by the Faculty of Science and Technology. These courses are not counted towards a student's credit requirements for the BSc degree. However they can be used as pre-requisites for other courses/ programmes.
- II.
 - a. Basic Chemistry for Life Sciences (CHEM 1062) is offered for students who have little exposure to Chemistry and intend to pursue studies in Agriculture, Human Ecology or the Life Sciences.
 - b. **CHEM 1062 cannot be done in conjunction with CHEM 1066, CHEM 1067, CHEM 1068 and CHEM 1070 or CHEM 0060 and CHEM 0061.**
- III. Students who have already passed Chemistry at CAPE (Units 1 and 2), GCE A-Level or Preliminary Chemistry (CHEM 0060 and CHEM 0061) or equivalent at UWI will be exempted from CHEM 1062 (Basic Chemistry for Life Sciences).
- IV. For all Preliminary, Level I and Level II Chemistry courses (unless otherwise stated) practical work will be assessed throughout the semester and will contribute to the candidate's final mark.
 - a. **NOTE:** Students will be debarred from writing the final examination if they have not attended, completed and handed in lab reports for at least 75% of the laboratory experiments.
- V The courses

- CHEM 3560 (Environmental Chemistry)/
 - CHEM 3570 (Chemistry of the Environment)and
 - CHEM 3569 (Industrial Chemistry)/
 - CHEM3579 (Chemistry of the Industry II) and
 - CHEM 3575 (Chemistry of Industry I)
- have restricted enrollment. Entry into these courses is highly competitive and selection will be based on students' academic records.

Students interested in pursuing these courses are required to complete an **application form**, available from the Chemistry General Office, the semester before the course is due to run.

- VI. Students wishing to pursue the new Analytical Chemistry Minor will be required to complete an **application form** available from the Chemistry General Office. Only successful applicants will be able to register for the courses.

Major in Chemistry

NEW COURSES AND AMENDMENTS TO THE CHEMISTRY MAJOR AND MINOR, AND THE B.SC. CHEMISTRY DEGREE - 2014/2015

Over the past two academic years the Department of Chemistry has been phasing in its new curriculum, starting with the Level I programme and it is now in the final stages for 2014/2015. During this period the Department has done some analysis of the new courses and programmes and has made some further changes, to be implemented in 2014/2015.

- At Level I, the three credit one semester laboratory course, CHEM1065, will no longer be run; instead students will be required to do a yearlong three credit lab course, CHEM1070, to be called Introductory Chemistry Laboratory.
- At Level II, there will be two three-credit laboratory courses - CHEM2672 (Semester I) and CHEM 2673 (Semester II) - instead of the two 1.5 credit laboratory courses - CHEM 2670 and CHEM 2671 - previously offered.
- The Minor in Chemistry will now consist of the following courses: CHEM2170, CHEM2270, CHEM2370, CHEM2470 and CHEM2672 – worth 3 credits each.
- Chemistry majors will be required to do at Level III a one Semester Research Project, CHEM3670 in either Semester I or II. Students with the prerequisites CHEM2672 and CHEM2673 will need to follow this new course. CHEM3670 will be essentially identical to the current project course, CHEM 3660, except that it will be weighted at three credits.

- For the 2014/2015 academic year we propose to introduce the courses which will enable students doing the new B.Sc. Chemistry degree to complete the Level III (final year) of their programme.
- The Level III B.Sc. Chemistry curriculum will consist of four core courses, CHEM 3172 CHEM 3273, CHEM 3373 and CHEM 3573 and four advanced elective courses (12 credits) of which up to two (6 credits) can be advanced courses outside of Chemistry approved by the Department of Chemistry. Students will be allowed to do any courses for which they have the prerequisites and which do not substantially overlap with any course they have already passed. The B.Sc. Chemistry degree also includes a six credit final year project, CHEM 3671, B.Sc. Chemistry Project, to run over two Semesters (Yearlong).

INTRODUCING A NEW MAJOR, NEW MINORS AND ELECTIVES FOR 2014/2015

The Department is introducing one new major and three new minors in 2014/2015. (*See programme details*)

- Major in Industrial Chemistry
- Minor in Industrial Chemistry (replaces the Minor in Applied Chemistry)
- Minor in Chemical Biology
- Minor in Materials Chemistry
- New Electives:
 - CHEM 3563 (ENVIRONMENTAL DEGRADATION OF MATERIALS) - students will not be allowed to register for this course if they have already passed CHEM3562 (CORROSION SCIENCE).
 - CHEM3564 (PRINCIPLES OF POLYMER CHEMISTRY) – students will not be allowed to register for this course if they have already passed CHEM3561 (Introduction to Polymer Chemistry).
 - CHEM 3570 (CHEMISTRY OF THE ENVIRONMENT) – students will not be allowed to register for this course if they have already passed CHEM3560 (Environmental Chemistry).
 - CHEM 3575 (CHEMISTRY AND INDUSTRY I)
 - CHEM 3576 (CHEMISTRY OF MEDICINES)
 - CHEM 3577 (GREEN CHEMISTRY)
 - CHEM 3578 (ENERGY FOR A SUSTAINABLE FUTURE)
 - CHEM 3579 (CHEMISTRY AND INDUSTRY II) - students will not be allowed to register for this course if they have already passed CHEM3569 (Industrial Chemistry)
 - CHEM 3871 (METHODS IN CHEMICAL BIOLOGY)

Major in Chemistry (NEW/ REVISED FOR 2014/2015) (30 Credits)

The new major will require the following courses amounting to 30 credits over Level II and Level III as follows:

COURSE LISTING

LEVEL I

SEMESTER 1

Course Code	Course Title	Credits
CHEM 1066	Introduction to Chemistry I	3
CHEM 1070	Introductory Chemistry Laboratory (<i>Yearlong. Credits applied in Semester 2</i>)	

LEVEL I

SEMESTER 2

Course Code	Course Title	Credits
CHEM 1067	Introduction to Chemistry II	3
CHEM 1068	Introduction to Chemistry III	3
CHEM1070	Introductory Chemistry Laboratory (<i>Yearlong</i>)	3

CORE COURSES

LEVEL II

SEMESTER 1

Course Code	Course Title	Credits
CHEM 2370	Physical Chemistry I	3
CHEM 2470	Introduction to Analytical Chemistry	3
CHEM 2672 **	Core Chemistry Laboratory I	3

(** Replaces CHEM 2670 at 1.5 credits)

LEVEL II

SEMESTER 2

Course Code	Course Title	Credits
CHEM 2673**	Core Chemistry Laboratory II	3
CHEM 3370	Physical Chemistry II	3

(** Replaces CHEM 2671 at 1.5 credits)

LEVEL III

SEMESTER 1

Course Code	Course Title	Credits
CHEM 2170	Fundamentals of Inorganic Chemistry I	3
CHEM 2270	Organic Chemistry I	3

LEVEL III

SEMESTER 2

Course Code	Course Title	Credits
CHEM 3170	Fundamentals of Inorganic Chemistry II	3
CHEM 3270	Organic Chemistry II	3

LEVEL III

SEMESTER 1 OR 2

Course Code	Course Title	Credits
CHEM 3670	Research Project for Chemistry Majors	3

NOTE CAREFULLY: For those students who began the new Chemistry Major in 2013/2014 and have already passed CHEM 2670 and CHEM 2671, the Advanced Chemistry Laboratory at 1.5 credits each, will need to do one Chemistry Elective in order to satisfy the 30 advanced credits for the Chemistry Major.

Major in Industrial Chemistry (NEW FOR 2014/2015)

30 Credits

PLEASE NOTE THAT THE MAJOR IN INDUSTRIAL CHEMISTRY CAN ONLY BE PURSUED IN CONJUNCTION WITH THE MAJOR IN CHEMISTRY

COURSE LISTING

LEVEL II/III

SEMESTER 1

Course Code	Course Title	Credits
CHEM 3564	Principles of Polymer Chemistry	3
CHEM 3575	Chemistry and Industry I	3
CHEM 3577	Green Chemistry	3

LEVEL II/III

SEMESTER 2

Course Code	Course Title	Credits
CHEM 3163	Chemistry of Technological Important Materials	3
CHEM 3563	Environmental Degradation of Materials	3
CHEM 3579	Chemistry and Industry II	3

PLUS

LEVEL III

SUMMER INTERNSHIP

Course Code	Course Title	Credits
CHEM 3671	Research Project for BSc Chemistry: Summer Internship at end of Level II	6

PLUS

TWO (2) LEVEL II/III ELECTIVES from Chemistry or approved courses from outside of Chemistry
(Total of 6 credits)

Minor in Chemistry

(NEW/REVISED FOR 2014/2015)
(15 Credits)

COURSE LISTING LEVEL II OR III

SEMESTER 1

Course Code	Course Title	Credits
CHEM 2470	Introduction to Analytical Chemistry	3
CHEM 2672 #	Core Chemistry Laboratory I	3
CHEM 2370	Physical Chemistry I	3

(# CHEM 2672 has replaced CHEM 2670 and CHEM 2671 (Advanced Chemistry Laboratory I & II at 1.5 credits each) from 2014/2015)

LEVEL II OR III

SEMESTER 1

Course Code	Course Title	Credits
CHEM 2170	Fundamentals of Inorganic Chemistry I	3
CHEM 2270	Organic Chemistry I	3

The Minor in Analytical Chemistry

(15 Credits)

Students pursuing the Minor or Major or BSc in Chemistry can register for this Analytical Chemistry Minor and will complete 15 credits of courses as outlined below.

Students wishing to pursue the new Analytical Chemistry Minor will be required to complete an **application form** available from the Chemistry General Office.

COURSE LISTING

LEVEL II/III

SEMESTER 1

Course Code	Course Title	Credits
	Elective ***	3

CORE COURSES

LEVEL II

SEMESTER 2

Course Code	Course Title	Credits
CHEM 2471	Analytical Methods in Chemistry	3
CHEM 2472	Advanced Analytical Laboratory	3

LEVEL II/III

SEMESTER 2

Course Code	Course Title	Credits
	Elective ***	3

CORE COURSE

LEVEL III

SEMESTER 1

Course Code	Course Title	Credits
CHEM 3470	Analytical Methods in Chemistry II	3

*** These electives must be chosen from the following:
CHEM 3570, CHEM 3564, CHEM 3563, CHEM 3579,
CHEM 3870, MATH 2190, AGBU 2003 and AGRI 3000.

Minor in Industrial Chemistry (NEW)

(15 Credits)

(This New Minor replaces the Minor in Applied Chemistry - Please note that students who have previously started the Minor in Applied Chemistry should complete it during the year 2014/2015)

PLEASE NOTE THAT THE MINOR IN INDUSTRIAL CHEMISTRY CAN ONLY BE PURSUED IN CONJUNCTION WITH THE MAJOR OR MINOR IN CHEMISTRY.

COURSE LISTING

LEVEL II/III

SEMESTER 1

Course Code	Course Title	Credits
CHEM 3564 //	Principles of Polymer Chemistry	3
CHEM 3575	Chemistry and Industry I	3
CHEM 3577	Green Chemistry	3

SEMESTER 2

Course Code	Course Title	Credits
CHEM 3563 //	Environmental Degradation of Materials	3
CHEM3579 //	Chemistry and Industry II	3

Please refer to the equivalent courses below. If any two equivalent pairs of courses are done, credit will only be given for one.

- // **CHEM3563** (Environmental Degradation of Materials) and CHEM3562 (Corrosion Science)
- // **CHEM3564** (Principles of Polymer Chemistry) and CHEM3561 (Introduction to Polymer Chemistry)
- // **CHEM3579** (Chemistry and Industry II) and CHEM3569 (Industrial Chemistry)

Minor in Chemical Biology (NEW)

(15 Credits)

PLEASE NOTE THAT A MINOR IN CHEMICAL BIOLOGY CAN ONLY BE PURSUED IN CONJUNCTION WITH THE MAJOR OR MINOR IN CHEMISTRY.

COURSE LISTING

LEVEL II/III

SEMESTER 1

Course Code	Course Title	Credits
CHEM 3268	Natural Products Chemistry	3
CHEM 3870	Principles of Chemical Biology	3

SEMESTER 2

Course Code	Course Title	Credits
CHEM 3576	Chemistry of Medicines	3
CHEM 3871	Methods of Chemical Biology	3

PLUS

ONE (1) Approved Elective (Chemistry OR Biology OR Biochemistry Elective OR Other Suitable Elective) 3
(See Head of Department)

Minor in Materials Chemistry (NEW)

(15 Credits)

PLEASE NOTE THAT A MINOR IN MATERIALS CHEMISTRY CAN ONLY BE PURSUED IN CONJUNCTION WITH THE MAJOR OR MINOR IN CHEMISTRY.

COURSE LISTING

LEVEL II/III

SEMESTER 1

Course Code	Course Title	Credits
CHEM 3162	Chemistry of Metal Catalysed Transformations	3
CHEM 3564	Principles of Polymer Chemistry	3
PHYS 2165	Materials Science	3

SEMESTER 2

Course Code	Course Title	Credits
CHEM3163	Chemistry of Technologically Important Materials	3

PLUS

ONE (1) Approved Chemistry Elective (will not be available until 2015/2016) – 3 credits

BSC IN CHEMISTRY

(NEW/REVISED – 2014/2015)

(93 Credits)

In addition to the Level I Chemistry courses (12 credits), students pursuing the BSc in Chemistry will require passes in CAPE Mathematics Units 1 and 2 or MATH 1115 and MATH 1125 or equivalent. Students who have the required passes in CAPE Mathematics Units 1 and 2 will then need to pursue any other four (4) Level I Faculty courses (at least 3 credits each) in order to satisfy the minimum Level I requirements of 24 credits. Also note carefully, the students who need to read MATH 1115 and MATH 1125 (3 credits each) will be required to complete any other two (2) Level I Faculty credits (at least 3 credits each) in order to fulfil the minimum Level I requirements.

At Level II students registered for the B.Sc. Chemistry will complete the courses required for a major in Chemistry and at Level III will pursue eighteen (18) credits of required advanced core courses in Chemistry and a further twelve credits of approved electives thus completing a total of sixty (60) credits of advanced courses. The full programme is outlined below.

COURSE LISTING

LEVEL I

SEMESTER 1 (12 credits)

Course Code	Course Title	Credits
CHEM 1066	Introduction to Chemistry I	3
CHEM 1070	Introductory Chemistry Laboratory (Yearlong)	
MATH 1115 #***	Fundamental Mathematics for the General Sciences I	3

PLUS

ONE (1) other Level I, 3-credit course chosen from allowed Faculty courses. – 3 credits

***** For students without CAPE/GCE A-Level
Mathematics or equivalent.**

LEVEL I

SEMESTER 2 (12 credits)

Course Code	Course Title	Credits
CHEM 1067	Introduction to Chemistry II	3
CHEM 1068	Introduction to Chemistry III	3
CHEM 1070	Introductory Chemistry Laboratory (Yearlong)	3
MATH 1125 #***	Fundamental Mathematics for the General Sciences II	3

PLUS

ONE (1) other Level I, 3-credit course chosen from allowed Faculty courses. – 3 credits

***** For students without CAPE/GCE A-Level
Mathematics or equivalent.**

LEVEL II

SEMESTER 1 (15 Credits)

Course Code	Course Title	Credits
CHEM 2170	Fundamentals of Inorganic Chemistry I	3
CHEM 2270	Organic Chemistry I	3
CHEM 2370	Physical Chemistry I	3
CHEM 2470	Introduction to Analytical Chemistry	3
CHEM2672	Core Chemistry Laboratory I	3

LEVEL II

SEMESTER 2 (15 Credits)

Course Code	Course Title	Credits
CHEM 2673	Core Chemistry Laboratory II	3
CHEM 3170	Fundamentals of Inorganic Chemistry II	3
CHEM 3270	Organic Chemistry II	3
CHEM 3370	Physical Chemistry II	3

PLUS

ONE (1) Chemistry Elective 3

LEVEL III

SEMESTER 1

Course Code	Course Title	Credits
CHEM3273	Synthesis of Blockbuster Drugs	3
CHEM3573	Contemporary Chemistry	3
CHEM 3671	Research Project for BSc Chemistry (Yearlong)	

PLUS

TWO (2) Electives### 3
credits each

LEVEL II SEMESTER 2

Course Code	Course Title	Credits
CHEM 3373	Advanced Topics in Physical Chemistry	3
CHEM 3172	Advanced Inorganic Chemistry	3
CHEM 3671	Research Project for BSc Chemistry (Yearlong)	6

PLUS

TWO (2) Electives### - 3 credits each

**NOTE: ### At least two (2) of the four (4) Electives
must be from Chemistry. For those courses
outside the Faculty of Science and Technology,
students must seek approval from the Head of
Department.**

Major in Chemistry

**(NOT AVAILABLE TO STUDENTS ENTERING
AFTER 2013/2014)**
(33 CREDITS)

COURSE LISTING

PREREQUISITE LEVEL I COURSES

LEVEL I

SEMESTER 1

Course Code	Course Title	Credits
CHEM 1060 ##	Introductory Chemistry I	6
CHEM 1061 ##	Introductory Chemistry II	6
OR		
CHEM 1065	Introduction to Chemistry Laboratory	3
CHEM 1066	Introduction to Chemistry I	3

Discontinued w.e.f. 2012/2013

LEVEL I

SEMESTER 2

Course Code	Course Title	Credits
CHEM 1067	Introduction to Chemistry II	3
CHEM 1068	Introduction to Chemistry III	3

CORE COURSES

LEVEL II

SEMESTER 1

Course Code	Course Title	Credits
CHEM 2025	Kinetics & Mechanism	4
CHEM 2160	Main Group Chemistry	4
CHEM 2360	Basic Physical Chemistry	4

LEVEL II

SEMESTER 2

Course Code	Course Title	Credits
CHEM 2015	Spectroscopy	4
CHEM 2260	Basic Organic Chemistry I	4

LEVEL III

SEMESTER 1 OR 2

Course Code	Course Title	Credits
CHEM 3660	Research Project	4

PLUS

(i) **EITHER** nine (9) credits of Level III courses from List 1

Minor in Analytical Chemistry **(NOT AVAILABLE TO STUDENTS ENTERING** **AFTER 2013/2014)** **(16 CREDITS)**

Chemistry Majors can also pursue a minor in Analytical Chemistry by taking the following additional courses. For these students, only one Research Project CHEM 3660 will be required (see MAJOR IN CHEMISTRY). **PLEASE NOTE THAT A MINOR IN ANALYTICAL CHEMISTRY CAN ONLY BE PURSUED IN CONJUNCTION WITH THE MAJOR IN CHEMISTRY.**

COURSE LISTING

LEVEL II

SEMESTER 2

Course Code	Course Title	Credits
CHEM 2460	Principles of Chemical Analysis	4

LEVEL III

SEMESTER 1

Course Code	Course Title	Credits
CHEM 3467	Basic Analytical Chemistry	6

LEVEL III

SEMESTER 2

Course Code	Course Title	Credits
CHEM 3468	Advanced Analytical Chemistry	6

Minor in Applied Chemistry **(REMAINS THE SAME FOR 2014/2015 BUT** **AVAILABLE ONLY TO STUDENTS ALREADY** **REGISTERED FOR THIS MINOR)** **(16 CREDITS)**

THE COURSES BELOW WILL BE OFFERED FOR ONLY ONE MORE YEAR - THE 2014/2015 ACADEMIC YEAR.

Therefore, **students should try to complete these courses within the academic year 2014/2015.** If this is not possible please seek academic advising from the Head of Department.

FOR STUDENTS PURSUING THE **NEW CURRICULUM**, PLEASE NOTE THAT THE **MINOR IN APPLIED CHEMISTRY HAS BEEN REPLACED WITH THE MINOR IN INDUSTRIAL CHEMISTRY (15 Credits).**

PLEASE NOTE THAT A **MINOR IN APPLIED CHEMISTRY** CAN ONLY BE PURSUED IN CONJUNCTION WITH THE **MAJOR IN CHEMISTRY.**

COURSE LISTING

LEVEL III

SEMESTER 1

Course Code	Course Title	Credits
CHEM 3560	Environmental Chemistry	4
CHEM 3561	Introduction to Polymer Chemistry	4

SEMESTER 2

Course Code	Course Title	Credits
CHEM 3562	Corrosion Science	4
CHEM 3569	Industrial Chemistry I	4

BSC CHEMISTRY AND MANAGEMENT

(INCORPORATES CHANGES MADE TO THE CHEMISTRY MAJOR FOR 2014/2015)

(PLEASE SEE APPENDIX 1 which outlines the specific prerequisites for the Management courses pursued by Chemistry and Management students.)

The Department introduced a revised major in Chemistry in 2013/2014. Students will now be required to pursue Chemistry courses amounting to 30 credits over Level II and Level III.

COURSE LISTING

(A) LEVEL I SEMESTER 1

Course Code	Course Title	Credits
ACCT 1002	Introduction to Financial Accounting	3
CHEM 1066	Introduction to Chemistry I	3
CHEM 1070	Introductory Chemistry Laboratory (Yearlong)	
ECON 1001	Introduction to Economics I	3
ECON 1005	Introduction to Statistics	3

SEMESTER 2

Course Code	Course Title	Credits
ACCT 1003	Introduction to Cost and Management Accounting	3
CHEM 1067	Introduction to Chemistry II	3
CHEM 1068	Introduction to Chemistry III	3
CHEM 1070	Introductory Chemistry Laboratory (Yearlong)	3

TOTAL LEVEL I CREDITS 24

(B) CHEMISTRY ADVANCED COURSES (30 Credits)

LEVEL II

SEMESTER 1

Course Code	Course Title	Credits
CHEM 2370	Physical Chemistry I	3
CHEM 2470	Introduction to Analytical Chemistry	3
CHEM 2672	Core Chemistry Laboratory I	3

LEVEL II

SEMESTER 2

Course Code	Course Title	Credits
CHEM 3370	Physical Chemistry II	3
Chem 2673	Core Chemistry Laboratory II	3

LEVEL III

SEMESTER 1

Course Code	Course Title	Credits
CHEM 2170	Fundamentals of Inorganic Chemistry I	3
CHEM 2270	Organic Chemistry I	3

LEVEL III

SEMESTER 2

Course Code	Course Title	Credits
CHEM 3170	Fundamentals of Inorganic Chemistry II	3
CHEM 3270	Organic Chemistry II	3

LEVEL III

SEMESTER 1 OR 2

Course Code	Course Title	Credits
CHEM 3670	Research Project for Chemistry Majors	3

(C) MANAGEMENT ADVANCED COURSES

LEVEL II/III

SEMESTER 1

Course Code	Course Title	Credits
MGMT 2012	Quantitative Methods	3
MGMT 2021***	Business Law	3
MGMT 2023	Financial Management	3

SEMESTER 2

Course Code	Course Title	Credits
MKTG 2001	Principles of Marketing	3
MGMT 2008	Organisational Behaviour	3
MGMT 2032	Managerial Economics	3

LEVEL III

SEMESTER 1

Course Code	Course Title	Credits
MGMT 2026	Production and Operations Management	3

SEMESTER 2

Course Code	Course Title	Credits
MGMT 3060	Operations Planning and Control	3

***** MGMT 2021 – Business Law can be done in Level II or III – this is dependent on a student's course loading.**

(D) IN ADDITION

Six (6) credits of level II/III Management courses selected from the following:

MANAGEMENT ELECTIVES:

SEMESTER 1

Course Code	Course Title	Credits
MKTG 3000	Marketing Management	3
MGMT 3017	Human Resource Management	3
MGMT 2006	Management Information Systems I	3

SEMESTER 2

Course Code	Course Title	Credits
MKTG 3007	Marketing Planning	3

Students may also select 6 credits of Management courses from any Level II/III Management courses offered in the Summer.

TOTAL LEVEL II/III Chemistry and Management CREDITS: 60

(E) NINE (9) CREDITS OF FOUNDATION COURSES:

SEMESTER 1 AND 2

Course Code	Course Title	Credits
FOUN 1101	Caribbean Civilisation	3
FOUN 1301	Law, Governance, Economy and Society	3

SEMESTER 2

Course Code	Course Title	Credits
FOUN 1105	Scientific and Technical Writing (Option C)	3

TOTAL DEGREE CREDITS REQUIREMENTS: 93

BSC CHEMISTRY AND MANAGEMENT

(OLD – NO LONGER AVAILABLE TO STUDENTS)

The course requirements for the BSc Chemistry and Management are as follows:

(PLEASE SEE APPENDIX 1 which outlines the specific prerequisites for the Management courses pursued by Chemistry and Management students.)

COURSE LISTING

(A) LEVEL I

SEMESTER 1

Course Code	Course Title	Credits
ACCT 1002	Introduction to Financial Accounting	3
CHEM 1060##	Introductory Chemistry I	6
CHEM 1061##	Introductory Chemistry II	6
OR		
CHEM 1065	Introduction to Chemistry Laboratory	3
CHEM 1066	Introduction to Chemistry I	3
ECON 1001	Introduction to Economics I	3
ECON 1005	Introduction to Statistics	3

##Discontinued w.e.f. 2012/2013

SEMESTER 2

Course Code	Course Title	Credits
ACCT 1003	Introduction to Cost and Management Accounting	3
CHEM 1067	Introduction to Chemistry II	3
CHEM 1068	Introduction to Chemistry III	3

TOTAL LEVEL I CREDITS (30)/24

(B) LEVEL II

SEMESTER 1

Course Code	Course Title	Credits
CHEM 2160	Main Group Chemistry	4
CHEM 2360	Physical Chemistry	4
CHEM 2025	Kinetics & Mechanism	4
MGMT 2012	Quantitative Methods	3
MGMT 2021	Business Law	3
MGMT 2023	Financial Management	3

SEMESTER 2

Course Code	Course Title	Credits
CHEM 2260	Organic Chemistry	4
CHEM 2015	Spectroscopy	4
MKTG 2001	Principles of Marketing	3
MGMT 2008	Organisational Behaviour	3
MGMT 2032	Managerial Economics	3

UNDERGRADUATE REGULATIONS & SYLLABUSES 2014-2015
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(C) LEVEL III - MANAGEMENT COURSES

SEMESTER 1

Course Code	Course Title	Credits
MGMT 3057	Production and Operations	3

SEMESTER 2

Course Code	Course Title	Credits
MGMT 3060	Operations Planning and Control	3

(D) LEVEL III - CHEMISTRY COURSES

SEMESTER 1 OR 2

Course Code	Course Title	Credits
CHEM 3660	Research Project	4

PLUS

(i) **EITHER** nine (9) credits of Level III courses from List 1

LIST 1

SEMESTER 1

Course Code	Course Title	Credits
CHEM 3267	Basic Organic Chemistry II	3

SEMESTER 2

Course Code	Course Title	Credits
CHEM 3167	Advanced Inorganic Chemistry	3
CHEM 3367	Thermodynamics & Statistical Thermodynamics	3

(ii) **OR** alternatively any six (6) credits from List 1 above
AND at least three (3) credits from Level III Chemistry Electives.

(E) IN ADDITION

Six (6) credits of level II/III Management courses selected from the following:

MANAGEMENT ELECTIVES:

SEMESTER 1

Course Code	Course Title	Credits
MKTG 3000	Marketing Management	3
MGMT 3017	Human Resource Management	3
MGMT 2006	Management Information Systems I	3

SEMESTER 2

Course Code	Course Title	Credits
MKTG 3007	Marketing Planning	3

Students may also select 6 credits of Management courses from any level II/III management courses offered in the Summer.

F) NINE (9) CREDITS OF FOUNDATION COURSES:

SEMESTER 1 AND 2

Course Code	Course Title	Credits
FOUN 1101	Caribbean Civilisation	3
FOUN 1301	Law, Governance, Economy and Society	3

SEMESTER 2

Course Code	Course Title	Credits
FOUN 1105	Scientific and Technical Writing	3

TOTAL DEGREE CREDITS REQUIREMENTS: 96

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

For further Information please visit DCIT website:
<http://sta.uwi.edu/fst/dcit/>

Please note:

- i. Students majoring in Computer Science and those registered in the BSc Computer Science and Management, /BSc Information Technology and BSc Computer Science (Special) must seek the approval of the Department to read Computing, Information Technology/Systems courses outside of the FST.

Course Equivalencies : There is substantial overlap in the courses listed hereunder. However, **students pursuing Computer Science courses WOULD NOT BE GIVEN credits for the equivalent Information Technology courses and vice versa.**

Transfer students who pursued the equivalent Computer Science course would be exempted WITHOUT credits from the relevant Information Technology course as listed hereunder.

COMP COURSES		INFO COURSES	
Course Code	Credits	Course Code	Credits
MATH 1140	6	INFO 1415	6
COMP1100	6	INFO 1420	6
COMP 1200	6	INFO2420	4
COMP 2000	4	INFO 2410	4
COMP 2100	4	INFO 2405	4
COMP 2200	4	INFO 2425	4
COMP 2300	4	INFO 2430	4
COMP 2400	4	INFO 2400	4
COMP 2700	4	INFO 2415	4
COMP 3250	4	INFO 3440	4
COMP 3550	4	INFO 3410	4
COMP 3750	4	INFO 3430	4
COMP 3990	4	INFO 3490	4

- ii. **REGULATION REGARDING FAIL THEORY IN FINAL EXAMINATIONS FOR ALL COMPUTER SCIENCE AND INFORMATION TECHNOLOGY COURSES:**
Students must make a minimum of 40% in the final examination to obtain a PASS Grade. Students who have an overall mark of 40% or more but less than 40% in the Final Examination will be deemed to have failed the examination.

iii. INTERNSHIP PROGRAMME FOR UNDERGRADUATE STUDENTS IN COMPUTER SCIENCE/INFORMATION TECHNOLOGY

The Department offers an optional internship programme for second year students majoring in Computer Science or pursuing the BSc Computer Science and Management, BSc Information Technology and BSc Computer Science (Special) degrees. This programme will be helpful in:

- Providing practical training to the students during their degree programme;
- Providing experience in the working environment, and
- Preparing for future jobs.

iv. TRANSFER OF COURSEWORK MARKS

The Department does NOT carry forward coursework marks for their courses (COMP or INFO).

COURSE LISTING

List of Courses Offered in the Department of Computing & Information Technology for the 2014/2015 academic year.

KEY:

- # Students Majoring in Computer Science or Information Technology will not be credited for COMP 1011.
- * INFO courses also offered to students in the Evening University (EU) Programme.

N.B. Evening University (EU) Programme not offered to new students w.e.f. 2013/2014 Academic Year.

SEMESTER 1

Course Code	Course Title	Credits
COMP 1011	Introduction to Information Technology #	3
COMP 1400	Programming I	3
COMP 1401	Introduction to Computer Science Concepts I	3
COMP 1402	Computer Science Mathematics I	3
COMP 1403	Introduction to Web Programming	3
COMP 1404	Programming II	3
COMP 1405	Programming III	3
COMP 2000	Data Structures	4
COMP 2200	Computer Architecture	4
COMP 2600	Theory of Computing 1	4
COMP 2700	Database Management Systems I	4
COMP 3000	Design and Analysis of Algorithms	4
COMP 3100	Operating Systems	4

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COMP 3150	Computer Networks	4
COMP 3550	Internet Technologies II	4
COMP 3850	Intelligent Systems	4
COMP3900	Special Topics in Computer Science (Game Programming)	4
INFO 1500	Introduction to Information Technology Fundamentals	3
INFO 1501	Introduction to WWW Programming	3
INFO 1502	Introduction to Problem Solving	3
INFO 1503	Introduction to Mathematics for Critical Thinking	3
INFO 2405	Discrete Mathematics	4
INFO 2415	Enterprise Database Systems *	4
INFO 2420	Programming Fundamentals II *	4
INFO 2425	Computer Architecture *	4
INFO 2430	Business Information Systems	4
INFO 2500	Networking Technologies Fundamentals*	4
INFO 3400	Fundamentals of Operating Systems *	4
INFO 3415	Information Assurance and Security *	4
INFO 3440	Software Engineering	4
INFO 3500	User Interface Design & Development	4
INFO 3520	Database Administration for Professional	4

SEMESTER 2

Course Code	Course Title	Credits
COMP 1011	Introduction to Information Technology #	3
COMP1400	Programming I	3
COMP 1402	Computer Science Mathematics I	3
COMP 1404	Programming II	3
COMP 1405	Programming III	3
COMP 1406	Computer Science Mathematics II	3
COMP 1407	Introduction to Computer Science Concepts II	3
COMP 2000	Data Structures	4
COMP 2100	Discrete Mathematics for Computer Science	4
COMP 2300	Programming for Business Applications	4
COMP 2500	Object-Oriented Programming	4
COMP 3000	Design and Analysis of Algorithms	4
COMP 3250	Software Engineering	4
COMP 3275	Wireless and Mobile Computing	4
COMP 3700	Database Management Systems II	4
COMP 3950	Modelling and Simulation	4
INFO 1504	Introduction to Programming Fundamentals I	3
INFO 1505	Introduction to Computer Systems	3
INFO 1506	Introduction to Information and Data Management	3
INFO 1507	Introduction to Business Principles	3
INFO 2400	Information Systems Development *	4
INFO 2405	Discrete Mathematics *	4

INFO 2410	Fundamental Data Structures *	4
INFO 3410	Web Systems and Technologies *	4
INFO 3420	Programming Languages	4
INFO 3435	E-Commerce *	4
INFO 3490	Project *	4
INFO 3510	Networking for Professionals	4

SEMESTER 3 (EVENING UNIVERSITY PROGRAMME)

Course Code	Course Title	Credits
INFO 2405	Discrete Mathematics	4
INFO 2415	Enterprise Database Systems4	
INFO 2420	Programming Fundamentals II	4
INFO 2425	Computer Architecture	4
INFO 2430	Business Information Systems	4
INFO 3410	Web Systems and Technologies	4
INFO 3425	Professional Ethics and Law	4
INFO 3440	Software Engineering	4

COURSES NOT OFFERED IN 2014/2015

Course Code	Course Title	Credits
COMP 2400	Information Systems	4
COMP 3300	Programming Languages I	4
COMP3400	Artificial Intelligence	4
COMP 3500	Internet Technologies I	4
COMP 3600	Theory of Computing II	4
COMP3750	Numerical Computing	4
COMP 3800	Cryptography and Security	4
COMP 3990	Project (Game Programming)	4
INFO 3430	Scientific Computing	4
INFO 3530	Geographic Information Systems for Business	4

Major in Computer Science

(32 ADVANCED CREDITS)

COURSE LISTING

PREREQUISITE COURSES

LEVEL I

SEMESTER 1

Course Code	Course Title	Credits
COMP 1400	Programming I	3
COMP 1401	Introduction to Computer Science Concepts I	3
COMP 1404	Programming II	3
COMP 1405	Programming III	3
MATH 1142	Calculus I	3
MATH 1152	Sets and Number Systems	3

SEMESTER 2

Course Code	Course Title	Credits
COMP 1400	Programming I	3
COMP 1404	Programming II	3
COMP 1405	Programming III	3
MATH 1141	Introductory Linear Algebra and Analytical Geometry	3
MATH 1151	Calculus II	3

CORE COURSES (24 credits):

LEVELS II/III

SEMESTER 1

Course Code	Course Title	Credits
COMP 2000	Data Structures	4
COMP 2200	Computer Architecture	4
COMP 3100	Operating Systems	4

SEMESTER 2

Course Code	Course Title	Credits
COMP 2710	Computer Architecture	4
COMP 2720	Operating Systems	4
COMP 2730	Data Structures	4
COMP 2740	Computer Architecture	4
COMP 2750	Operating Systems	4
COMP 2760	Data Structures	4
COMP 2770	Computer Architecture	4
COMP 2780	Operating Systems	4
COMP 2790	Data Structures	4
COMP 2800	Computer Architecture	4
COMP 2810	Operating Systems	4
COMP 2820	Data Structures	4
COMP 2830	Computer Architecture	4
COMP 2840	Operating Systems	4
COMP 2850	Data Structures	4
COMP 2860	Computer Architecture	4
COMP 2870	Operating Systems	4
COMP 2880	Data Structures	4
COMP 2890	Computer Architecture	4
COMP 2900	Operating Systems	4
COMP 2910	Data Structures	4
COMP 2920	Computer Architecture	4
COMP 2930	Operating Systems	4
COMP 2940	Data Structures	4
COMP 2950	Computer Architecture	4
COMP 2960	Operating Systems	4
COMP 2970	Data Structures	4
COMP 2980	Computer Architecture	4
COMP 2990	Operating Systems	4

Major in Information Technology

(32 ADVANCED CREDITS)

COURSE LISTING

PREREQUISITE COURSES

LEVEL I

SEMESTER 1

Course Code	Course Title	Credits
INFO 1500	Introduction to Information Technology Fundamentals	3
INFO 1502	Introduction to Problem Solving	3

SEMESTER 2

Course Code	Course Title	Credits
INFO 1504	Introduction to Programming Fundamentals I	3
INFO 1505	Introduction to Computer Systems	3

CORE COURSES

(24 CREDITS):

LEVELS II & III

SEMESTER 1

Course Code	Course Title	Credits
INFO 2415	Enterprise Database Systems	4
INFO 2420	Programming Fundamentals II	4
INFO 2500	Networking Technologies Fundamentals	4
INFO 3400	Fundamentals of Operating Systems	4

SEMESTER 2

Course Code	Course Title	Credits
INFO 2410	Fundamental Data Structures	4
INFO 3410	Web Systems and Technologies	4

ELECTIVES (8 credits from IT Advanced Courses as listed)

SEMESTER 1

Course Code	Course Title	Credits
INFO 2425	Computer Architecture	4
INFO 2430	Business Information Systems	4
INFO 3415	Information Assurance and Security	4
INFO 3440	Software Engineering	4

SEMESTER 2

Course Code	Course Title	Credits
INFO 2400	Information Systems Development	4
INFO 3420	Programming Languages	4
INFO 3435	E-Commerce	4
INFO 3490	Project	4

BSC INFORMATION TECHNOLOGY

(ALSO OFFERED UNDER THE EVENING UNIVERSITY PROGRAMME – ONLY FOR RETURNING STUDENTS w.e.f. 2013/2014)
(93 CREDITS)

THIS PROGRAMME WAS REVISED WITH EFFECT FROM THE ACADEMIC YEAR 2012/2013.

N.B. STUDENTS SHOULD NOTE THE COURSE EQUIVALENCIES LISTED AT THE BEGINNING OF THE DEPARTMENTAL INFORMATION.

KEY:

* INFO courses also offered to students in the Evening University (EU) Programme.

COURSE LISTING

LEVEL I (24 CREDITS)

SEMESTER 1

CORE COURSES

Course Code	Course Title	Credits
INFO 1500	Introduction to Information Technology Fundamentals	3
INFO 1501	Introduction to WWW Programming	3
INFO 1502	Introduction to Problem Solving	3
INFO 1503	Introduction to Mathematics for Critical Thinking	3

LEVEL I

SEMESTER 2

CORE COURSES

Course Code	Course Title	Credits
INFO 1504	Introduction to Programming Fundamentals I	3
INFO 1505	Introduction to Computer Systems	3
INFO 1506	Introduction to Information and Data Management	3
INFO 1507	Introduction to Business Principles	3

LEVEL II/III (60 CREDITS)

Comprising of CORE courses (48 credits) and ELECTIVE courses (12 credits)

SEMESTER 1

CORE COURSES

Course Code	Course Title	Credits
INFO 2415	Enterprise Database Systems *	4
INFO 2420	Programming Fundamentals II *	4
INFO 2425	Computer Architecture *	4

INFO 2500	Networking Technologies Fundamentals*	4
INFO 3400	Fundamentals of Operating Systems *	4
INFO 3415	Information Assurance and Security *	4
INFO 3440	Software Engineering	4

ELECTIVE COURSE

Course Code	Course Title	Credits
INFO 2430	Business Information Systems	4
INFO 3500	User Interface Design and Development	4
INFO 3520	Database Administration for Professionals	4

LEVEL II/III

SEMESTER 2 CORE COURSES

Course Code	Course Title	Credits
INFO 2400	Information Systems Development*	4
INFO 2405	Discrete Mathematics*	4
INFO 2410	Fundamental Data Structures*	4
INFO 3410	Web Systems & Technologies*	4
INFO 3490	Project	4

ELECTIVE COURSES

Course Code	Course Title	Credits
INFO 3420	Programming Languages	4
INFO 3435	E-Commerce *	4
INFO 3510	Networking for Professionals	4

SEMESTER 3 (EVENING UNIVERSITY PROGRAMME) CORE COURSES

Course Code	Course Title	Credits
INFO 2405	Discrete Mathematics	4
INFO 2415	Enterprise Database Systems	4
INFO 2420	Programming Fundamentals II	4
INFO 2425	Computer Architecture	4
INFO 2430	Business Information Systems	4
INFO 3410	Web Systems and Technologies	4
INFO 3425	Professional Ethics and Law	4
INFO 3440	Software Engineering	4

FOUNDATION COURSES (9 CREDITS)

SEMESTERS 1 & 2

Course Code	Course Title	Credits
FOUN 1101	Caribbean Civilization	3
FOUN 1301	Law, Governance, Economy and Society	3

SEMESTER 2

Course Code	Course Title	Credits
FOUN 1105	Scientific and Technical Writing	3

BSC COMPUTER SCIENCE (SPECIAL)

(93 CREDITS)

PLEASE NOTE THE COURSE EQUIVALENCIES LISTED AT THE BEGINNING OF THE DEPARTMENTAL INFORMATION.

COURSE LISTING

LEVEL I (24 CREDITS)

CORE COURSES

SEMESTER 1

Course Code	Course Title	Credits
COMP 1400	Programming I	3
COMP 1401	Introduction to Computer Science Concepts I	3
COMP 1402	Computer Science Mathematics I	3
COMP 1403	Introduction to Web Programming	3
COMP 1404	Programming II	3
COMP 1405	Programming III	3

SEMESTER 2

Course Code	Course Title	Credits
COMP 1404	Programming II	3
COMP 1405	Programming III	3
COMP 1406	Computer Science Mathematics II	3
COMP 1407	Introduction to Computer Science Concepts II	3

LEVEL II/III (60 CREDITS) comprising of: CORE courses (52 credits) and ELECTIVE courses (8 credits) from any other Level II/III courses.

CORE COURSES

SEMESTER 1

Course Code	Course Title	Credits
COMP 2000	Data Structures	4
COMP 2200	Computer Architecture	4
COMP 2700	Database Management Systems I	4
COMP 3100	Operating Systems	4
COMP 3150	Computer Networks	4
COMP 3550	Internet Technologies II	4
COMP 3850	Intelligent Systems	4

SEMESTER 2

Course Code	Course Title	Credits
COMP 2100	Discrete Mathematics for Computer Science	4
COMP 2500	Object-Oriented Programming	4
COMP 3000	Design and Analysis of Algorithms	4
COMP 3250	Software Engineering	4
COMP 3950	Modelling and Simulation	4
COMP3990	Project	4

UNDERGRADUATE REGULATIONS & SYLLABUSES 2014-2015
THE FACULTY OF SCIENCE & TECHNOLOGY

SEMESTER 2

Course Code	Course Title	Credits
COMP 2100	Discrete Mathematics for Computer Science	4
COMP 2300	Programming for Business Applications	4
COMP 2500	Object -Oriented Programming	4
COMP 3000	Design and Analysis of Algorithms	4

LEVELS II/III

**MANAGEMENT COURSES CORE COURSES
(15 CREDITS)**

SEMESTER 1

Course Code	Course Title	Credits
MGMT 2021	Business Law	3

SEMESTER 2

Course Code	Course Title	Credits
MKTG 2001	Principles of Marketing	3
MGMT 2008	Organisational Behaviour	3
MGMT 2032	Managerial Economics	3

AND any 3 credits of electives from the following:

SEMESTER 1

Course Code	Course Title	Credits
ACCT 2017	Management Accounting	3
MGMT 2012	Quantitative Methods	3
MKTG 3000	Marketing Management	3
MGMT 2023	Financial Management	3

ELECTIVE COURSES (13 CREDITS)

A minimum of thirteen (13) credits chosen from Levels II/III Computer Science, Mathematics, Economics or Management courses.

FOUNDATION COURSES (9 CREDITS)

SEMESTERS 1 & 2

Course Code	Course Title	Credits
FOUN 1101	Caribbean Civilization	3
FOUN 1301	Law, Governance, Economy and Society	3

SEMESTER 2

Course Code	Course Title	Credits
FOUN 1105	Scientific and Technical Writing	3

DEPARTMENT OF LIFE SCIENCES

COURSE LISTING

List of Courses Offered in the Department of Life Sciences for the 2014/2015 academic year.

NOTE: Students who entered in 2012/2013 must meet a minimum 93-credit requirement to graduate; those entering before must meet the previous 101-credit requirement unless approval is granted from the Dean's Office.

KEY

- * Offered in alternate years
- ** Not counted towards a student's credit requirements for the award of the BSc Degree
- *** Students must consult with course coordinator prior to registering for BIOL 3068 or BIOL 3069

SEMESTER 1

Course Code	Course Title	Credits
BIOL 2061	Bioenergetics	3
BIOL 2069	Practical Skills in Biochemistry I	1.5
BIOL 2161	Primary Metabolism	3
BIOL 3062	Cellular and Molecular Defence Systems	3
BIOL 3069	Biochemistry Research Project	3
BIOL 3162	Experimental Biochemistry and Molecular Biology	3
BIOL 0061	Preliminary Biology I**	0
BIOL 1262	Living Organisms I	3
BIOL 1263	Living Organisms II	3
BIOL 2061	Cell and Developmental Biology	3
BIOL 2163	Biostatistics	3
BIOL 2165	Genetics II	3
BIOL 2262	Evolutionary Biology	3
BIOL 2360	Biochemistry IIA	3
BIOL 2461	Humans and the Environment	4
BIOL 2462	Caribbean Island Ecology	4
BIOL 3063	Marine Ecology and Oceanography	3
BIOL 3069	Research Project***	4
BIOL 3263	Introduction to Bioinformatics	3
BIOL3363	Medical Biotechnology	3
BIOL 3369	Laboratory Skills in Biotechnology	3
BIOL 3463	Pollution and Environmental Management	4
BIOL 3469	Research and Practical Skills in Environmental Biology	3
BIOL 3769	Plant Genetic Improvement	3
BIOL 3770	Plant Pathogens	3
BIOL 3771	Environmental Plant Physiology	3
BIOL 3773	Plant Anatomy	3
BIOL3774	Research and Practical Skills in Plant Biology	3
BIOL 3863	Tropical Aquaculture	4
BIOL 3867	Biology of Animal Behaviour	3

BIOL 3868	The Ecology of Humans	3
ESST 1001	Biology for Environmental Sciences	3
ESST 1002	Chemistry for Environmental Sciences	3
ESST 1004	Science Communication	3
ESST 2001	Principles of Environmental Chemistry	3
ESST 2002	Environmental Technology	3
ESST 2003	Data Management for Environmental Science	3
ESST 2006	Pollution Biology (Offered from 2015/2016)	3

SEMESTER 2

Course Code	Course Title	Credits
BIOL 2162	Circulatory and Secretory Systems	3
BIOL 2169	Practical Skills in Biochemistry II	1.5
BIOL 2262	Gene Expression	3
BIOL 3069	Biochemistry Research Project	3
BIOL 3262	Medical Biochemistry	3
BIOL 3364	Biochemical Basis of Disease	3
BIOL 0062	Preliminary Biology II**	0
BIOL 1362	Biochemistry I	3
BIOL 1364	Genetics I	3
BIOL 2164	Principles of Molecular Biology	3
BIOL 2265	Fundamentals of Microbiology	3
BIOL 2464	Fundamentals of Ecology	3
BIOL 2764	Physiology of Plants	3
BIOL 2867	Physiology of Animals	3
BIOL 3069	Research Project***	4
BIOL 3162	Principles of Microbial Biotechnology	3
BIOL 3164	Function & Design in Biology	3
BIOL 3366	Plant Biotechnology and Genetic Engineering	3
BIOL 3462	The Ecology of Freshwaters	3
BIOL 3465	Tropical Forest Ecology and Use	3
BIOL 3466	Coastal Ecosystems & Resource Management	3
BIOL 3468	Biodiversity and Conservation	3
BIOL 3469	Research and Practical Skills in Environmental Biology	3
BIOL 3768	Plant Diversity & Systematics	3
BIOL 3772	Plant Development	3
BIOL 3774	Research and Practical Skills in Plant Biology	3
BIOL 3864	Fisheries Biology and Management	4
BIOL 3866	Parasite Biology	3
BIOL 3869	Zoology Project	3
BIOL 3870	Insect Biology	3
ESST1000	Physics for Environmental Sciences	3
ESST 1005	Information Technology Fundamentals	3
ESST 1006	Human Impact on the Environment	3
ESST 2004	Physics for Environmental Sciences II	3
ESST 2005	Pollution Management and Abatement Technologies	3
ESST 3000	Environmental Toxicology	3



SEMESTER 3 (SUMMER)

Course Code	Course Title	Credits
BIOL 3068	Field Course in Neotropical Ecology***	4

NOTE: Please consult the department on courses expected to commence in 2015/2016.

MAJORS & MINORS

The following programmes are offered by the Department of Life Sciences

MAJORS

Biochemistry
Biology

Environmental Science

MINORS

Biochemistry
Biology

SPECIAL OPTIONS

BSc in Environmental Science and Sustainable Technology

BSc Biology with Specializations in:

- Biotechnology
- Ecology and Environmental Biology
- Plant Biology
- Zoology

Prior to 2013/14, students majoring in **Biology and Biochemistry** should credit BIOL 3061 - Molecular Biology to the major in Biology. Such students should NOT read BIOL 2365 - Comparative Biochemistry, but should **choose an elective from the given Biology electives to replace BIOL 2365**. Students should also choose an elective from the given Biochemistry electives to replace BIOL 3061.

With effect from 2013/14, students pursuing joint majors in **Biology and Biochemistry MUST NOT NOT READ** BIOL 2360 Biochemistry IIA and BIOL 2164 - Principles of Molecular Biology. **Such students must choose an additional 6 credits of Biology electives to complete the Biology Major.**

Students wishing to read BIOL 2462 - Caribbean Island Ecology must have at least a grade B in BIOL1462

- BIOL 1061 - Cell Biology and Genetics will not be credited with AGRI 1011 - Introduction to General Genetics and AGRI 1013 - Introduction to Biochemistry or BIOL 1362 - Biochemistry I or BIOL1364 - Genetics I
- BIOL 1261 - Diversity of Organisms will not be credited with AGRI 1012 - Microbiology or BIOL 1065 - Diversity of Plants and Animals or BIOL1262 - Living Organisms I or BIOL1263 - Living Organisms II
- BIOL1362 - Biochemistry I will not be credited with AGRI 1013 - Introduction to Biochemistry;
- BIOL1364 - Introductory Genetics will not be credited with AGRI 1011 - Introduction to General Genetics;
- BIOL 2263 - General Microbiology will not be credited with BIOL 2261 - Biology of Microorganisms
- BIOL 3264 - Functional Design in Biology will not be credited with BIOL 2861 - Function Design in Animals.
- BIOL 2365 - Comparative Biochemistry will not be credited with BIOL 2361 - Biomolecules and Energy Metabolism
- BIOL 2360 - Biochemistry IIA will not be credited with BIOC2061 - Bioenergetics
- BIOL 2164 - Principles of Molecular Biology will not be credited with BIOC 3162 - Experimental

BIOL 2262	Evolutionary Biology	3
BIOL 2360	Biochemistry IIA*	3

SEMESTER 2

Course Code	Course Title	Credits
BIOL 2164	Principles of Molecular Biology	3
BIOL 2265	Fundamentals of Microbiology	3
BIOL 2464	Fundamentals of Ecology	3
BIOL 2764	Physiology of Plants	3
BIOL 2867	Physiology of Animals	3

Students pursuing joint majors in Biochemistry and Biology should not read BIOL2164 and BIOL2360. Such students must choose 6 additional credits from the Biology electives for the major in Biology.

BIOLOGY ELECTIVES:

SEMESTER 1

Course Code	Course Title	Credits
BIOL 2462	Caribbean Island Ecology	4
BIOL 3063	Marine Ecology and Oceanography	3
BIOL 3069	Research Project***	4
BIOL 3263	Introduction to Bioinformatics	3
BIOL 3363	Medical Biotechnology	3
BIOL 3369	Laboratory Skills in Biotechnology	3
BIOL 3469	Research and Practical Skills in Environmental Biology	3
BIOL 3769	Plant Genetic Improvement	3
BIOL 3770	Plant Pathogens	3
BIOL 3771	Environmental Plant Physiology	3
BIOL 3773	Plant Anatomy	3
BIOL 3774	Research and Practical Skills in Plant Biology	3
BIOL 3863	Tropical Aquaculture	4
BIOL 3867	Animal Behaviour	3
BIOL 3868	The Ecology of Humans	3
BIOL 3869	Zoology Project	3

SEMESTER 2

Course Code	Course Title	Credits
BIOL 3162	Principles of Microbial Biotechnology	3
BIOL 3164	Function & Design in Biology	3
BIOL 3366	Plant Biotechnology and Genetic Engineering	3
BIOL 3462	The Ecology of Freshwaters	3
BIOL 3465	Tropical Forest Ecology and use	3
BIOL 3466	Coastal Ecosystems & Resource Management	3
BIOL 3468	Biodiversity and Conservation	3
BIOL 3469	Research and Practical Skills in Environmental Biology	3
BIOL 3768	Plant Diversity & Systematics	3
BIOL 3772	Plant Development	3
BIOL 3774	Research and Practical Skills in Plant Biology	3
BIOL 3864	Fisheries Biology & Management	4
BIOL 3866	Parasite Biology	3
BIOL 3869	Zoology Project	3
BIOL 3870	Insect Biology	3

Major in Environmental Science (30 Advanced Credits)

COURSE LISTING

PREREQUISITE COURSES

LEVEL I

(Students must complete at least 24 level I credits)

SEMESTER 1

Course Code	Course Title	Credits
ESST 1001	Biology for Environmental Sciences	3
ESST 1002	Chemistry for Environmental Sciences	3

SEMESTER 2

Course Code	Course Title	Credits
ESST 1000	Physics for Environmental Sciences	3
ESST 1006	Human Impact on the Environment	3

SEMESTERS 1, 2

Course Code	Course Title	Credits
MATH 1115	Fundamental Mathematics for the General Sciences I	3
MATH 1125	Fundamental Mathematics for General Science II	3

MATH 1115 or MATH 1125 should be taken by students who do not have a pass in Pure Mathematics at CAPE Units I & II or GCE A'Level or equivalent.

CORE COURSES (30 CREDITS)

LEVEL II/III

SEMESTER 1

Course Code	Course Title	Credits
BIOL 2163	Biostatistics*	3
ESST 2001	Principles of Environmental Chemistry	3
ESST 2006	Pollution Biology	3

(Offered with effect from 2015/16)

SEMESTER 2

Course Code	Course Title	Credits
ESST 2004	Physics for Environmental Science II	3
BIOL 2464	Fundamentals of Ecology*	3
ESST 3000	Environmental Toxicology	3

*Students pursuing joint majors in Biology and Environmental Science should choose six (6) credits from the Biology electives to replace BIOL2163 and BIOL2464

PLEASE NOTE: ADDITIONAL LEVEL III COURSES WILL BE PUBLISHED IN THE SYLLABUS FOR 2015/2016

BSC BIOLOGY WITH SPECIALISATIONS

(60 Advanced Credits)

COURSE LISTING

PREREQUISITE COURSES

LEVEL I

(Students must complete at least 24 Level I credits)

SEMESTER 1

Course Code	Course Title	Credits
BIOL 1262	Living Organisms I	3
BIOL 1263	Living Organisms II	3
CHEM 1062**	Basic Chemistry for Life Sciences	3

**** For students without a pass in CAPE Units I & II or GCE A' Level Chemistry or equivalent)**

LEVEL I

SEMESTER 2

Course Code	Course Title	Credits
BIOL 1362	Biochemistry I	3
BIOL 1364	Genetics I	3

SEMESTERS I, II

Course Code	Course Title	Credits
MATH 1115	Fundamental Mathematics for the General Sciences I	3
MATH 1125	Fundamental Mathematics for General Science	3

MATH 1115 or MATH 1125 should be taken by students who do not have a pass in Pure Mathematics at CAPE Units I & II or GCE A' Level or equivalent

LEVEL II (30 Advanced Credits)

SEMESTER I

Course Code	Course Title	Credits
BIOL 2061	Cell and Developmental Biology	3
BIOL 2163	Biostatistics	3
BIOL 2165	Genetics II	3
BIOL 2262	Evolutionary Biology	3
BIOL 2360	Biochemistry IIA	3

SEMESTER 2

Course Code	Course Title	Credits
BIOL 2164	Principles of Molecular Biology	3
BIOL 2265	Fundamentals of Microbiology	3
BIOL 2464	Fundamentals of Ecology	3
BIOL 2764	Physiology of Plants	3
BIOL 2867	Physiology of Animals	3

SPECIALISATIONS

SPECIALISATION – BIOTECHNOLOGY

SEMESTER 1

Course Code	Course Title	Credits
BIOL 3263	Introduction to Bioinformatics	3
BIOL 3363	Medical Biotechnology	
BIOL 3369	Laboratory Skills in Biotechnology	

SEMESTER 2

Course Code	Course Title	Credits
BIOL 3162	Principles of Microbial Biotechnology	3
BIOL 3366	Plant Biotechnology and Genetic Engineering	3
BIOL 3369	Laboratory Skills in Biotechnology	3

SPECIALISATION - ECOLOGY & ENVIRONMENTAL BIOLOGY

SEMESTER 1

Course Code	Course Title	Credits
BIOL 3063	Marine Ecology and Oceanography	3
BIOL 3469	Research and Practical Skills in Environmental Biology	3

SEMESTER 2

Course Code	Course Title	Credits
BIOL 3462	The Ecology of Freshwaters	3
BIOL 3465	Tropical Forest Ecology and Use	3
BIOL 3468	Biodiversity and Conservation	3
BIOL 3469	Research and Practical Skills in Environmental Biology	3

SPECIALISATION - PLANT BIOLOGY

SEMESTER 1

Course Code	Course Title	Credits
BIOL 3771	Environmental Plant Physiology	3
BIOL 3773	Plant Anatomy	3
BIOL 3774	Research and Practical Skills in Plant Biology	3

SEMESTER 2

Course Code	Course Title	Credits
BIOL 3772	Plant Development	3
BIOL 3774	Research and Practical Skills in Plant Biology	3
BIOL 3768	Plant Diversity and Systematics	3

SPECIALISATION - ZOOLOGY

SEMESTER 1

Course Code	Course Title	Credits
BIOL 3867	Biology of Animal Behaviour	3
BIOL 3868	The Ecology of Humans	3
BIOL 3869	Zoology Project	3

SEMESTER 2

Course Code	Course Title	Credits
BIOL 3866	Parasite Biology	3
BIOL 3869	Zoology Project	3
BIOL 3870	Insect Biology	3

BIOL 2265	Fundamentals of Microbiology	3
BIOL 2464	Fundamentals of Ecology	3

PLUS ELECTIVES FROM THE FOLLOWING:

CHEM 2470	Introduction to Analytical Chemistry	3
ESST 3000	Environmental Toxicology	3
BIOL 3468	Biodiversity and Conservation	3

NOTE: LEVEL III COURSES WILL BE PUBLISHED IN THE SYLLABUS FOR 2015/2016.

BSC ENVIRONMENTAL SCIENCE AND SUSTAINABLE TECHNOLOGY

LEVEL I

CORE COURSES (24 credits)

SEMESTER 1

Course Code	Course Title	Credits
ESST 1001	Biology for Environmental Sciences	3
ESST 1002	Chemistry for Environmental Sciences	3
ESST 1004	Science Communication	3
MATH 1115	Fundamental Mathematics for the General Sciences I	3

SEMESTER 2

Course Code	Course Title	Credits
ESST 1000	Physics for Environmental Sciences	3
ESST 1005	Information Technology Fundamentals	3
ESST 1006	Human Impact on the Environment	3
MATH 1125	Fundamental Mathematics for the General Sciences II	3

LEVEL II/III

CORE COURSES (24 credits)

SEMESTER 1

Course Code	Course Title	Credits
ESST 2001	Principles of Environmental Chemistry	3
ESST 2002	Environmental Technology	3
ESST 2003	Data Management for Environmental Science	3
BIOL 2163	Biostatistics	3

SEMESTER 2

Course Code	Course Title	Credits
ESST 2004	Physics for Environmental Science II	3
ESST 2005	Pollution Management and Abatement Technologies	3

Major in Environmental & Natural Resource Management

This interdisciplinary programme is offered in conjunction with the Departments of Life Sciences, Chemistry, Food Production and Agricultural Economics & Extension. This major will be phased out from 2014/2015.

- (i) Students doing the major in ENRM are not permitted to do the minor in Environmental Biology.

CORE COURSES (22 CREDITS)

For students who started the major during the 2013/14 academic year

LEVEL II/III

SEMESTER 1

Course Code	Course Title	Credits
AGSL 3004	Integrated Watershed Management	4
BIOL 2461	Humans & the Environment	4
BIOL 3463	Pollution and Environmental Management	4

LEVEL II/III

SEMESTER 2

Course Code	Course Title	Credits
AGSL 3002	Soil Survey & Land Evaluation	4
BIOL 3468	Biodiversity and Conservation	3
BIOL 3465	Tropical Forest Ecology and Use	3

MAJOR ELECTIVES (8 CREDITS)

Any 8 credits from the following:-

LEVEL II/III

SEMESTER 1

Course Code	Course Title	Credits
AGBU 3010	Environmental Economics	4
AGEX 2001	Operations and Management of Extension Programmes	4
AGSL 3010	Geophysical and Environmental Soil Sensing	4
BIOL 2462	Caribbean Island Ecology	4
BIOL 3063	Marine Ecology and Oceanography	3
BIOL 3069	Research Project	4
CHEM 3560	Environmental Chemistry	4
BIOL3771	Environmental Plant Physiology	3

LEVEL II/III

SEMESTER 2

Course Code	Course Title	Credits
AGRI 3001	Climate Change Impact and Management	4
AGBU 3003	Introduction to Ecotourism	4
BIOL 3069	Research Project	4
BIOL3462	The Ecology of Freshwaters	3
BIOL 3466	Coastal Ecosystem and Resources Management	3
BIOL 3864	Fisheries Biology & Management	4

SEMESTER 3 (SUMMER)

Course Code	Course Title	Credits
BIOL 3068	Field Course in Neotropical Ecology	4

Minor in Biology

(WITH EFFECT FROM 2013/14)

(15 ADVANCED CREDITS)

COURSE LISTING

LEVEL I (PREREQUISITES)

SEMESTER 1

Course Code	Course Title	Credits
BIOL 1262	Living Organisms I	3
BIOL 1263	Living Organisms II	3

SEMESTER 2

Course Code	Course Title	Credits
BIOL 1362	Biochemistry I	3
BIOL 1364	Genetics I	3

MINORS

NOTE:

- (i) Core courses must be credited towards the chosen major and cannot be credited towards the minor.
- (ii) (ii)Students reading the major in Biology with the minor in Biochemistry must **NOT** read BIOL 2360 Biochemistry IIA. Such students must choose an additional 3 credits of Biology electives to complete the Biology Major.

AND 15 credits of Level II/III courses as follows:

CORE COURSES (6 CREDITS)

SEMESTER I

Course Code	Course Title	Credits
BIOL2262	Evolutionary Biology	3

SEMESTER 2

Course Code	Course Title	Credits
BIOL3164	Function and Design in Biology	3

PLUS Three (3) additional courses (9 credits) taken from the following:

SEMESTER 1

Course Code	Course Title	Credits
BIOL 2165	Genetics II	3
BIOL 2360	Biochemistry IIA*	3

SEMESTER 2

Course Code	Course Title	Credits
BIOL 2464	Fundamentals of Ecology	3
BIOL 2764	Physiology of Plants	3
BIOL 2867	Physiology of Animals	3
BIOL 3770	Plant Pathogens	3

* Students pursuing a Major in Biochemistry should **NOT** select BIOL 2360 Biochemistry IIA as an elective for the minor in Biology

Minor in Biochemistry

(WITH EFFECT FROM 2013/14)

(15 CREDITS)

COURSE LISTING

CORE COURSES (9 credits)

SEMESTER 1

Course Code	Course Title	Credits
BIOC 2061	Bioenergetics	3
BIOC 2069	Practical Skills in Biochemistry I	1.5
BIOC 2161	Primary Metabolism	3

SEMESTER 2

Course Code	Course Title	Credits
BIOC 2169	Practical Skills in Biochemistry II	1.5

PLUS Two (2) additional courses taken from the following:

SEMESTER 2

Course Code	Course Title	Credits
BIOC 2262	Gene Expression	3
BIOC 2162	Circulatory and Secretory Systems	3
BIOC 3364	Biochemical Basis of Disease	3
BIOC 3262	Medical Biochemistry	3

DEPARTMENT OF MATHEMATICS & STATISTICS

NOTE: Students reading courses in **Mathematics** in the Faculty of Science and Technology are advised to consult with the Head, Department of Mathematics & Statistics, **before registering for any course in the Faculty of Social Sciences that involves Mathematics or Statistics.**

COURSE LISTING

List of courses offered in the Department of Mathematics & Statistics for the 2014/2015 academic year.

KEY:

Students pursuing MATH 2140 or MATH 2150 will not be credited for MATH 2190.

****** Not counted towards a student's credit requirements for the award of the BSc Degree.

LIST OF COURSES OFFERED IN THE DEPARTMENT OF MATHETMATICS & STATISTICS FOR THE 2014/2015 ACADEMIC YEAR

NOTE: Where course codes were not available at the time of publication, please check your faculty / department office/ the online Banner database for the relevant information.

SEMESTER 1

Course Code	Course Title	Credits
MATH 0100	Pre-Calculus**	0
MATH 1115	Fundamental Mathematics for the General Sciences I	3
MATH1125	Fundamental Mathematics for the General Sciences II	3
MATH1142	Calculus I	3
MATH 1152	Sets and Number Systems	3
MATH1201	Applied Mathematics I	3
MATH 2100	Abstract Algebra	4
MATH 2120	Analysis & Mathematical Methods I	4
MATH 2140	Introduction to Probability##	4
MATH 2170	Introduction to Combinatorics	4
MATH 2190	Probability and Statistics I	4
MATH 2210	Mathematics of Finance	4
MATH 3250	Fluid Dynamics I	4
MATH 3310	Life Contingencies	4
MATH 3351	Regression and Time Series Analysis	4
MATH 3400	Graph Theory	4
MATH 3430	Advanced Algebra I - Theory	4
MATH 3450	Statistical Theory I	4
MATH 3500	Complex Analysis	4

NEW COURSES AVAILABLE IN 2014/2015

Course Code	Course Title	Credits
MATH 1192	Mathematical Software I – Excel	1
MATH 1194	Mathematical Software III – Matlab	1
MATH 1201	Applied Mathematics I	3
MATH 2273	Linear Algebra I	3
MATH 2270	Multivariable Calculus	3
MATH 2274	Probability Theory I	3
MATH 2276	Discrete Mathematics	3

SEMESTER 2

Course Code	Course Title	Credits
MATH 0110	Calculus & Analytical Geometry**	0
MATH 1115	Fundamental Mathematics for the General Sciences I	3
MATH1125	Fundamental Mathematics for the General Sciences II	3
MATH 1141	Introductory Linear Algebra & Analytical Geometry	3
MATH 1151	Calculus II	3
MATH 1202	Applied Mathematics II	3
MATH 2110	Linear Algebra	4
MATH 2160	Analysis & Mathematical Methods II	4
MATH 2180	Introduction to Optimization	4
MATH 2220	Introduction to Actuarial Mathematics	4
MATH 3240	Real Analysis	4
MATH 3280	Introduction to Mathematical Modelling	4
MATH 3290	Combinatorics	4
MATH 3320	Risk Theory	4
MATH 3321	Principles of Asset/Liability Management Actuarial Science	4
MATH 3354	Actuarial Project	4
MATH 3440	Advanced Algebra II-Applications	4
MATH 3460	Statistical Theory II	4
MATH 3470	Sampling Theory	4

NEW COURSES AVAILABLE IN 2014/2015

Course Code	Course Title	Credits
MATH 1193	Mathematical Software II – Maple	1
MATH 1194	Mathematical Software III – Matlab	1
MATH 1202	Applied Mathematics II	3
MATH 2272	Abstract Algebra I	3
MATH 2275	Statistics I	3
MATH 2277	Introduction to Real Analysis I	3
MATH 2271	Ordinary Differential Equations	3

NEW COURSES INTRODUCED BUT NOT OFFERED IN 2014/2015

Course Code	Course Title	Credits
MATH 3273	Linear Algebra II	3
MATH 3277	Introduction to Real Analysis II	3
MATH 3274	Set Theory	3
MATH 3272	Abstract Algebra II	3
MATH 3275	Introduction to Complex Analysis	3

UNDERGRADUATE REGULATIONS & SYLLABUSES 2014-2015
THE FACULTY OF SCIENCE & TECHNOLOGY

Double Major in Mathematics

(PRIOR TO 2014/2015)

(64 CREDITS)

COURSE LISTING

PREREQUISITE COURSES

LEVEL I

SEMESTER 1

Course Code	Course Title	Credits
MATH 1142	Calculus I	3
MATH 1152	Sets and Number Systems	3

SEMESTER 2

Course Code	Course Title	Credits
MATH 1141	Introductory Linear Algebra & Analytical Geometry	3
MATH 1151	Calculus II	3

CORE COURSES (16 CREDITS):

LEVEL II

SEMESTER 1

Course Code	Course Title	Credits
MATH 2100	Abstract Algebra	4
MATH 2120	Analysis & Mathematical Methods I	4

SEMESTER 2

Course Code	Course Title	Credits
MATH 2110	Linear Algebra	4
MATH 2160	Analysis & Mathematical Methods II	4

ELECTIVES (48 CREDITS)

(At least 32 credits must be selected from Level III Mathematics courses)

LEVELS II/III

SEMESTER 1

Course Code	Course Title	Credits
MATH 2140	Introduction to Probability	4
MATH 2170	Introduction to Combinatorics	4
MATH 2190	Probability and Statistics I	4
MATH 2210	Mathematics of Finance	4
MATH 3250	Fluid Dynamics I	4
MATH 3310	Life Contingencies	4
MATH 3351	Regression and Time Series Analysis	4
MATH 3400	Graph Theory	4
MATH 3430	Advanced Algebra I - Theory	4
MATH 3450	Statistical Theory I	4
MATH 3500	Complex Analysis	4

LEVEL II/III

SEMESTER 2

Course Code	Course Title	Credits
MATH 2150	Introduction to Statistics	4
MATH 2180	Introduction to Optimization	4
MATH 2220	Introduction to Actuarial Mathematics	4
MATH 3240	Real Analysis	4
MATH 3280	Introduction to Mathematical Modelling I	4
MATH 3290	Combinatorics	4
MATH 3320	Risk Theory	4
MATH 3321	Principles of Asset/Liability Management Actuarial Science	4
MATH 3440	Advanced Algebra II - Applications	4
MATH 3460	Statistical Theory II	4
MATH3470	Sampling Theory	4

BSC IN MATHEMATICS

(NEW - SEPTEMBER 2014)

(96 CREDITS)

COURSE LISTING

LEVEL I (27 Credits)

SEMESTER I

Course Code	Course Title	Credits
MATH 1142	Calculus I	3
MATH 1152	Sets and Number Systems	3
MATH 1201	Applied Mathematics I	3
MATH1192	Mathematical Software I - Excel	1
COMP 1400	Programming I	3
PLUS One (1) Foundation (FOUN) Course		3

LEVEL I

SEMESTER II

Course Code	Course Title	Credits
MATH 1141	Introductory Linear Algebra and Analytical Geometry	3
MATH 1151	Calculus II	3
MATH 1202	Applied Mathematics II	3
MATH 1193	Mathematical Software II - Maple	1
MATH 1194	Mathematical Software III- Matlab	1
COMP 1403	Programming II	3
PLUS One (1) Foundation (FOUN) Course		3

LEVELS II/III (60 Credit)

LEVEL II

SEMESTER I

Course Code	Course Title	Credits
MATH 2270	Multivariable Calculus	3
MATH 2273	Linear Algebra I	3
MATH 2274	Probability Theory I	3
MATH 2276	Discrete Mathematics	3

PLUS: One (1) Mathematics (MATH) elective course drawn from Level II or III - 3 credits

UNDERGRADUATE REGULATIONS & SYLLABUSES 2014-2015
THE FACULTY OF SCIENCE & TECHNOLOGY

LEVEL II

Semester II

Course Code	Course Title	Credits
MATH 2277	Introduction to Real Analysis I	3
MATH 2272	Abstract Algebra I	3
MATH 2275	Statistics I	3
MATH 2271	Ordinary Differential Equations	3

PLUS: One (1) Mathematics (MATH) elective course drawn from Level II or III - 3 credits

PLUS: One (1) Foundation (FOUN) Course - 3 credits

LEVEL III

SEMESTER I

Course Code	Course Title	Credits
MATH 3277	Introduction to Real Analysis II	3
MATH 3272	Abstract Algebra II	3

PLUS: One (1) Mathematics (MATH) elective course drawn from Level III - 3 credits

PLUS: One (1) Mathematics (MATH) course drawn from Level II or III - 3 credits

PLUS: One (1) Level II/III elective course drawn from any discipline - 3 credits

LEVEL III

SEMESTER III

Course Code	Course Title	Credits
MATH 3275	Introduction to Complex Analysis	3
MATH 3274	Set Theory	3

PLUS: One (1) Mathematics (MATH) elective course drawn from Level III - 3 credits

PLUS: One (1) Mathematics (MATH) course drawn from Level II or III - 3 credits

PLUS: One (1) Level II/III elective course drawn from any discipline - 3 credits

Minor in Mathematics

(16 CREDITS)

COURSE LISTING

CORE COURSES (8 credits):

LEVEL II

SEMESTER 1

EITHER

Course Code	Course Title	Credits
MATH 2100	Abstract Algebra	4

OR

MATH 2120	Analysis & Mathematical Methods I	4
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SEMESTER 2

EITHER

Course Code	Course Title	Credits
MATH 2110	Linear Algebra	4

OR

MATH 2160	Analysis & Mathematical Methods II	4
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ELECTIVES:

Any 8 credits from the following:

LEVELS II/III

SEMESTER 1

Course Code	Course Title	Credits
MATH 2140	Introduction to Probability	4
MATH 2170	Introduction to Combinatorics	4
MATH 2190	Probability and Statistics I	4
MATH 2210	Mathematics of Finance	4
MATH 3250	Fluid Dynamics I	4
MATH 3310	Life Contingencies	4
MATH 3351	Regression and Time Series Analysis	4
MATH 3400	Graph Theory	4
MATH 3430	Advanced Algebra I - Theory	4
MATH 3450	Statistical Theory I	4
MATH 3500	Complex Analysis	4

NEW COURSES AVAILABLE IN 2014/2015

Course Code	Course Title	Credits
MATH 2273	Linear Algebra I	3
MATH 2270	Multivariable Calculus	3
MATH 2274	Probability Theory I	3
MATH 2276	Discrete Mathematics	3

LEVEL II/III

SEMESTER 2

Course Code	Course Title	Credits
MATH 2150	Introduction to Statistics	4
MATH 2180	Introduction to Optimization	4
MATH 2220	Introduction to Actuarial Mathematics	4
MATH 3240	Real Analysis	4
MATH 3280	Introduction to Mathematical Modelling I	4
MATH 3290	Combinatorics	4
MATH 3320	Risk Theory	4
MATH 3321	Principles of Asset/Liability Management Actuarial Science	4
MATH 3440	Advanced Algebra II - Applications	4
MATH 3460	Statistical Theory II	4
MATH 3470	Sampling Theory	4

NEW COURSES AVAILABLE IN 2014/2015

Course Code	Course Title	Credits
MATH 2272	Abstract Algebra I	3
MATH 2275	Statistics I	3
MATH 2277	Introduction to Real Analysis I	3
MATH 2271	Ordinary Differential Equation	3

Minor in Statistics

(16 CREDITS)

COURSE LISTING

LEVELS II/III

SEMESTER 1

Course Code	Course Title	Credits
MATH 3450	Statistical Theory I	4

SEMESTER 2

Course Code	Course Title	Credits
MATH 2150	Introduction to Statistics	4
MATH 3460	Statistical Theory II	4
MATH 3470	Sampling Theory	4

SEMESTER 2

Course Code	Course Title	Credits
MATH 2110	Linear Algebra	4
MATH 2160	Analysis and Mathematical Methods II	4
MATH 2150	Introduction to Statistics	4
MATH 2220	Introduction to Actuarial Mathematics	4
MATH 2271	Ordinary Differential Equations	3

LEVELS III

SEMESTER 1

Course Code	Course Title	Credits
MGMT 3048	Financial Management II	3
MATH 3351	Regression and Time Series Analysis	4
MATH 3310	Life Contingencies	4

BSC ACTUARIAL SCIENCE

(PRIOR TO 2014/2015)

(104 CREDITS)

COURSE LISTING

LEVEL I (30 CREDITS)

SEMESTER 1

Course Code	Course Title	Credits
ACCT 1002	Introduction to Financial Accounting	3
ECON 1001	Introduction to Economics I	3
COMP 1400	Programming I	3
MATH 1142	Calculus I	3
MATH 1152	Sets and Number Systems	3

LEVEL I

SEMESTER 2

Course Code	Course Title	Credits
ACCT 1003	Introduction to cost & Managerial Accounting	3
ECON 1002	Introduction to Economics II	3
COMP 1404	Programming II	3
MATH1141	Introductory Linear Algebra & Analytical Geometry	3
MATH 1151	Calculus II	3

LEVELS II/III (65 CREDITS)

SEMESTER 1

CORE COURSES

LEVEL II

Course Code	Course Title	Credits
MATH 2100	Abstract Algebra	4
MATH 2120	Analysis and Mathematical Methods I	4
MATH 2140	Introduction to Probability Theory	4
MATH 2210	Mathematics of Finance I	4
MGMT 2023	Financial Management I	3

SEMESTER 2

Course Code	Course Title	Credits
MATH 3320	Risk Theory	4
MATH 3321	Principles of Asset/Liability Management for Actuarial Science	4
MATH 3354	Actuarial Project	4

ELECTIVE COURSES (7 CREDITS)

Students may select any level III courses in or outside the faculty.

FOUNDATION COURSES (9 CREDITS)

Course Code	Course Title	Credits
FOUN 1101	Caribbean Civilization	3
FOUN 1105	Scientific and Technical Writing	3
FOUN 1301	Law, Governance, Economy and Society	3

BSC ACTUARIAL SCIENCE

**(FOR NEW STUDENTS AND STUDENTS
ENTERING LEVEL II IN 2014/2015)**

(104 CREDITS)

COURSE LISTING

LEVEL I (30 CREDITS)

SEMESTER 1

Course Code	Course Title	Credits
ACCT 1002	Introduction to Financial Accounting	3
ECON 1001	Introduction to Economics I	3
COMP 1400	Programming I	3
MATH 1142	Calculus I	3
MATH 1152	Sets and Number Systems	3

LEVEL I

SEMESTER 2

Course Code	Course Title	Credits
ACCT 1003	Introduction to cost & Managerial Accounting	3
ECON 1002	Introduction to Economics II	3
COMP 1404	Programming II	3
MATH1141	Introductory Linear Algebra & Analytical Geometry	3
MATH 1151	Calculus II	3

CMC 1511 (168 CREDITS) (137489) (14) (6) (6) (2) (3) (r) 1 cu) -3 (l) -3 () 1 (/P 2) MCID 15 BDC -0.034 Tc 0.016 Tw -3.158 - Tw -24.184 -1.1 (E) -26 (M

LEVELS II/III (65 CREDITS)

LEVEL II

SEMESTER 1

Course Code	Course Title	Credits
MATH 2120	Analysis & Mathematical Methods I	4
MATH 2140	Introduction Probability	4
ECON 2000	Intermediate Microeconomics I	3
ECON 2002	Intermediate Macroeconomics I	3
PLUS:	One (1) Foundation (FOUN) course	3

LEVEL II

SEMESTER 2

Course Code	Course Title	Credits
MATH 2110	Linear Algebra	4
MATH 2150	Introduction to Statistics	4
ECON 2001	Intermediate Microeconomics II	3
ECON 2003	Intermediate Macroeconomics II	3
ECON 2005	Social and Economic Accounting	3

LEVEL III

SEMESTER 1

Course Code	Course Title	Credits
MATH 3450	Statistical Theory I	4
ECON 3049	Econometrics I	3

EITHER

ECON 2020	Caribbean Economy	3
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OR

ECON 3051	Topics in Economic Development	3
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PLUS: One (1) elective in Mathematics OR Statistics 4

PLUS: One (1) elective in Mathematics OR Economics 3

LEVEL III

SEMESTER 2

Course Code	Course Title	Credits
MATH 3460	Statistical Theory II	4
ECON 3073	Internship in Statistics	3
ECON 3050	Econometrics II	3
MATH 3470	Sampling Theory	4

FOUNDATION COURSES

SEMESTERS 1 & 2

Course Code	Course Title	Credits
FOUN 1101	Caribbean Civilization	3
FOUN 1301	Law, Governance, Economy and Society	3

SEMESTER 2

Course Code	Course Title	Credits
FOUN 1105	Scientific and Technical Writing	3

BSC STATISTICS AND ECONOMICS

(FOR NEW STUDENTS AND STUDENTS ENTERING LEVEL II IN 2014/2015)
(99 CREDITS)

COURSE LISTING

LEVEL I (34 CREDITS)

SEMESTER 1

Course Code	Course Title	Credits
MATH 1142	Calculus I	3
MATH 1152	Sets & Numbers Systems	3

EITHER

SOCI 1002	Introduction to Sociology	3
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OR

PSYC 1001	Introduction to Psychology	3
ECON 1001	Introduction to Economics I	3
ACCT 1002	Financial Accounting	3

PLUS: One (1) Foundation (FOUN) course 3

LEVEL I

SEMESTER 2

Course Code	Course Title	Credits
MATH 1151	Calculus II	3
COMP 1400	Programming I	3
ECON 1002	Introduction to Economics II	3
MATH 1192	Introduction to Mathematics Software1	
MATH 1141	Introduction to Linear Algebra Analytical Geometry	3

PLUS: One (1) Foundation (FOUN) course 3

LEVELS II/III (65 CREDITS)

SEMESTER 1

Course Code	Course Title	Credits
MATH 2270	Multivariable Calculus	3
MATH 2273	Linear Algebra I	3
MATH 2274	Probability Theory I	3
MATH1194	Mathematical Software III(Matlab)	1
ECON 2000	Intermediate Microeconomics I	3
ECON 2002	Intermediate Macroeconomics I	3

SEMESTER 2

Course Code	Course Title	Credits
MATH 2277	Introduction to Real Analysis I	3
MATH 2275	Statistics I	3
ECON 2001	Intermediate Microeconomics II	3
ECON 2003	Intermediate Macroeconomics II	3
ECON 2005	Social and Economic Accounting	3
PLUS:	One (1) Foundation (FOUN) course	3

DEPARTMENT OF PHYSICS

List of courses offered in the Department of Physics for the 2014/2015 academic year.

SEMESTER 1

Course Code	Course Title	Credits
PHYS 0070	Preliminary Physics I*	0
PHYS 1001	Introduction to Astronomy	3
PHYS 1211	Introduction to Mechanics and Heat (Offered to repeating students only)	3
PHYS 1213	Introduction to Oscillations and Waves (Offered to repeating students only)	1.5
PHYS 1214	Introductory Physics Laboratory I (Offered to repeating students only)	1.5
PHYS 1216	Introduction to Optics (Offered to repeating students only)	1.5
PHYS 2150	Mathematics for Physicists	3
PHYS 2151	Classical and Statistical Mechanics	3
PHYS 2155	Physics Major Laboratory Level II (year long)	3
PHYS 2156	Meteorology and Climatology (Offered in 2015/2016)	3
PHYS 2159	Introductory Medical Physics and Bioengineering (Offered to repeating students only)	3
PHYS 2165	Materials Science I	3
PHYS 3150	Electromagnetism	3
PHYS 3153	Physics Major Research Project	3
PHYS 3155	Physics Major Laboratory Level III (year long)	3
PHYS 3156	Principles of Physical Oceanography and Geohydrology	3
PHYS 3159	Environmental Physics Laboratory (year long)	3
PHYS 3160	Medical Physics & Bioengineering Laboratory (year long)	3
PHYS 3163	Electronics Laboratory (yearlong)	3
PHYS 3164	Ceramics Science	3
PHYS 3166	Materials Science Laboratory (year long)	3
PHYS 1221	Introduction to Mechanics	3
PHYS 1222	Introduction to Optics, Oscillation and Waves	3
PHYS 3202	Practical Electronics I (year long) (Offered in 2015/2016)	3
PHYS 2401	Optoelectronics	3
PHYS 3201	Advance Electronics and Control Theory	3
BMET 1004	Introductory Human Anatomy & Physiology I	3
BMET 2002	Introduction to Medical Physics	3
BMET 2001	Bioengineering	3

BMET 3000	Biomedical Technology Project (yearlong) (Offered in 2015/2016)	6
BMET 3001	Laboratory Management and Practice (yearlong) (Offered in 2015/2016)	3
BMET 3002	Light & Optics in Medicine (yearlong) (Offered in 2015/2016)	3

SEMESTER 2

Course Code	Course Title	Credits
PHYS 0071	Preliminary Physics II*	0
PHYS 1212	Introduction to Electricity & Magnetism and Modern Physics (Offered to repeating students only)	3
PHYS 1215	Introductory Physics Laboratory II (Offered to repeating students only)	1.5
PHYS 2152		

UNDERGRADUATE REGULATIONS & SYLLABUSES 2014-2015
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3. Laboratory courses (year long): Students are required to register for each year long laboratory course in **Semester I** of the Academic year. However, since these are year long courses credits will be assigned only in **Semester II**.
4. PHYS 1211, 1212, 1213, 1214, 1215, & 1216 have been replaced by four three (3) credit courses (**TABLE 5**)
5. PHYS 2162, 2163, 3161, 3162, & 3163 have been replaced (**TABLE 6**): Students are required to register for the new courses:

TABLE 5

OLD COURSES	NEW COURSES
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Major in Physics

(30 CREDITS)

COURSE LISTING

PREREQUISITES

LEVEL I

SEMESTER 1

Course Code	Course Title	Credits
PHYS 1221	Introduction to Mechanics	3
PHYS 1222	Introduction to Optics, Oscillations and Waves	3
PHYS 1211	Introduction to Mechanics and Heat (Offered to repeating students only)	3
PHYS 1213	Introduction to Oscillations and Waves (Offered to repeating students only)	1.5
PHYS 1214	Introductory Physics Laboratory I (Offered to repeating students only)	1.5
PHYS 1216	Introduction to Optics (Offered to repeating students only)	1.5

SEMESTER 2

Course Code	Course Title	Credits
PHYS 1223	Introduction to Electricity & Magnetism	3
PHYS 1224	Introduction to Thermodynamics and Modern Physics	3
PHYS 1212	Introduction to Electricity & Magnetism and Modern Physics (Offered to repeating students only)	3
PHYS 1215	Introductory Physics Laboratory II (Offered to repeating students only)	1.5

CORE COURSES (30 CREDITS)

LEVEL II/III

SEMESTER 1

Course Code	Course Title	Credits
PHYS 2150	Mathematics for Physicists	3
PHYS 2151	Classical and Statistical Mechanics	3
PHYS 2155	Major Laboratory Level II (year long)	3
PHYS 3150	Electromagnetism	3
PHYS 3153	Physics Major Research Project (Offered in both semesters)	3
PHYS 3155	Major Laboratory Level III (year long)	3

SEMESTER 2

Course Code	Course Title	Credits
PHYS 2152	Vibrations, Waves and Optics	3
PHYS 2153	Astrophysics	3
PHYS 3151	Quantum Mechanics	3
PHYS 3152	Advanced Thermodynamics and Solid State Physics	3
PHYS 3153	Physics Major Research Project (Offered in both semesters)	3

Major Electronics

(30 CREDITS)

COURSE LISTING

PREREQUISITES *

LEVEL I

SEMESTER 1

Course Code	Course Title	Credits
MATH 1142	Calculus I	3
COMP 1400	Programming I	3

SEMESTER 2

Course Code	Course Title	Credits
PHYS 1223	Introduction to Electricity & Magnetism	3
MATH 1141	Introductory Linear Algebra & Analytical Geometry	3

* Students must secure 12 more level I credits in order to proceed to Level II

CORE COURSES (27 CREDITS)

LEVEL II

SEMESTER 1

Course Code	Course Title	Credits
PHYS 2401	Optoelectronics	3
PHYS 2150	Mathematics for Physicists	3

SEMESTER 2

Course Code	Course Title	Credits
ECNG 2001	Communication Systems I	3
PHYS 2402	Digital Circuits and Logic Design	3

LEVEL III

SEMESTER 1

Course Code	Course Title	Credits
PHYS 3201	Advance Electronics and Control Theory	3
ENG 3001	Communication Systems II	3
PHYS 3202	Practical Electronics I (year long)	3

SEMESTER 2

Course Code	Course Title	Credits
PHYS 3203	Microprocessor and Modern Digital design	3
PHYS 3204	Practical Electronics II	3

ELECTIVES (Choose one(1) three credit course)

LEVEL III

SEMESTER I

Course Code	Course Title	Credits
PHYS 3168	Medical Instrumentation	3
ECNG 3002	Data Communication Systems	3
ECNG 3025	Discrete Signal Processing	3

BSC BIOMEDICAL TECHNOLOGY

(93 CREDITS)

SEMESTER 1

LEVEL 1 (ALL ARE CORE COURSES)

Course Code	Course Title	Credits
PHYS 1221	Introduction to Mechanics	3
PHYS 1222	Introduction to Optics, Oscillations and Waves	3
PHYS 1211	Introduction to Mechanics and Heat <i>(Offered to Repeating Students Only)</i>	3
PHYS 1213	Introduction to Oscillations and Waves <i>(Offered to Repeating Students Only)</i>	1.5
PHYS 1214	Introductory Physics Laboratory I <i>(Offered to Repeating Students Only)</i>	1.5
BMET 1004	Introductory Human Anatomy & Physiology I	3
MATH 1115	Fundamental Mathematics for the General Sciences I	3
PHYS 1216	Introduction to Optics <i>(Offered to Repeating Students Only)</i>	1.5

SEMESTER 2

Course Code	Course Title	Credits
PHYS 1223	Introduction to Electricity and Magnetism	3
PHYS 1224	Introduction to Thermodynamics & Modern Physics	3
PHYS 1212	Introduction to Electricity and Magnetism and Modern Physics <i>(Offered to Repeating Students Only)</i>	3
PHYS 1215	Introductory Physics Laboratory II <i>(Offered to Repeating Students Only)</i>	1.5
MATH 1125	Fundamental Mathematics for the General Sciences II	3
BMET 1005	Introductory Human Anatomy & Physiology II	3

LEVEL II/III

SEMESTER 1

Course Code	Course Title	Credits
PHYS 2401	Optoelectronics	3
PHYS 3201	Advance Electronics and Control Theory	3
BIOL 2163	Biostatistics	3
BMET 2002	Introduction to Medical Physics	3
PHYS 2150	Mathematics for Physicists	3
BMET 3000	Biomedical Technology Project <i>(yearlong) (Offered in 2015/2016)</i>	6
BMET 3001	Laboratory Management and Practice <i>(Offered in 2015/2016)</i>	3
BMET 3002	Light and Optics in Medicine <i>(Offered in 2015/2016)</i>	3
PHYS 3160	Medical Physics & Bioengineering Laboratory <i>(yearlong)</i>	3
PHYS 3163	Electronics Laboratory <i>(yearlong)</i>	3
BMET 2001	Bioengineering	3

SEMESTER 2

Course Code	Course Title	Credits
BMET 3003	Biomedical Technology Laboratory <i>(Offered in 2015/2016)</i>	3
BMET 3004	Metrology and Regulatory Standards <i>(Offered in 2015/2016)</i>	3
PHYS 3203	Microprocessor and Modern Digital Design	3
PHYS 3168	Medical Instrumentation	3
PHYS 3167	Radiation Biophysics and Medicine	3
PHYS 2402	Digital Circuits and Logic Design	3

ELECTIVE COURSES *** (CHOOSE any 6 credits)

*** Students may pursue and 6 level II/III credits preferable from other Departments provided that they have the necessary pre-requisites and with the head of Department's approval.

LANGUAGE COURSES

The Centre for Language Learning (CLL) offers courses in 10 foreign languages: Arabic, Chinese, French, German, Hindi, Italian, Japanese, Portuguese, Spanish and Yoruba.

Its aim is to empower students to use the target language in order to understand information, to express themselves orally and in writing, to communicate with native and non-native speakers of the language and engage with the culture of the language.

Students can register at the CLL and attend classes in any language, upon payment of a small registration fee. Students can also pursue credit courses in Chinese, French, Japanese and Spanish. Registration is online using BANNER. **Students must complete a paper-based registration at the CLL before their online registration.** The normal per credit fee applies.

CHINESE (MANDARIN)

Course Code	Course Title	Credits
CHIN 1003	Level 1A Chinese (Mandarin) I	2
CHIN 1004	Level 1B Chinese (Mandarin) II	2

FRENCH

Course Code	Course Title	Credits
FREN 1001	Level 1A French (Mandarin) I	2

LEVEL: II

SEMESTER: 1

COURSE CODE: ACCT 2017

COURSE TITLE: MANAGEMENT ACCOUNTING

NUMBER OF CREDITS: 3

PREREQUISITES: ACCT 1002 AND ACCT 1003

DEPARTMENT RESPONSIBLE: MANAGEMENT STUDIES

COURSE DESCRIPTION: The course explains how managerial accounting information is used by managers in manufacturing, retail, service and not-for-profit organisations to anticipate the future and monitor the activities of the business.

ASSESSMENT:

Coursework	25%
Final Examination	75%

LEVEL: I

SEMESTER: 2

COURSE CODE: AGBU 1002

COURSE TITLE: INTRODUCTION TO AGRO-ENVIRONMENTAL MANAGEMENT

NUMBER OF CREDITS: 4

PREREQUISITES: NONE

COURSE DESCRIPTION: The role and importance of the environment for social development and as a life support system. The nexus between agriculture and the environment. Agro-ecosystems structure and dynamics.

Economics of environmental resources: market failure and environmental degradation, externalities and public goods; optimal resource use/extraction and approaches for management of renewable resources.

Concept of the watershed as a management unit: hydrology, soils, natural forest, biodiversity and land use. The impact of agricultural practices on the environment viewed from an ecosystem perspective: deforestation, soil erosion/degradation, flooding, irrigation, loss of biodiversity and climate change. Case studies of impacts related to various agricultural systems: crop and livestock, subsistence and plantation farming, hillside and erodable soils, pesticide and chemical application, irrigated agriculture.

Integration of the concepts and issues discussed in designing sustainable agro-environmental systems for the tropics; focus on small island states. Case studies.

ASSESSMENT:

Coursework	40%
Final Examination	60%

LEVEL: I

SEMESTER: 1

COURSE CODE: AGBU 1005

COURSE TITLE: INTRODUCTION TO MICROECONOMICS

NUMBER OF CREDITS: 3

PREREQUISITES: NONE

COURSE DESCRIPTION: Nature and Scope of Economics:

General overview: Functions performed by economic systems; Resources/Factors of Production and Characteristics.

Demand and Supply: Concepts; definitions and introduction to factors affecting demand and supply; elasticities. Market Price and Quantity determination; interpretation and applications.

Theories of Consumer Behaviour: Marginal utility and indifference theories, Theory of Production, Supply and Cost: Production functions forms; profit maximisation behaviour and rationality in production. Market Structures and Forms: Market types and characteristics; profit maximisation behaviour in perfect competition and monopoly.

ASSESSMENT:

Coursework	40%
Final Examination	60%

LEVEL: I

SEMESTER: 1

COURSE CODE: AGRI 1012

COURSE TITLE: MICROBIOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: NONE

COURSE DESCRIPTION: Microbiology as a fundamental study of bacteria, fungi and viruses, their structure and growth, genetic recombination in bacteria and microbial control. Food-borne diseases and Hazard Analysis and Critical Food Point System (HACCP). A study of the ecology of microorganism, and the roles of microorganisms in agriculture, technology and human.

ASSESSMENT:

Coursework	40%
Final Examination	60%

LEVEL: I

SEMESTER: 1

COURSE CODE: AGSL 1000

COURSE TITLE: SOILS AND THE ENVIRONMENT

NUMBER OF CREDITS: 4

PREREQUISITES: NONE

COURSE DESCRIPTION: Soil texture, structure, aeration, water relations, evapotranspiration, climatic factors and their measurements; impact of local climate and climate near the ground on agriculture; agriculture and the environment. Chemical nature and properties of clays, soil organic matter, ion exchange and soil reaction; agricultural importance of soil components; soil chemical constraints and availability of N, P, K, Ca, Mg and minor elements; amelioration of chemical behaviour of soils.

ASSESSMENT:

Coursework	25%
Final Examination	75%

LEVEL: III

SEMESTER: 2

COURSE CODE: AGSL 3002

COURSE TITLE: SOIL SURVEY AND LAND EVALUATION

NUMBER OF CREDITS: 4

PREREQUISITES: AGSL1000 OR GEOM 1011, GEOM 1015 AND GEOM 1030

COURSE DESCRIPTION: Principles of soil ecology and soil habitation - faunal and floral interactions with soil properties; kinds, classes, and field techniques in soil surveys; Aerial photographic interpretation; Remote sensing, GIS and their applications; soil and land capability classification; Use and interpretation of soil and land capability maps; Land evaluation techniques.

ASSESSMENT:

Coursework	40%
Final Examination	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: AGSL 3004

COURSE TITLE: INTEGRATED WATERSHED MANAGEMENT

NUMBER OF CREDITS: 4

PREREQUISITES: AGSL 1000

COURSE DESCRIPTION: The hydrologic cycle; rainfall, runoff/stream flow measurement and analysis; rainfall-runoff models; the watershed and its ecosystem; biogeochemical and nutrient cycles; integrated watershed management principles and planning; soil and water resources conservation practices; watershed degradation and restoration; soil erosion and control; water quality and yield improvement; the role of forestry/agro-forestry; socio-economic, legal and institutional aspects. Case studies and field trips.

ASSESSMENT:

Coursework	25%
Final Examination	75%

LEVEL: II

SEMESTER: 1

COURSE CODE: BIOC 2061

COURSE TITLE: BIOENERGETICS

NUMBER OF CREDITS: 3

PREREQUISITES: BIOL 1362, CHEM 1066 AND CHEM 1067

COURSE DESCRIPTION: pH and buffers; Bioenergetics, Membrane structure ; Introduction to membrane transport; TCA cycle; Oxidative phosphorylation; Plant and fungal respiratory chains; Transporters of the mitochondrial inner membrane; Photosynthetic light reactions of plants and bacteria; Calvin cycle; C3, C4 and CAM metabolism; GS-GOGAT and photorespiration; Mitochondria-plastid interactions in higher plants; Chlororespiration; Mitochondrial dysfunction

ASSESSMENT:

Coursework	50%
Final Exam	50%

LEVEL: II

SEMESTER: 1

COURSE CODE: BIOC 2069

COURSE TITLE: PRACTICAL SKILLS IN BIOCHEMISTRY I

NUMBER OF CREDITS: 1.5

PREREQUISITES: BIOL 1362, CHEM 1066 AND CHEM 1067

COURSE DESCRIPTION: This course is composed primarily of laboratory exercises which assist students to understand concepts taught in the classroom as well as introduce techniques necessary to function efficiently in a biochemistry lab. Topics covered include: Instrumentation and safety in the biochemistry laboratory; pH and buffers; proteins and amino acids; the Hill Reaction; measurement of arginase activity; assay of tissue glycogen.

ASSESSMENT:

Coursework	100%
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LEVEL: II

SEMESTER: 1

COURSE CODE: BIOC 2161

COURSE TITLE: PRIMARY METABOLISM

NUMBER OF CREDITS: 3

PREREQUISITES: BIOL 1362, CHEM 1066 AND CHEM 1067

COURSE DESCRIPTION: Regulation mechanisms of enzymes in biological systems; Enzyme mechanisms; Carbohydrate metabolism; Nitrogen metabolism; Amino Acids; Lipid metabolism Integrated Metabolism; Regulation of Metabolism

ASSESSMENT:

Coursework	50%
Final Exam	50%

LEVEL: II
SEMESTER: 2

LEVEL: III

SEMESTER: 1

COURSE CODE: BIOC 3162

COURSE TITLE: EXPERIMENTAL BIOCHEMISTRY AND MOLECULAR BIOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: BIOC2262 AND BIOC2169

COURSE DESCRIPTION: Course Description: This course covers key advanced techniques in Biochemistry and Molecular Biology including mammalian cell culture, immunological techniques, analysis of lipids and carbohydrates, analysis of DNA, RNA and proteins, recombinant DNA technology and genetic engineering, protein expression, ethics of synthetic biology and computational methods in biochemistry and molecular biology. Course materials will include class handouts e.g. illustrations and diagrams and the course will be fully myeLearning-supported. The course is primarily a theoretical course but computer-assisted approaches to experimental design and data analysis will be practiced by students.

ASSESSMENT:

Coursework:	50%
Final Examination:	50%

LEVEL: III

SEMESTER: 2

COURSE CODE: BIOC 3262

COURSE TITLE: MEDICAL BIOCHEMISTRY

NUMBER OF CREDITS: 3

PREREQUISITES: BIOC 2162

COURSE DESCRIPTION: The formation, composition and analysis of urine, stool and blood. Clinical significance and laboratory handling. Mechanisms for the release of cellular enzymes into circulation. Criteria for selection of plasma enzyme tests. Examples of clinically important enzymes. A brief outline of the structure and function of the kidney – the nephron. The role of the kidney in maintaining water balance, ionic equilibria and acid-base balance. Acute and chronic diseases of the kidney. Effect of diabetes on renal function. The buffer systems in blood. The roles of the kidney and lung in regulating blood pH. Symptoms and compensatory mechanisms of the various disorders. The anion gap. Procedures for assessing acid-base status. Treatment of acid-base disturbances. Outline of the anatomy and excretory/secretory functions of the liver. Review of the major synthetic activities and the roles of the liver in detoxification and drug metabolism. Clinical and biochemical features of acute liver disease. Chronic liver disease cirrhosis, clinical and biochemical features, major complications. Laboratory tests for assessment of liver function and for differential diagnosis of liver disease. Relationship of plasma lipids to the pathogenesis of arterial disease. Laboratory investigation of plasma lipid abnormalities. Thyroid hormone metabolism. Mechanism of thyroid hormone action and regulation of secretion. Disorders of the thyroid –Laboratory investigation of thyroid function. Pathways of catecholamine biosynthesis and metabolism. Regulation of steroidogenesis. Mechanism of action of steroid hormones and their physiologic effects. Secretion, metabolism and excretion of steroids. Biochemical and clinical features of disorders of the adrenal cortex, testis, ovary.

ASSESSMENT:

Coursework:	50%
Final Examination:	50%

LEVEL: III

SEMESTER: 2

COURSE CODE: BIOC 3364

COURSE TITLE: BIOCHEMICAL BASIS OF DISEASE

NUMBER OF CREDITS: 3

PREREQUISITES: BIOC 2161 AND BIOC 2262

COURSE DESCRIPTION:

Course Description: The course covers applied aspects of cancer metabolism, gene expression, diabetes and obesity, signal transduction/apoptosis, sensory systems and neurochemistry. The course will be delivered using a number of pedagogical tools and will be myeLearning supported

ASSESSMENT:

Coursework:	50%
Final Examination:	50%

LEVEL: 0 (PRELIMINARY)

SEMESTER: 1

COURSE CODE: BIOL 0061

COURSE TITLE: PRELIMINARY BIOLOGY I

NUMBER OF CREDITS: 0

PREREQUISITES: CSEC OR EQUIVALENT PASS IN BIOLOGY

COURSE DESCRIPTION: An introduction to Cell and Plant Biology including the ultra -structure of plant and animal cells; comparison between prokaryotic and eukaryotic cells; structure and function of micro- and macro-molecules; enzymes; respiration and photosynthesis. Introduction of the Plant Kingdom, plant anatomy, morphology and physiology to include water relations, ion uptake, mineral nutrition; regulation of growth and development by hormonal and environmental factors.

ASSESSMENT:

Coursework	50%
Theory 20%	
Practical 30%	
Final Examination	50%

LEVEL: 0 (PRELIMINARY)

SEMESTER: 2

COURSE CODE: BIOL 0062

COURSE TITLE: PRELIMINARY BIOLOGY II

NUMBER OF CREDITS: 0

PREREQUISITES: CSEC OR EQUIVALENT PASS IN BIOLOGY

COURSE DESCRIPTION: Introduction to the Animal Kingdom; relationships between structure and function of the mammalian body including the gross anatomy and tissue structure of the various organ systems. Basic principles of Mendelian and Molecular genetics including the physical and chemical basis of inheritance; DNA replication, recombinant DNA and DNA fingerprinting. Introduction to Ecology including ecosystems, energy flow and trophic levels, nutrient cycling and environmental issues.

ASSESSMENT:

Coursework	50%
Theory 20%	
Practical 30%	
Final Examination	50%

LEVEL: I

SEMESTER: 1

COURSE CODE: BIOL 1262

COURSE TITLE: LIVING ORGANISMS I

NUMBER OF CREDITS: 3

PREREQUISITES: (CAPE BIOLOGY (UNITS I AND II) OR (BIOL 0061 & BIOL 0062) OR GCE A-LEVEL BIOLOGY

COURSE DESCRIPTION: An introduction to the major groups of prokaryotes, autotrophic protists and plants, their evolutionary associations, and adaptive radiation. Explores ideas about the origin of the prokaryotes and the evolution and diversity of photosynthetic organisms. It is a prerequisite for advanced biology courses in the Department of Life Sciences.

ASSESSMENT:

Coursework	50%
Theory 30%	
Practical 20%	
Final Examination	50%

LEVEL: I

SEMESTER: 1

COURSE CODE: BIOL 1263

COURSE TITLE: LIVING ORGANISMS II

NUMBER OF CREDITS: 3

PREREQUISITES: (CAPE BIOLOGY (UNITS I AND II) OR (BIOL 0061 & BIOL 0062) OR GCE A-LEVEL BIOLOGY

COURSE DESCRIPTION: An introduction to the diversity of animals and fungi. Students are introduced to animals, their evolutionary associations, and adaptive radiation; and fungi as decomposers, symbionts, and pathogens. It is a prerequisite for advanced biology courses in the Department of Life Sciences

ASSESSMENT:

Coursework	50%
Theory 30%	
Practical 20%	
Final Examination	50%

LEVEL: I

SEMESTER: 2

COURSE CODE: BIOL 1362

COURSE TITLE: BIOCHEMISTRY I

NUMBER OF CREDITS: 3

PREREQUISITES: (CAPE BIOLOGY (UNITS I AND II) OR (BIOL 0061 & BIOL 0062) OR GCE A-LEVEL BIOLOGY

COURSE DESCRIPTION: This course provides an introductory treatment of concepts in Biochemistry. In many regards, students will be learning a vast new language as well as new insight into the molecular logic of life - how the structure/form of molecules is related to their diverse functions.

ASSESSMENT:

Coursework	40%
Final Examination	60%

LEVEL: I

SEMESTER: 2

COURSE CODE: BIOL 1364

COURSE TITLE: GENETICS I

NUMBER OF CREDITS: 3

PREREQUISITES: (CAPE BIOLOGY (UNITS I AND II) OR

(BIOL 0061 & BIOL 0062) OR GCE A-LEVEL BIOLOGY

COURSE DESCRIPTION: This course aims to present an introduction to the basic principles of genetics and will equip students with the necessary foundation for advanced level courses in biology and biochemistry.

ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: II

SEMESTER: 1

COURSE CODE: BIOL 2061

COURSE TITLE: CELL & DEVELOPMENTAL BIOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: BIOL1263 OR BIOL1261 OR (BIOL1065 AND AGRI1012) AND EITHER BIOL1362 AND BIOL1364 OR BIOL1061.

COURSE DESCRIPTION: The course begins with a review of the structure and function of cellular membranes and organelles and the role of the cytoskeleton in cell shape and motility. The fundamental processes operating during embryonic development and cellular differentiation of plants and animals will then be examined. The principles of development will be considered at the organismal, cellular and molecular levels for a complete understanding of developmental processes. Students will be introduced to important experiments that have led to an understanding of the basic principles of development. The application of stem cells in research and associated ethical considerations will form the basis of class discussions and debates.

ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: II

SEMESTER: 1

COURSE CODE: BIOL 2163

COURSE TITLE: BIOSTATISTICS

NUMBER OF CREDITS: 3

PREREQUISITES: MATH 1115 OR MATH 1125 OR AGRI 1003 OR UNIT I OR II CAPE PURE MATHEMATICS OR UNIT I OR II CAPE APPLIED MATHS OR CAMBRIDGE GCE A'LEVEL MATHEMATICS OR A/O' LEVEL ADD MATHS OR EQUIVALENT AND 9 CREDITS OF LEVEL 1 LIFE SCIENCES COURSES CHOSEN FROM THE FOLLOWING: BIOL 1262, BIOL 1263, BIOL 1364, BIOL 1362, BIOL1261 AND BIOL1061.

COURSE DESCRIPTION: This course introduces statistical concepts and analytical methods that can be applied to data in the biological, life sciences and environmental sciences. It will teach the basic concepts of experimental design, quantitative analysis of data, and statistical inferences. This course emphasises applications and will help students to statistically evaluate data from biological experiments. Assessment is designed to make students work continuously with the course materials, exploring and critically analysing research and real world data. Assessment will be continuous through assigned problem sheets allowing continuous feedback and guidance on problem solving techniques.

ASSESSMENT:

Coursework	50%
Final Exam	50%

LEVEL: II

SEMESTER: 2

COURSE CODE: BIOL 2164

COURSE TITLE: PRINCIPLES OF MOLECULAR BIOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: EITHER BIOL 1362 AND BIOL 1364 OR BIOL 1061

COURSE DESCRIPTION: This course provides an introduction to recombinant DNA technology, R-DNA cloning, and applications of R-DNA technology. It examines the importance of restriction endonucleases in gene cloning, methods of construction of vectors and their applications in developing gene libraries. The methods of screening and enrichment of libraries are also examined. The principles of the Polymerase Chain Reaction (PCR) and its applications including paternity testing and fingerprinting, are also discussed. The principles of sequencing and the expansion of next-generation sequencing techniques are examined. Approaches to locating genes, including map-based gene isolation, and methods of regulating gene expression, including RNAi, co-suppression, and over-expression are discussed using detailed examples. All techniques are further examined under general and holistic approaches to studying the genome, through forward and reverse genetics approaches, functional genomics, transcriptomics, proteomics and metabolomics. The theoretical principles discussed during the lectures are reinforced by practical exercises and assessment involving quizzes, lab reports and discussions.

ASSESSMENT:

Coursework	50%
Final Exam	50%

LEVEL: II

SEMESTER: 1

COURSE CODE: BIOL 2165

COURSE TITLE: GENETICS II

NUMBER OF CREDITS: 3

PREREQUISITES: BIOL 1364 OR BIOL 1061 AND 6 CREDITS FROM AMONG THE FOLLOWING COURSES: BIOL 1262, BIOL 1263, BIOL 1362 OR BIOL 1261.

COURSE DESCRIPTION: The major topics of the course are cytogenetics (including epigenetics and developmental genetics), prokaryotic/ viral genetics, and molecular genetics (including genomics). Cytogenetics explores chromosomal macromutations (chromosomal deletions, duplications, inversions and translocations) and their associated cytogenetic effects on plants and animals. Epigenetics and developmental genetics is a new area of study that explains the environmental influence on chromatin dynamics, DNA methylation, development and ultimately on inheritance. An introductory treatment of developmental genetics is also given to understand master control genes (homeotic genes) that regulate a cascade of genes that control development. Prokaryotic/ viral genetics provides insights into prokaryotic/ viral reproduction, recombination; genetic complementation, mapping; and genetic regulation. Molecular genetics provides the fundamental basis for the understanding of Molecular Biology and as such deals with DNA replication, transcription, translation and controls. Genomics provides an insight into where genetics is evolving (including an introduction to applications).

ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: II

SEMESTER: 1

COURSE CODE: BIOL 2262

COURSE TITLE: EVOLUTIONARY BIOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: BIOL 1364 OR BIOL 1061 AND 6 CREDITS FROM AMONG THE FOLLOWING COURSES: BIOL 1262, BIOL 1263, BIOL 1362 OR BIOL 1261.

COURSE DESCRIPTION: After a historical introduction, about one-quarter of the course is devoted to population genetics and the workings of natural selection as the basis for understanding evolutionary mechanisms and patterns. This leads to treatment of the nature of species, the roles of fossils in understanding past evolutionary patterns, special forms of evolution and phylogenetic analysis.

ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: II

SEMESTER: 2

COURSE CODE: BIOL 2265

COURSE TITLE: FUNDAMENTALS OF MICROBIOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: EITHER BIOL 1262 AND BIOL 1263 OR BIOL 1261 OR (BIOL 1065 AND AGRI 1012) AND EITHER BIOL 1362 AND BIOL 1364 OR BIOL 1061.

COURSE DESCRIPTION: An overview of the biology, taxonomy and phylogeny of bacteria, fungi and viruses. Topics covered include bacterial carbon and energy metabolism, as well as genetic recombination, growth and nutrition. The course covers the principles of classical and molecular-based methods used in the identification and enumeration of microorganisms.

ASSESSMENT:

Coursework	50%
Final Exam	50%

LEVEL: II

SEMESTER: 1

COURSE CODE: BIOL 2360

COURSE TITLE: BIOCHEMISTRY IIA

NUMBER OF CREDITS: 3

PREREQUISITES: EITHER BIOL 1362 OR BIOL 1061 AND EITHER CHEM 1062 OR CAPE CHEMISTRY OR CHEM 0060 AND CHEM 0061 AND EITHER BIOL 1262 OR BIOL 1263 OR BIOL 1261 .

COURSE DESCRIPTION: This is a core course for the Biology Degree/Major in the Department of Life Sciences. It explores questions such as– Why is life thermodynamically possible? It also examines how we digest and metabolize sugars, fats and proteins. Subsequently, it discusses the roles of the main hormones involved in the fed and fasting states and finally it looks at two common metabolic disorders in the Caribbean, diabetes and obesity. Materials covered in this course will be an asset for students who wish to further their studies in fields of medicine or nutrition or wish to pursue careers in teaching or the pharmaceutical industry.

ASSESSMENT:

Coursework	50%
Final Exam	50%

LEVEL: II

SEMESTER: 1

COURSE CODE: BIOL 2461 (TO BE DISCONTINUED WITH EFFECT FROM 2015/16)

COURSE TITLE: HUMANS AND THE ENVIRONMENT

NUMBER OF CREDITS: 4

PREREQUISITES: BIOL 1462

COURSE DESCRIPTION: Evolution of humans and human races and origin of diversity. Anatomical, physiological and cultural adaptations to diverse environments. Ecology of human diseases and health. Human population demography and human population-resources relationships. Technological development and its impacts on the environment and human population. The future of human populations.

ASSESSMENT:

Coursework	40%
Final Examination	60%

LEVEL: II

SEMESTER: 1

COURSE CODE: BIOL 2462

COURSE TITLE: CARIBBEAN ISLAND ECOLOGY

NUMBER OF CREDITS: 4

PREREQUISITES: BIOL 1462 (AT LEAST A GRADE B)

COURSE DESCRIPTION: This advanced course treats the islands of the Caribbean within a global perspective. Its subject matter is the special nature of island environments and their biotas, and its aim is an understanding of the distributions and ecological relationships of island plants and animals through an analysis of their origins, evolutionary past population biology and community structure. The course is expected to integrate much of the knowledge that advanced undergraduates have amassed.

ASSESSMENT:

Coursework	40%
Final Examination	60%

LEVEL: II

SEMESTER: 2

COURSE CODE: BIOL 2464

COURSE TITLE: FUNDAMENTALS OF ECOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: (BIOL 1262 AND 6 CREDITS FROM (BIOL 1263 OR BIOL 1362 OR BIOL 1364) OR (ESST 1001 AND 6 CREDITS FROM (ESST 1000 OR ESST 1002 OR ESST 1006

COURSE DESCRIPTION: An introduction to the science of ecology and its domain. Geographic range, habitat, and niche; influences of the abiotic and biotic environment. Estimating the abundance and pattern of populations. Population structure and demography; growth models, life tables and resource allocation patterns. Species interactions; competition, predation, commensalism and mutualism. The ecological community; concepts, classification, and attributes, ecological succession. Primary and secondary production, trophic levels, and ecological efficiencies. Nutrient cycles and energy flow.

ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: II

SEMESTER: 2

COURSE CODE: BIOL 2764

COURSE TITLE: PHYSIOLOGY OF PLANTS

NUMBER OF CREDITS: 3

PREREQUISITES: BIOL1262 OR BIOL 1261 OR (BIOL 1065 AND AGRI 1012) AND EITHER BIOL 1364 AND BIOL 1362 OR BIOL1061

COURSE DESCRIPTION: This course deals with how plants gather the resources they need to grow and survive. The first part provides the essential concepts of plant physiology with comprehensive coverage of water relations, mineral uptake, and photosynthesis. The second part explores how these resources are translated into plant growth and provides an introduction to how plants respond to environmental signals at the whole plant level. Each topic is covered by lectures and supported by online material and by recommended reading. The Practicals complement the lecture topics and provide an opportunity gain valuable practical skills in the life sciences.

ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: II

SEMESTER: 2

COURSE CODE: BIOL 2867

COURSE TITLE: PHYSIOLOGY OF ANIMALS

NUMBER OF CREDITS: 3

PREREQUISITES: BIOL 1263 AND BIOL 1362 AND EITHER BIOL 1364 OR ESST 1001.

COURSE DESCRIPTION: Physiology of Animals is the study of how animals' function. The course provides an introduction to molecular and cellular physiology and the principal physiological systems in animals, and how these systems function to maintain homeostasis in various environments. It covers fundamental concepts in osmoregulation and excretion, neurophysiology, muscle physiology, respiration, thermo-physiology, circulation and gas transport, endocrinology, and cardiovascular physiology. It also looks at some of the major stressors on physiological processes and how animals have been able to deal them. Typical stressors that are covered include osmotic pressures, water limitation, hypoxia, altitude, depth, temperature extremes and exercise. While animal physiology examines systems and processes common to all animal species, this course will focus on vertebrates, with a special emphasis on mammalian systems.

ASSESSMENT:

Coursework	50%
Final Exam	50%

LEVEL: III

SEMESTER: 1

COURSE CODE: BIOL 3063

COURSE TITLE: MARINE ECOLOGY AND OCEANOGRAPHY

NUMBER OF CREDITS: 3

PREREQUISITES: EITHER BIOL1262 AND BIOL1263 OR BIOL1261 R (BIOL1065 AND AGRI1012) AND EITHER BIOL2464 OR BIOL1462

COURSE DESCRIPTION: This course is an introduction to marine ecology and related aspects of oceanography and marine biology. It emphasizes ecological processes and adaptations that act to structure marine associations and permit their persistence through time. Lectures provide an overview of characteristics, biodiversity and ecology of these marine ecosystems. They will also highlight concepts, ideas and hypotheses of how marine ecosystems function. These principles are examined on a global oceanographic scale.

The course will also explore the structure and function of marine communities and ecosystems; threats to marine ecosystems and include management strategies to provide sustainable benefits both to the ecosystems and human wellbeing.

Students are expected to have a basic foundation in ecology and biodiversity. In addition to providing a foundation of theoretical knowledge, this course will emphasise practical skills and expose students to field and laboratory approaches for studying freshwater systems. It is an interactive 'hands-on' course where students are expected to prepare, participate and perform in an active way to engage with the content in a variety of ways. Assessment is designed to encourage students to work continuously with the course materials, explore and critically analyse research in this rapidly developing field.

ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: III

SEMESTER: 3 (SUMMER)

COURSE CODE: BIOL 3068

COURSE TITLE: FIELD COURSE IN NEOTROPICAL ECOLOGY

NUMBER OF CREDITS: 4

PREREQUISITES: BIOL 1462 AND 8 CREDITS OF ADVANCED LEVEL LIFE SCIENCES COURSES, OR PERMISSION OF THE HEAD OF DEPARTMENT

COURSE DESCRIPTION: Introduction to focal group, ecological principles illustrated by focal group, specialised features of focal group, field research projects (aquatic or terrestrial). Students must consult with the course coordinator before registering for this course.

ASSESSMENT:

Coursework	100%
• Oral Report	10%
• Written Work	90%

LEVEL: III

SEMESTERS: 1 & 2

COURSE CODE: BIOL 3069

COURSE TITLE: RESEARCH PROJECT

NUMBER OF CREDITS: 4

PREREQUISITES: AT LEAST A B AVERAGE IN LEVEL II LIFE SCIENCES COURSES OR PERMISSION OF THE HEAD OF DEPARTMENT. STUDENTS WISHING TO DO THIS COURSE ARE STRONGLY ENCOURAGED TO READ AN ELEMENTARY STATISTICS COURSE.

COURSE DESCRIPTION: Short lecture course (6-8 hours): Aims and means of assessing project feasibility; Methods of investigation; Experimental design; Project reporting and presentation. An approved investigation of a problem in biology and a written report thereon. Students must consult with the course coordinator before registering for this course

ASSESSMENT:

In-course assessment		40%
Project Proposal	10%	
Literature Review	10%	
Oral Presentation	20%	
Project Report		60%

LEVEL: III

SEMESTER: 2

COURSE CODE: BIOL 3162

COURSE TITLE: PRINCIPLES OF MICROBIAL BIOTECHNOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: EITHER BIOL2265 OR BIOL 2164 AND BIOL3369 OR BIOC 2262 AND BIOL3162

COURSE DESCRIPTION: This course focuses on the applications of microorganisms in a range of processes that are beneficial for humans and the environment. The topics covered include isolation, screening, genetic manipulation and culturing of microorganisms for selected biotechnological applications related to industries, health, agriculture and the environment. The course is organized into face-to-face lectures, tutorials and practical exercises. General and specific concepts would be covered in lectures while tutorials would be interactive, with students expected to prepare and fully participate in discussions and other class activities. Students will be continuously assessed via in-course tests, activities during lectures and tutorials, and attendance and participation in tutorials. Students' practical exercises will be assessed and there is also a final end-of-semester theory examination.

ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: II

SEMESTER: 2

COURSE CODE: BIOL 3164

COURSE TITLE: FUNCTION AND DESIGN IN BIOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: EITHER BIOL1262 OR BIOL1261 OR (BIOL1065 AND AGRI1012); AND EITHER OR BIOL2761 AND EITHER OR BIOL2862 ANIMAL PHYSIOLOGY; AND BIOL3773

COURSE DESCRIPTION: This course offers a fresh approach to the study of the structure and function of living things. It does not follow the traditional approach based on phylogeny, processes, or organ systems, but looks at how organisms are designed to best make use of the physical characteristics of the environment in which they live. The course goes further than presentation of didactic lectures. For example, students are asked to critique the commonly held belief that cells are the building blocks of living things, and instead consider that cells are incomplete subunits of the organism, so that morphology is not related to anatomy. In the same vein, the concept of Bernoulli's Principle is shown to be inadequate to explain flight. Analogies are used wherever possible to explain concepts, such as comparing the anatomy of stems and bones to beams and girders, using the Forth Rail Bridge as an engineered analogue of stems. Lectures, tutorials, and practicals are designed to encourage thinking about concepts rather than remembering details.

ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: III

SEMESTER: 1

COURSE CODE: BIOL 3263

COURSE TITLE: INTRODUCTION TO BIOINFORMATICS

NUMBER OF CREDITS: 3

PREREQUISITES: BIOL2164 PRINCIPLES OF MOLECULAR BIOLOGY

COURSE DESCRIPTION: This course introduces students to bioinformatics tools and methods. It provides the conceptual background for using bioinformatics tools and application methods and offers skills and training on computational molecular biology and related fields. It gives an understanding about major advances in the analysis of genomes, sequences and their structures and also critically discusses the strength and limitations of the methods. The lecture component of this course provides the necessary conceptual backing and the practical component provides assignments for utilizing bioinformatics tools. Problem-based learning methods would be employed to teach the utility of bioinformatics tools. Teaching approaches include lectures, tutorials and lab sessions. Topics include (but not limited to) bioinformatics databases, sequence and structure alignment, protein structure prediction, protein folding, protein-protein interaction, simulation, and molecular dynamics.

ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: III

SEMESTER: 1

COURSE CODE: BIOL 3363

COURSE TITLE: MEDICAL BIOTECHNOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: BIOL2164

COURSE DESCRIPTION: Biotechnology as a field has very high relevance and application to human and animal medicine. With the advent of research we are at a stage to unravel the molecular mechanisms of several diseases and disorders. These studies have opened up a new era for the management of several problems facing human health and longevity. Biotechnology innovation is in a large part driven by the requirement for improvements in medical diagnosis and therapy for a range of diseases including autoimmune diseases, diseases of inflammation and cancer. This course gives students a detailed insight into the principles and techniques of biotechnology applied to human medicine. Topics include (but not limited to) biopharmaceuticals, stem cell technologies, tissue engineering and regenerative medicine, proteomics, antibody technologies, nanomedicine and molecular diagnostics. The teaching and learning methods include lectures/tutorials, and field trips to medical facilities (within Trinidad).

ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: III

SEMESTER: 2

COURSE CODE: BIOL 3366

COURSE TITLE: PLANT BIOTECHNOLOGY AND GENETIC ENGINEERING

NUMBER OF CREDITS: 3

PREREQUISITES: Either BIOL 2164 Principles of Molecular Biology and BIOL 3369 Laboratory Skills in Biotechnology OR BIOC 2262 Gene Expression and BIOC3162 Experimental Biochemistry and Molecular Biology.

COURSE DESCRIPTION: This course introduces students to plant transformation technologies and genetic engineering methodologies for the introduction of beneficial traits into economically important plants. It also introduces students to plant tissue culture techniques and the impact of this technology on preservation of plant species and plant tissue based production of proteins and secondary metabolites. Topics include, Tissue culture applications in plant biotechnology; Advanced study of Gene sources and Gene expression; Promoters, selectable markers and reporter genes; Plant Transformation systems; Biology of *Agrobacterium* - mediated transformation; *Agrobacterium* – mediated gene transformation – methodology; Direct gene-transfer methods, Particle bombardment; Transgene Integration; Evaluation of Transgenics; Management of Gene silencing; Genetic engineering of plants for novel traits; herbicide tolerance, enhancing pest resistance, disease resistance; resistance to plant viruses, enhanced product qualities; Marker aided selection and gene pyramiding; Biofarming and plant expression systems; Phytoremediation, Genetic engineering of biofuel crops; Genetically modified crops - ethical, social biosafety and environmental issues. The teaching and learning methods include lectures/tutorials, group discussion, journal paper discussion and lab sessions. The teaching and learning methods include lectures/tutorials, and lab sessions.

ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: III

SEMESTER: 1

COURSE CODE: BIOL3369

COURSE TITLE: LABORATORY SKILLS IN BIOTECHNOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: Either BIOL 2164 and BIOL 3369 OR BIOC 2262 and BIOC3162

COURSE DESCRIPTION: This course provides necessary practical skills on recombinant DNA technology and molecular biology and biotechnology techniques. This course will be taught through lab sessions, lab discussions/lectures. Course will be assessed for 100% course work. Lab experiments and lectures will comprehensively cover the experiments and methods involved in gene cloning, necessary instrumentation and Preparation of reagents; Extraction of DNA and RNA; Restriction digestion of plasmid and genomic DNA and fragment analysis; Extraction of plant proteins and SDS-PAGE analysis; DNA-PCR, RT-PCR, qPCR; Preparation of tissue culture media; Tissue culture of tobacco leaf explants; Cell culture techniques; DNA-sequencing and DNA finger printing

ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: III

SEMESTER: 1 AND 2

COURSE CODE: BIOL 3469

COURSE TITLE: RESEARCH AND PRACTICAL SKILLS IN ENVIRONMENTAL BIOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: PERMISSION OF THE HEAD OF DEPARTMENT. ONLY AVAILABLE TO STUDENTS TAKING THE ECOLOGY & ENVIRONMENTAL BIOLOGY

SPECIALISATION WITH 24 LEVEL II BIOLOGY CREDITS

COURSE DESCRIPTION: This course is designed to expose students to the general approaches and techniques used for research in Environmental Biology by conducting research in a selected area of Environmental Biology. The course is organised into background lectures and tutorials, field and laboratory sessions covering general practical skills and a short group research project. It is a 'hands-on' course where students are expected to prepare, participate and perform in an active way in order to engage with the content. Assessment will be based entirely on practical activities, skills and reporting.

ASSESSMENT:

Coursework	100%
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LEVEL: III

SEMESTER: 2

COURSE CODE: BIOL 3768

COURSE TITLE: PLANT DIVERSITY AND SYSTEMATICS

NUMBER OF CREDITS: 3

PREREQUISITES: BIOL1262 or BIOL1261 and either or BIOL2761

COURSE DESCRIPTION: This course provides an overview of plant diversity and systematics and explores the origin and diversity of vascular land plants emphasizing flowering plants in the flora of Trinidad and Tobago. The course covers taxonomy (identification, nomenclature, and classification), diversity, morphology and evolution of vascular plant groups, as well as phylogenetics (phenetics, cladistics, morphology and molecules). Practicals focus on skills and activities necessary for indentifying vascular plants in Trinidad and Tobago and the tools necessary for the understanding of the study of systematics. The course would be taught using interactive lectures, tutorials and hands on practical sessions. Assessment would consist of a final written examination and in course, online and practical assignments

ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: III

SEMESTER: 1

COURSE CODE: BIOL 3769

COURSE TITLE: PLANT GENETIC IMPROVEMENT

NUMBER OF CREDITS: 3

PREREQUISITES: BIOL 2162 OR BIOL 2165 OR AGCP 2001

COURSE DESCRIPTION: Objectives of plant breeding; Crop evolution and genetic variability; genetic erosion and germplasm conservation. Creating genetic variability - mutagenesis genetic engineering, inter- and intra-specific hybridisation. Reproductive isolation systems and their manipulation; Principles of selection-factors affecting genetic gain, selection methods, molecular marker assisted selection and response to selection. Principles and methods of breeding self-pollinated cross-pollinated and vegetatively propagated crops. Case studies. . Impact of biotechnology on plant breeding.

ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: III

SEMESTER: 1

COURSE CODE: BIOL 3770

COURSE TITLE: PLANT PATHOGENS

NUMBER OF CREDITS: 3

PREREQUISITES:

COURSE DESCRIPTION: This course introduces the learner to the field of plant pathology and provides basic information on the biology and epidemiology and disease cycle of important plant pathogens affecting plants of this region. This course provides comprehensive knowledge about plant pathogens and their interactions with the host. Topics include: Biology of plant pathogens; Classification of plant pathogens; their cellular organization, structure; Examples of pathogens; Pathogen-life cycles, disease cycle; Symptomology; epidemiology, spread, survival; Host-pathogen interactions, mechanism of infection, physiological and biochemical processes of infection; Host resistance and defense mechanisms; Principles of disease management; Molecular-based pathogen detection and disease diagnosis. This course will be taught through lectures/tutorials, lab sessions, field trips. Students are expected to complete a group project.

LEVEL: III

SEMESTER: 2

COURSE CODE: BIOL 3771

COURSE TITLE: ENVIRONMENTAL PLANT PHYSIOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES:BIOL2764 BIOL2761

COURSE DESCRIPTION: The course consists of two parts with an in-course exam following each part. The first part introduces the essential concepts of Environmental Plant Physiology and looks in detail at three important abiotic factors: light, water and temperature. Each topic is covered by lectures and supported by online materials and by recommended reading. The Practicals complement the lecture topics and provide an opportunity to assess the students' comprehension of each topic, while at the same time providing the students with valuable practical skills in the life sciences.

The second part examines the application of these concepts through a series of case studies looking at different habitats and applied scenarios. In addition to case studies developed by the instructor, students work in structured groups to develop and present their own case studies that explore the role of plant research in meeting the challenge of global climate change. Assessment will be based on a group presentation, practical reports, two in course exams and a final theory exam.

ASSESSMENT:

Coursework 50%

Final Examination 50%

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LEVEL: III

SEMESTER: 2

COURSE CODE: BIOL3772

COURSE TITLE: PLANT DEVELOPMENT

NUMBER OF CREDITS: 3

PREREQUISITE(S): BIOL 2061 AND EITHER BIOL 2764

BIOL2761

COURSE DESCRIPTION:Th]TJES(S: 0.014 Tc 0.014 Tw16(O)1w16(O)1wi1A0(R)6(S)1ADC -

UNDERGRADUATE REGULATIONS & SYLLABUSES 2014-2015
THE FACULTY OF SCIENCE & TECHNOLOGY

LEVEL: III

SEMESTER: 1

COURSE CODE: BIOL 3867

COURSE TITLE: BIOLOGY OF ANIMAL BEHAVIOUR

NUMBER OF CREDITS: 3

PREREQUISITES: (BIOL1263 OR BIOL1261 OR BIOL1065

AND (BIOL2864 OR BIOL2862.

COURSE DESCRIPTION: Approaches to animal behaviour.

The description and measurement of behaviour, and the design of experiments. The evolution of behaviour.

Physiological behaviour; stimulus perception, processing, and the organization of behaviour. Instinct and learning, and the development of behaviour in the individual.

Signals, communication, and language in animals.

Behavioural ecology of feeding, defence, territory and social behaviour, reproduction, and parental care.

ASSESSMENT:

Coursework 50%

Final Examination 50%

LEVEL: III

SEMESTER: 1

COURSE CODE: BIOL 3868

COURSE TITLE: THE ECOLOGY OF HUMANS

NUMBER OF CREDITS: 3

PREREQUISITES: Either BIOL 1263 OR BIOL1261 OR

(BIOL1065 AND AGRI1012) AND either BIOL2464 OR

BIOL1462

COURSE DESCRIPTION: This course focuses on one of the most important animals on Earth today, Homo sapiens, considering the species from a broad biological and ecological perspective. The course introduces the evolution and origin of modern humans, the extent of their uniqueness in comparison with other animals and Primates, and the characteristics that contribute to their

LEVEL: I

SEMESTER: 1

COURSE CODE: BMET 1004

**COURSE TITLE: INTRODUCTORY HUMAN ANATOMY AND
PHYSIOLOGY I**

NUMBER OF CREDITS: 3

**PREREQUISITES: CAPE PHYSICS (UNITS I AND II) OR CAPE
MATHEMATICS (UNITS I AND II) AND CSEC (CXC)**

**PHYSICS OR PHYS 0070 AND PHYS 0071 OR THEIR
EQUIVALENT**

COURSE DESCRIPTION:

It is essential that biotechnology personnel, in any form of the use of the body, should be more than merely acquainted with the human body and the relationship of its parts to the total working of the healthy person. Scientific background will underscore student opportunities to think critically, from the perspective of the human organism functioning independently, the interface between the individual and his/her immediate environment, including interactive relationships with technology, and global environment. This course integrates several disciplines including the basic gross anatomy and histology of all the system, as well as physiology of the human body. Contemporaneous issues of homeostasis, ergonomics, adaptation and health will be discussed in the context of today's emerging environmental and inter-organism impacts in the quality of life. This course comprises: General Introduction of Gross anatomy, concepts and principles of cell biology; histology; the integumentary, skeletal, muscular, and nervous systems; special senses; and the endocrine system. This course will be assessed through in-course assignments, in-course laboratory exercises and a final examination.

ASSESSMENT:

Coursework	40%
Final Examination (One 2-hr paper)	60%

LEVEL: I

SEMESTER: 2

COURSE CODE: BMET 1005

**COURSE TITLE: INTRODUCTORY HUMAN ANATOMY AND
PHYSIOLOGY II**

LEVEL: II

SEMESTER: 2

COURSE CODE: BMET 2001

COURSE TITLE: BIOENGINEERING

NUMBER OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR PHYS 1221, PHYS 1222, PHYS 1223 AND PHYS 1224 OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: This course will emphasize a systemic view of human anatomy, hierarchy of structures, the function of the various systems of the body and an introduction to selected physiological functions in the human body. Additionally, the physics of the human body will be addressed in terms of the generation of electricity and the use of biopotential measurements in medical diagnostics. This course will focus on the following: Review of radiation interaction with matter; Medical radiation sources and their applications in diagnosis and therapy (focus on detectors, scanners and image processing in the medical environment); Nuclear medicine: radioisotopes, tracer studies and system modeling; Biomechanics as applied in orthopaedic and cardiac surgery; Biomaterials: focusing on the properties of implantable materials and their preparation for implantation; Kinetic and blood flow studies. This course will be assessed through in-,92_ Tc 0.09(t)4(e)-19(t)Tc 0 5(es a)730730

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LEVEL: III

SEMESTER: (YEAR-LONG)

COURSE CODE: BMET 3000

COURSE TITLE: BIOMEDICAL TECHNOLOGY PROJECT

NUMBER OF CREDITS: 6

PREREQUISITES

AVAILABLE TO B.SC. BIOMEDICAL TECHNOLOGY

STUDENTS ONLY, WITH A MINIMUM OF 30 LEVEL II/III CREDITS

COURSE DESCRIPTION: The project will be compulsory for all biomedical technology majors and will consist of 6 hours/week of practical work and related required activities such as writing critiques of selected literature, training on equipment, attending and presenting interim reports verbally, meeting with supervisors. The student will be assigned a research project and will work under the guidance of a member of academic and/or technical staff. The student will be required to write a research proposal outlining the research project, a critical analysis of the literature and the methodology to be used. The student will plan and carry out experiments under the supervision of the advisor or professional recommended by the supervisor. On completion of the practical component, the student will be required to write a project report according to specified format. The report is to be submitted for assessment by a deadline set by the Department of Physics. Students will also be required to orally present their project to an open audience on dates set by the Department of Physics. The oral presentation should make use of current presentation technologies and technique and should be of ten minutes duration per student. This course will be assessed through a written report and an oral presentation.

ASSESSMENT:

Oral Dissertation	20%	
Written Report		80%

LEVEL: III

SEMESTER: 2

COURSE CODE: BMET 3003

COURSE TITLE: BIOMEDICAL TECHNOLOGY

LABORATORY

NUMBER OF CREDITS: 3

PREREQUISITES

PHYS 1110 AND PHYS 1111 OR PHYS 1221, PHYS 1222, PHYS 1223 AND PHYS 1224 OR OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: Biomedical Technology is based on scientific principles which are tested by practical experimentation. In the process, the students are expected to deepen their understanding of the relations between experiment and theory. The data obtained will have the inevitable systematic and random errors that obscure the relations between macroscopic observables of our sensory experience and the ideal laws that govern the phenomena. Students will be challenged to learn how each of the experimental configurations work, to master its manipulation so as to obtain the best possible data set and then to interpret the data in light of theory and a quantitative assessment of the errors. This course stresses data analysis in a laboratory setting. This course will be assessed through in-course assignments and a final examination.

ASSESSMENT:

Coursework	100%
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LEVEL: III

SEMESTER: 1

COURSE CODE: BMET 3001

COURSE TITLE: LABORATORY MANAGEMENT AND PRACTICE

NUMBER OF CREDITS: 3

PREREQUISITES: AVAILABLE ONLY TO BSC BIOMEDICAL TECHNOLOGY STUDENTS

COURSE DESCRIPTION: Biomedical technologists may work within a laboratory environment and may be managers of a laboratory. Technologists may calibrate, test, sample, and evaluate various types of signals and materials and quantify results that may be used by other medical professionals for interpretation. One objective of laboratories is the achievement of documented processes and error-free results that are above reproach. Mistakes can lead to a lack of confidence in the results and services provided by a laboratory. Laboratories are designed, managed, and operated in a manner to consistently provide reliable services. This course provides an introductory overview on the various aspects involved in managing the laboratory environment. The content comprises the following topics: General concepts and administrative issues; optimizing efficiency in workflow processes; workload management; quality management and performance improvement; laboratory informatics and data management; financial management; staff management; laboratory safety; competitive performance in the market. This course will be assessed through in-course assignments.

ASSESSMENT:

Coursework	100%
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LEVEL: III

SEMESTER: 2

COURSE CODE: BMET 3002

COURSE TITLE: LIGHT AND OPTICS IN MEDICINE

NUMBER OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR PHYS 1221, PHYS 1222, PHYS 1223 AND PHYS 1224 OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: Lasers and fiber optics have significant applications in medicine including in imaging and the illumination components of endoscopes to view internal organs. Flexible and rigid fiber cables with laser emitters and detectors are used to access organs. This course provides a background on fundamental optics, fiber optics, and lasers, and their applications to biomedical instrumentation. This course comprises: physics of fiber optics; fiber modes, transmission, and detection; fiber bundles; endoscopy imaging; sigmoidoscopy; colonoscopy; bronchoscopy; physics of lasers; laser classifications and characteristics; laser types; laser interaction with tissue; laser medical applications; laser radiation safety; clinical applications of fiber-optic laser systems. This course will be assessed through in-course assignments and a final examination.

ASSESSMENT:

Coursework	40%
Final Examination (One 2-hr paper)	60%

LEVEL: III

SEMESTER: II

COURSE CODE: BMET 3004

COURSE TITLE: METROLOGY & REGULATORY STANDARDS

NUMBER OF CREDITS: 3

PREREQUISITES: AVAILABLE ONLY TO BSC BIOMEDICAL TECHNOLOGY STUDENTS

COURSE DESCRIPTION: In the health sector, due to the inherent potential risk to life it is necessary to measure quantities as accurately as possible. The accuracy and reliability of medical measurements have direct consequences on each individual's health. In addition, medical decisions are often based on statistical analysis and on the conclusions of clinical studies. Medical measurements are incorporated within these studies and are correlated with other medical findings. Thus, the accuracy, reproducibility, and repeatability as well as the quality assurance (calibration, legal metrological control and reference measurement methods) of medical instrumentation must be assured. This course introduces the metrology and regulatory framework and standards of certain categories of medical devices. This course comprises: metrology principles; quality in measurement and testing; the different international classification systems for medical devices; the life phases to developing medical devices; medical device design standards versus medical device operational standards; the regulatory framework for medical devices including the World Health Organization Medical Devices regulations; International Electrotechnical Commission standards for electrical equipment in medical practice and on medical device software; Examples of metrological characteristics (methods and equipment) for specific equipment such as, but not limited to, electrocardiographs. This course will be assessed through in-course assignments and a final examination.

ASSESSMENT:

Coursework	100%
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LEVEL: 0 (PRELIMINARY)

SEMESTER: 1

COURSE CODE: CHEM 0060

COURSE TITLE: PRELIMINARY CHEMISTRY I

NUMBER OF CREDITS: 0

PREREQUISITES: CSEC OR EQUIVALENT PASS IN CHEMISTRY

COURSE DESCRIPTION: Theory: Foundations of Chemistry. Descriptive inorganic and organic chemistry. Energy changes in chemical reactions. Chemical equilibria. Chemical kinetics.

Practical: Forty-eight (48) hours of practical work

ASSESSMENT:

Practical Coursework	15%
Theory Coursework	10%
Final Examination - 3-hour written paper	75%

LEVEL: 0 (PRELIMINARY)

SEMESTER: 2

COURSE CODE: CHEM 0061

COURSE TITLE: PRELIMINARY CHEMISTRY II

NUMBER OF CREDITS: 0

PREREQUISITES: CSEC OR EQUIVALENT PASS IN CHEMISTRY

COURSE DESCRIPTION: Theory: The three physical states of matter. Further introduction to the chemistry of the elements. Properties of solutions. Acid-base systems and buffer systems. Electrical conductance, oxidation-reduction. Practical: Forty-eight (48) hours of practical work.

ASSESSMENT:

Practical Coursework	15%
Theory Coursework	10%
Final Examination - 3-hour written paper	75%

LEVEL: I

SEMESTER: 1

COURSE CODE: CHEM 1062

COURSE TITLE: BASIC CHEMISTRY FOR LIFE SCIENCES

NUMBER OF CREDITS: 3

PREREQUISITES: NONE

COURSE DESCRIPTION: The course is intended to provide students, who have had very little exposure to chemistry and who intend to proceed to degree level in the Life and Health Sciences, with a working knowledge of the basic concepts and principles of Chemistry. Topics of study: atoms, bonding, (ionic and covalent) intermolecular forces, quantifying matter, classes of reactions; properties of ionic and covalent compounds; solution chemistry; acid-base equilibrium; reaction kinetics; thermochemistry; gases; properties and reactions of carbon compounds including alcohols, aldehydes and ketones, carboxylic acids, esters and ethers, amines and amides; amino acids and peptides, natural polymers and stereochemistry.

ASSESSMENT:

Coursework	40%
Final Examination - 2-hour written paper	60%

LEVEL: I

SEMESTER: 1

COURSE CODE: CHEM 1066

COURSE TITLE: INTRODUCTION TO CHEMISTRY I

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 0060 & CHEM 0061 OR CAPE CHEMISTRY OR EQUIVALENT

COURSE DESCRIPTION: Atomic structure, group and periodic trends, chemical reactivity, fundamentals of bonding.

ASSESSMENT:

Coursework	40%
Final Examination - 2-hour written paper	60%

LEVEL: I

SEMESTER: 2

COURSE CODE: CHEM 1067

COURSE TITLE: INTRODUCTION TO CHEMISTRY II

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 0060 & CHEM 0061 OR CAPE CHEMISTRY OR EQUIVALENT

COURSE DESCRIPTION: Fundamentals of organic chemistry, introduction to chemical thermodynamics, reaction kinetics, chemical equilibria, d-block elements and coordination chemistry.

ASSESSMENT:

Coursework	40%
Final Examination - 2-hour written paper	60%

LEVEL: I

SEMESTER: 2

COURSE CODE: CHEM 1068

COURSE TITLE: INTRODUCTION TO CHEMISTRY III

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 0060 & CHEM 0061 OR CAPE CHEMISTRY OR EQUIVALENT

COURSE DESCRIPTION: Particle in a box, eigenvalues, harmonic oscillators, heat capacity, entropy, Gibbs free energy. Organic chemistry: addition, substitution, elimination and hydrolysis reactions.

ASSESSMENT:

Coursework	40%
Final Examination - 2-hour written paper	60%

LEVEL: I

SEMESTER: 1 and 2 (Yearlong)

COURSE CODE: CHEM 1070

COURSE TITLE: INTRODUCTORY CHEMISTRY

LABORATORY (YEARLONG)

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 0060 & CHEM 0061 OR CAPE CHEMISTRY OR EQUIVALENT

COURSE DESCRIPTION: This is a laboratory based course covering basic and intermediate laboratory skills, including chemical calculations, simple data and statistical analyses, volumetric and gravimetric techniques, chemical quantitation, pH measurements, purification of mixtures, chromatography, measurement of thermodynamic and kinetic parameters of reactions, basic symmetry and laboratory safety. Laboratory exercises begin with a careful emphasis on skill acquisition, then move towards more complicated exercises. During the later stages of the course students would be expected to do more advanced laboratory activities, using the techniques taught in the earlier sessions to plan, design and execute their own solution to a laboratory problem. The final grade for CHEM 1070 will be determined from an assessment of student performance in the following activities: general laboratory reports / exercises, laboratory quizzes, laboratory skills evaluation, and mini-projects.

ASSESSMENT:

Coursework	100%
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LEVEL: II

SEMESTER: 1

COURSE CODE: CHEM 2170

COURSE TITLE: FUNDAMENTALS OF INORGANIC CHEMISTRY I

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 1065 OR CHEM1070, CHEM 1066, CHEM 1067 AND CHEM 1068 OR CHEM 1060 AND CHEM 1061

COURSE DESCRIPTION: This is part I of two of core inorganic chemistry courses and gives an introduction to fundamental concepts in inorganic chemistry with a focus on descriptive inorganic chemistry and bonding theories both in inorganic molecules and in the solid state. The course is divided into topic themes and includes structure of solids, survey of properties of main group elements, aqueous and redox chemistry of ionic compounds, principles of group theory, descriptive transition metal chemistry the basis of which includes crystal field theory and extending into basic molecular magnetism and electronic spectroscopy. The topics are pursued with a common theme of chemical bonding and structure and the derived chemical properties of compounds of elements across the most of the periodic table.

The assessment approach will be varied and continuous throughout the course and include online quizzes, in-course exams, tutorial worksheets and group research paper.

ASSESSMENT:

Coursework	40 %
Final Examination - 2-hour written paper	60%

LEVEL: II

SEMESTER: 1

COURSE CODE: CHEM 2270

COURSE TITLE: ORGANIC CHEMISTRY I

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 1065, CHEM 1066, CHEM 1067 AND CHEM 1068 OR CHEM 1060

COURSE DESCRIPTION: This course will be the first of the two basic organic chemistry courses required for students who have completed the Introductory Chemistry programme and wish to pursue a major in chemistry. Students are introduced to the basic reactions, principles and tools which will enable them to devise reasonable schemes for the synthesis of given molecules, to determine the structures of these molecules and to explain the formation of the products obtained from reactions. This will be achieved through six lectures in Stereochemistry, six lectures in Spectroscopy and 12 lectures on Synthetic Design which will focus on applying knowledge of aromatic and carbanion chemistry and retrosynthetic analysis to the synthesis of given organic molecules. There will be twelve weekly tutorials during which assigned problems will be discussed. Students will be assigned to work in small groups on the problems and hand in their solutions before each tutorial.

ASSESSMENT:

Coursework	40%
Final Examination - 2-hour written paper	60%

LEVEL: II

SEMESTER: 1

COURSE CODE: CHEM 2370

COURSE TITLE: PHYSICAL CHEMISTRY I

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 1065 OR CHEM1070, CHEM 1066, CHEM 1067 and CHEM 1068 OR CHEM 1061

COURSE DESCRIPTION: Introduction and fundamental theory of spectroscopic techniques important to chemists and how the techniques can be used to find out more about atoms and molecules. The course also includes reaction kinetics, particularly its application to real world chemistry problems. This is a core subject area in physical chemistry. The course covers important material that will be needed in subsequent courses in all disciplines of chemistry. The course is assessed by two in-course examinations, and tutorial activities, along with a final examination.

ASSESSMENT:

Coursework	40%
Final Examination - 2-hour written paper	60%

LEVEL: II

SEMESTER: 1

COURSE CODE: CHEM 2470

COURSE TITLE: INTRODUCTION TO ANALYTICAL CHEMISTRY

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 1065 OR CHEM1070, CHEM 1066, CHEM 1067 AND CHEM 1068 or CHEM 1060 AND CHEM 1061

COURSE DESCRIPTION: This course emphasizes classical methods in analytical chemistry. In the first of two units, students are introduced to the basic tools needed in all chemical analyses. The techniques of chemical measurements of mass and volume, for example, are studied, along with relevant units and interconversions. The errors associated with chemical analyses are discussed; students will be able to describe these errors, identify how they can occur in an analysis and suggest methods for minimizing or eliminating them. Simple statistical analysis is also considered in this unit. In the second unit, students are introduced to a survey of classical and modern analytical methods. This is followed by the principles of chemical equilibria, and how these apply to the important classical analytical chemistry methods of gravimetry and titration. The teaching/learning strategies in use in this course are based on the classroom lecture along with small group activities, supported by myeLearning components. The course is assessed by in-course examinations, tutorial activities and participation, along with a final examination.

ASSESSMENT:

Coursework	50%
Final Examination - 2-hour written paper	50%

LEVEL: II

SEMESTER: 2

COURSE CODE: CHEM 2471

COURSE TITLE: ANALYTICAL METHODS IN CHEMISTRY I

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 2460 OR CHEM 2470

COURSE DESCRIPTION: This is a compulsory course for students who wish to pursue the Minor in Analytical Chemistry, which continues the study of analytical chemistry concepts begun in CHEM 2470. More advanced concepts are presented, including further development of titrimetric techniques, focusing on complexometric titrations. The understanding and use of instrumental techniques begins in this course, with electrochemical methods, basic spectroscopy and separation techniques. The unit on electrochemical methods covers the chemical theory that is exploited in potentiometric and other analytical techniques as well as more applied issues to do with the appropriate use of these methods. The units on basic spectroscopy and separation techniques provide a general introduction to these advanced instrumental techniques. The teaching/learning strategies used in this course are based on the classroom lecture along with small group activities and participation; all of this supported by myeLearning components. The course is assessed by in-course examination, tutorial activities, poster preparation, a literature review and a final examination.

ASSESSMENT:

Coursework	50%
Final Examination - 2-hour written paper	50%

LEVEL: II

SEMESTER: 2

COURSE CODE: CHEM 2472

COURSE TITLE: ANALYTICAL CHEMISTRY LABORATORY

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 2460 OR CHEM 2470

COURSE DESCRIPTION: This is a compulsory course for students who wish to pursue the Minor in Analytical Chemistry, which provides a general survey of the most common laboratory activities required by the modern analytical chemist. These activities include planning and design, techniques for the acquisition, handling and processing of samples, analytical techniques, data analysis and quality control and quality assurance concepts. The course is organised as a semester-long "research project" with the students working on one site/problem over the whole semester using a range of analytical techniques. In the first year, the site/problem under investigation will be an environmental survey of a contaminated river. Each week a different set of relevant analytical techniques will be emphasised, while some critical areas will be repeated in a variety of labs for better understanding by students. For example, the use of replicates, simple statistical analysis and error evaluation will be conducted in every lab. Group learning is emphasised, as students will carry out all course activities in small groups. The course is assessed entirely by coursework, which consists of a variety of activities; including laboratory skill demonstrations, weekly lab reports, a final lab report and an oral presentation.

ASSESSMENT:

Coursework 100%

LEVEL: II

SEMESTER: 1

COURSE CODE: CHEM2672

COURSE TITLE: CORE CHEMISTRY LABORATORY I

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 1070 OR CHEM 1065

COURSE DESCRIPTION: CHEM 2672 reinforces and further develops basic and intermediate laboratory skills covered in CHEM 1070. The course also introduces students to advanced techniques and skills such as advanced separation and purification techniques; chemical quantitation; reaction thermodynamics and kinetics; one step and basic multistep reaction syntheses; interpretation of spectral data; structure elucidation and chemical characterization; stereochemistry; as well as the basic analytical & spectroscopic instrumentation skills required of a chemist: HPLC, GC, Flame Atomic Absorption, UV-Visible Spectroscopy, IR, ¹H NMR and mass spectrometry. The final grade for CHEM 2672 will be determined from an assessment of student performance in the following activities: pre-lab preparation, general laboratory reports / exercises, laboratory quizzes oral and written, practical lab skills and tutorial/group discussions.

ASSESSMENT:

Coursework 100%

LEVEL: II

SEMESTER: 2

COURSE CODE: CHEM 2673

COURSE TITLE: CORE CHEMISTRY LABORATORY II

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 2672 OR CHEM 2670

COURSE DESCRIPTION: This course integrates and further develops the basic laboratory skills covered in CHEM 1070 and CHEM 2672 courses. The course also introduces students to further advanced experimental techniques and skills ranging from experimental design and planning of multistep reaction syntheses to product purification and quantitation; complex structure/mixture elucidation and chemical characterization with the aid of advanced spectroscopic techniques to the investigation and measurement of the physical parameters (thermodynamics, equilibria and kinetics) of reactions. In this course students will be continuously evaluated throughout the semester on pre-lab preparation, experimental planning and design, post lab report write-up, practical lab skills through the acquisition of meaningful accurate experimental data as well as on their chemical knowledge through short lab quizzes, oral examinations and tutorial/group discussions.

ASSESSMENT:

Coursework 100%

LEVEL: III

SEMESTER: 2

COURSE CODE: CHEM 3172

COURSE TITLE: ADVANCED INORGANIC CHEMISTRY

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM2170 AND CHEM 3170

COURSE DESCRIPTION: This course is the result of a major revision of the advanced programme being offered in the Department of Chemistry and is an essential component for students who are likely to either pursue the single Chemistry discipline for their Bachelor's Degree or to cover the special topics offered within in preparation for graduate study and research. The course builds on the knowledge base and experiences of the student who has successfully completed core Level II inorganic chemistry. The course content is therefore specialized in depth rather than diversity, and heavily biased toward topics which cover areas of active research in the department. It is intended that students who complete this course will be well exposed to and competent in the usage of common methodologies for the characterization and study of metal complexes, with a good grasp of the principles, limitations, calculations and derivations that apply in each general case.

ASSESSMENT:

Coursework:	40%
Final Examination:	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: CHEM 3268

COURSE TITLE: CHEMISTRY OF NATURAL PRODUCTS

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 2260 OR CHEM 2270

COURSE DESCRIPTION: Primary and secondary metabolites. The main biosynthetic pathways - evidence. The acetate-malonate pathway - polyketides. Mevalonic acid - terpenoids. Metabolites derived from shikimic acid. Amino acid - alkaloids; modern techniques for characterisation of natural products.

ASSESSMENT:

Theory Coursework	25%
Final Examination - 2-hour written paper	75%

LEVEL: II/III

SEMESTER: 2

COURSE CODE: CHEM 3270

COURSE TITLE: ORGANIC CHEMISTRY II

NUMBER OF CREDITS: 3

PREREQUISITE: CHEM2260 OR CHEM 2270

COURSE DESCRIPTION: This course follows on the Organic Chemistry I course which students would have already taken and is designed to complete the organic chemistry theoretical knowledge considered essential for a major in Chemistry. Students will apply the knowledge they have gained in stereochemistry, spectroscopy and synthetic methodology. The course introduces the student to the basic chemistry and synthesis of heterocyclic compounds, amino acids, peptides and carbohydrates and to the mechanistic features of important types of organic reactions, namely substitution and elimination. The properties and role of reactive intermediates, eg carbenes, nitrenes, radicals and carbocations, in organic chemistry are also discussed.

ASSESSMENT:

Coursework	40%
Final Examination - 2-hour written paper	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: CHEM 3273

LEVEL: III

SEMESTER: 1

COURSE CODE: CHEM 3367 (REMEDIATION ONLY)

COURSE TITLE: THERMODYNAMICS AND STATISTICAL THERMODYNAMICS

NUMBER OF CREDITS: 3

PREREQUISITE: CHEM 2360 OR CHEM 3370

COURSE DESCRIPTION: Advanced Thermodynamics:

Systems of variable composition, phase equilibria, solutions, equilibria in non-ideal systems.

Statistical Thermodynamics: Microstates and configurations, Boltzmann distribution law, entropy, partition functions, ideal gas law, Sackur-Tetrode equation, applications of statistical thermodynamics.

ASSESSMENT:

Theory Coursework	20%
Final Examination - 2-hour written paper	80%

LEVEL: II/III

SEMESTER: 2

COURSE CODE: CHEM 3370

COURSE TITLE: PHYSICAL CHEMISTRY II

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 1065 OR CHEM1070, CHEM 1066, CHEM 1067 and CHEM 1068 OR CHEM 1061

COURSE DESCRIPTION: This is a core course for anyone pursuing the B.Sc. or a major in chemistry. This rigorous and comprehensive course continues building student knowledge of concepts in modern physical chemistry. The material covers: Gases, Liquids & Solids introducing the student to adhesive forces and the characteristics of ideal and non-ideal gases; Surface Chemistry and discusses catalytic activity at surface; and Electrochemistry and oxidation-reduction reactions with insight into industrial chemical processes as related to redox reactions. The knowledge and understanding gained in this course will be important for the more advanced physical chemistry and elective courses. The final grade for CHEM 3370 will be determined from student performance in the in-course examinations, graded tutorials and the final examination.

ASSESSMENT:

Coursework	40%
Final Examination - 2-hour written paper	60%

LEVEL: III

SEMESTER: 2

COURSE CODE: CHEM 3373

COURSE TITLE: ADVANCED TOPICS IN PHYSICAL CHEMISTRY

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 2370 AND CHEM 3370

COURSE DESCRIPTION: Statistical Thermodynamics:

microstates and configurations, Boltzmann distribution; Partition functions for translation, rotation and vibration; Calculation of Internal energy, entropy and Gibbs free energy and equilibrium constants. Computational chemistry: molecular mechanics- potential energy functions - stretching, bending and torsions.

Molecular Orbital Theory - Ab initio Methods, Hartree-Fock approximation self consistent field (SCF) theory, basis sets electron correlation. Comparison of available software and practical workshop.

ASSESSMENT:

Coursework	40%
Final Examination - 2-hour written paper	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: CHEM 3470

COURSE TITLE: ANALYTICAL METHODS IN CHEMISTRY II

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 2470 AND CHEM 2471

COURSE DESCRIPTION: The course "Analytical Methods in Chemistry II" is a compulsory course for students who wish to pursue the Minor in Analytical Chemistry. It seeks to reinforce the principles and practices of chemical analyses that were taught in CHEM 2470 and CHEM 2471 by use of appropriate training materials and methods to the application of analysis of real samples. This course also introduces students to experimental designs and project management which utilizes problem solving skills to solve real-world problems. The teaching/learning strategies in use in this course are based on the classroom lecture along with small group activities, supported by myLearning components. The course is assessed entirely by coursework, involving in-course exams, the production of an experimental proposal, and the design and construction of a functioning analytical instrument. In order to be awarded with a Minor in Analytical Chemistry, students must also successfully complete two additional optional courses.

ASSESSMENT:

Coursework	100%
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LEVEL: III

SEMESTER: 2

COURSE CODE: CHEM 3569

COURSE TITLE: INDUSTRIAL CHEMISTRY I

NUMBER OF CREDITS: 4

PREREQUISITES: AT LEAST THREE OF CHEM 2160 OR CHEM 2170; CHEM 2260 OR CHEM 2270; CHEM 2360 OR CHEM 3370 OR CHEM 2370; CHEM 2015

COURSE DESCRIPTION: Overview of the Chemical Industry. Petrochemicals. Selected Products of the Chemical Industry - some major chemical commodities, other industrial products. Water in Industry. Chemicals from Sugar. Industrial Safety and Pollution in the Chemical Industry. Unit Operations: An Introduction. The Patent Literature. Coursework will consist of reports on site visits and a project.

ASSESSMENT:

Coursework	40%
Final Examination - 2-hour written paper	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: CHEM 3570

COURSE TITLE: CHEMISTRY OF THE ENVIRONMENT

NUMBER OF CREDITS: 3

PREREQUISITES: ANY TWO (2) OF CHEM 2160 OR CHEM 2170; CHEM 2260 OR CHEM 2270; CHEM 2360 OR CHEM 2370; CHEM 2460 OR CHEM 2470.

COURSE DESCRIPTION: CHEM 3570 is a broad-based introduction to environmental chemistry for advanced chemistry students. The goal of the course is to introduce you, using unusual and innovative learning experiences, to the application of chemical facts and principles to processes occurring in the environment, and the solution of problems relating to environmental processes and pollution.

ASSESSMENT:

Coursework:	50%
Final Examination:	50%

LEVEL: III

SEMESTER: 1

COURSE CODE: CHEM 3573

COURSE TITLE: CONTEMPORARY CHEMISTRY

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 2160 OR CHEM 2170; CHEM 2260 OR CHEM 2270 AND CHEM 2360 OR 3370 OR CHEM 2370

COURSE DESCRIPTION: This course focuses on recent advances in chemistry and on the role of chemistry in helping to address the challenges faced by modern society in the areas of energy, health and nutrition, the environment and food security. It also places emphasis on the development of skills of scientific writing, on critical analysis of published articles and on publication of research work in peer reviewed journals. The topics to be dealt with each year will vary depending on the developments both in the area of chemistry itself and in its application to the contemporary social challenges. The course will be delivered through a multimodal teaching-learning approach and will include lectures and discussions of emerging topics in chemistry as a basis for further assigned reading which will be from articles chosen from the recent scientific literature. Online discussion, oral presentations and in-class discussions involving critical analysis of the assigned reading material will be other features of the course. Students will also be required to produce written reviews and analyses of articles in the major emerging areas of chemical science and its applications towards the solution of major problems. Students will critically assess the scientific method as a means of generating knowledge, and discuss modern research strategies or methodologies including building value through interdisciplinary research at an advanced level.

ASSESSMENT:

Coursework:	100%
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LEVEL: III

SEMESTER: 1

COURSE CODE: CHEM 3575

COURSE TITLE: CHEMISTRY AND INDUSTRY I

NUMBER OF CREDITS: 3

PREREQUISITES: ANY TWO (2) OF CHEM 2160 OR CHEM 2170; CHEM 2260 OR CHEM 2270; CHEM 2360 OR CHEM 2370; CHEM 2460 OR CHEM 2470.

COURSE DESCRIPTION: The course introduces the student to the chemical principles involved in the production and use of a wide range of food, household and industrial products. Discussion of the chemical processes involved will draw on the knowledge already gained from all areas of chemistry.

ASSESSMENT:

Coursework:	40%
Final Examination:	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: CHEM 3577

COURSE TITLE: GREEN CHEMISTRY

NUMBER OF CREDITS: 3

PREREQUISITES: ANY TWO (2) OF CHEM 2160 OR CHEM 2170; CHEM 2260 OR CHEM 2270; CHEM 2360 OR CHEM 2370; CHEM 2460 OR CHEM 2470.

COURSE DESCRIPTION: This exciting new elective is based on the recently elaborated concept of Green Chemistry. It encompasses the use of sustainable design from the viewpoint of the chemical reaction itself to the choice of reaction materials or process design. Areas such as hetero- and homogeneous catalysis, material synthesis, assisted reactions, use of solvents and others will be presented in relation to introducing inherently green design. The information presented in lectures and developed in tutorials (hands-on) will give the student a sound basis for chemical design in a like manner to other international courses adopted by world leading institutions.

ASSESSMENT:

Coursework: 50%

Final Examination: 50%

LEVEL: III

SEMESTER: 2

COURSE CODE: CHEM 3576

COURSE TITLE: CHEMISTRY OF MEDICINES

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 2260 OR CHEM 2270

COURSE DESCRIPTION:

ASSESSMENT: The course introduces the student to the chemical principles involved in modern medicinal chemistry. The chemical processes involved in the production of these products in everyday life will be discussed. Aspects of general and organic chemistry will be employed in the discussion and understanding of the chemical principles and reactions involved in the efficacy and use of these products.

Coursework: 40%

Final Examination: 60%

LEVEL: III

SEMESTER: 2

COURSE CODE: CHEM 3578

COURSE TITLE: ENERGY FOR A SUSTAINABLE FUTURE

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 2160 OR CHEM 2170 AND CHEM 2260 OR CHEM 2270 AND CHEM 2360 OR CHEM 2370 OR CHEM 3370

COURSE DESCRIPTION: Energy is an integral part of the future of mankind. By 2050 it is estimated that 9 billion people will be housed on planet earth...9 billion people to feed, clothe and provide facilities such as education, work, housing, health care and others. Each and every human activity requires energy and how energy is used in the modern world goes beyond the simple process of growing and eating food crops. As the energy demand grows human innovation and creative design of new systems based on chemically sound technologies will become increasingly necessary. This course will take you from the layman's perspective on energy to the current status of the energy industry and then into the technologies being proposed for a sustainable future. This course is truly an applied chemistry module and will be underpinned by your previous learning of fundamental chemical principles and as such more emphasis will be placed on the chemistry involved in specific applications as opposed to an overview of knowledge garnered in earlier courses. The course approach is an integrated one where the student has the opportunity to utilise the material presented in lectures in real-life applications, thereby gaining a deeper understanding of the topic in the wider sense, *i.e.* beyond the chemistry taught in the classroom. The fundamentals of, as well as advances in, biomass (alternative bio-renewable energy), traditional renewable energy and the hydrogen economy will be presented through examples of the best-in-class proven and emerging technologies for each area. This will be positioned in the context of fossil and nuclear fuels currently used for the energy and chemicals industry.

ASSESSMENT:

Coursework: 50%

Final Examination: 50%

LEVEL: III

SEMESTER: 2

COURSE CODE: CHEM 3579

COURSE TITLE: CHEMISTRY AND INDUSTRY II

NUMBER OF CREDITS: 3

**PREREQUISITES: ANY TWO (2) OF CHEM 2460 OR 2470;
CHEM 2160 OR CHEM 2170; CHEM 2260 OR CHEM 2270;
CHEM 2360 OR CHEM 2370**

COURSE DESCRIPTION: The chemical industry sustains human activity across the globe. Industrialised and developing nations depend on a vast array of chemical products for agriculture, energy and consumer needs. This course is designed to provide students with an overview of the manufacture and used of major industrial chemicals, and processes, as well as some appreciation of production levels, costs and future directions. This will be delivered through lectures that cover the fundamental principles in the manufacture of selected chemicals, with a focus on how the chemistry taught in core courses is integrated into the chemical industry. Additionally, students be exposed to the working environment of local industrial plants through site visits and recent literature on chemical production (markets and outlooks) Finally health and safety aspects of the manufacturing processes and the chemical products themselves will be presented to students for discussion.

ASSESSMENT:

Coursework:	40%
Final Examination:	60%

LEVEL: III

SEMESTER: 1 OR 2

COURSE CODE: CHEM 3660

COURSE TITLE: RESEARCH PROJECT

NUMBER OF CREDITS: 4

**PREREQUISITES: AT LEAST THREE OF CHEM 2160 OR
2170; CHEM 2260 OR CHEM2270; CHEM 2360 OR
CHEM3370; CHEM 2370; CHEM 2015**

COURSE DESCRIPTION: The project will be compulsory for all chemistry majors and will consist of 96 hours of practical work and the related requirements e.g. library work, lectures/seminars, meetings with supervisor(s), training on instruments etc. The student will be assigned a research problem carefully selected, bearing in mind the available time and resources, and will work under the supervision of a member of academic staff. The student will be required to do a literature review including an outline of the problem and the approach and methodology to be utilised. The student will plan and carry out experiments under supervision. On completion of the practical work, the student will be required to write up the project according to a specified format and submit the report by a given deadline for assessment. An oral presentation of ten minutes duration will also be required of the student at a public session to be held before the start of the semester final examinations.

ASSESSMENT:

Written Report	60%
Supervisor's Assessment	20%
Oral Presentation	20%

LEVEL: III

SEMESTER: 1 OR 2

COURSE CODE: CHEM 3670

COURSE TITLE: RESEARCH PROJECT FOR CHEMISTRY MAJORS

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 2672 AND CHEM 2673

COURSE DESCRIPTION: CHEM 3670 is a one semester condensed chemistry research project course for students pursuing a Chemistry Major in which the skills and techniques acquired in the Level I and II lab courses are utilized in solving a research problem. In this course each student will engage in guided research under the supervision of a member of staff on a project which may be interdisciplinary or in one of the sub-disciplines: analytical, inorganic, organic and physical chemistry. The student will be required to meet each week with his/her supervisor to discuss/review their experimental results, progress on the project and weekly work plan before executing their plan each week. Students are expected to work more independently in this course but will receive further guidance on specific safety issues; searching, reviewing and critically assessing the chemical literature; developing and testing a research question/hypothesis; interpreting and drawing conclusions from experimental results and in presenting research results in written and oral formats. The course also introduces students to specialized advanced techniques and skills specific to individual projects and provides hands-on experience with modern research instrumentation. CHEM 3670 comprises sixty hours of bench work, two two-hour sessions of instruction and ten one-hour non-lab based research work sessions each semester. **A compulsory research project specific safety test must be passed within the first two weeks of the course before lab work can commence.** Assessment will focus primarily on the chemical knowledge, practical competency, problem-solving skills and research capability of students through the preparation and quality of milestone reports, the final project report, and oral presentation as well as the quality of research work performed, and active participation in group discussions.

ASSESSMENT:

Coursework 100%

LEVEL: III

SEMESTER: 1 AND 2 (YEARLONG)

COURSE CODE: CHEM 3671

COURSE TITLE: RESEARCH PROJECT FOR B.SC. CHEMISTRY

NUMBER OF CREDITS: 6

PREREQUISITES: CHEM 2672 AND CHEM 2673

COURSE DESCRIPTION: CHEM 3671 is a year-long intensive chemistry research project course for students in the B.Sc. chemistry programme in which the skills and techniques acquired in the Level I and II lab courses are utilized in solving a research problem. In this course each student will get involved in guided research under the supervision of a member of staff on a project which may be interdisciplinary or in one of the sub-disciplines in chemistry. Students will get hands-on experience on addressing laboratory safety issues; searching, reviewing and critically assessing the chemical literature; developing a research proposal and testing a research question/hypothesis, interpreting and drawing conclusions from experimental results, and in presenting research results in written and oral formats. The course also introduces students to specialized advanced techniques and skills specific to individual projects and provides hands-on experience with modern research instrumentation. Assessment will focus primarily on the chemical knowledge, practical competency, problem-solving skills and research capability of students through the preparation and quality of milestone reports, the final project report, and oral presentation as well as the quality of research work performed, and active participation in group discussions.

ASSESSMENT:

Coursework 100%

LEVEL: III

SEMESTER: 1

COURSE CODE: CHEM 3870

COURSE TITLE: PRINCIPLES OF CHEMICAL BIOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 2260 OR CHEM 2270

COURSE DESCRIPTION: This chemistry elective provides knowledge of the three major classes of bioactive molecules (Carbohydrates, Proteins and Nucleic Acids). Quite distinct from simply examining the chemical reactions of the three molecular classes, this course focuses on their structures, functioning in signalling and recognition pathways, and their role in diseases and the aging process. For each biomolecule, its use and potential in the design of new drug therapies is addressed. The section on free radicals acts as a tie-in for the three biomolecules, in terms of relating the onset and prognosis of all diseases to a free radical origin. The two laboratory-based demonstration exercises (Carbohydrates and Nucleic Acids) will allow students to appreciate the dynamic 3-D nature of these molecules and the implications of their structure, conformation and configuration on their chemical and biological properties.

ASSESSMENT:

Coursework	40%
Final Examination - 2-hour written paper	60%

LEVEL: III

SEMESTER: 2

COURSE CODE: CHEM 3871

COURSE TITLE: METHODS IN CHEMICAL BIOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: CHEM 3870

COURSE DESCRIPTION: This chemistry elective introduces the practical/ experimental techniques available to study the biomolecules described in CHEM 3870, Principles of Chemical Biology. Description of the chemical biology tools available for researchers at this interfacial discipline, provided in lectures, is followed by hands-on laboratory demonstrations; where students can immerse themselves in the actual execution and manipulation of different techniques. This is a very practical / technique oriented course. Each section concludes with research opportunities available and potential future developments, to address current needs as well as deficiencies in techniques and understanding.

ASSESSMENT:

Coursework	40%
Final Examination	60%

LEVEL: I

SEMESTER: 1

COURSE CODE: CHIN 1003

COURSE TITLE: LEVEL 1A CHINESE (MANDARIN)

NUMBER OF CREDITS: 2

PREREQUISITES: NONE

COURSE DESCRIPTION: The course which involves four skills (listening, speaking, reading and writing) introduces students to Mandarin Chinese and some aspects of Chinese culture and daily life. Students will develop an ability to communicate in Chinese in basic situations relating to their personal lives via exposure to the new language and culture. The course meets for four hours per week for 13 weeks. In addition, class contact time should be supplemented by two hours of independent study for each contact hour.

ASSESSMENT:

In-course testing: 100%: 40% [mid-semester]; 40% [end of semester]; 20% [two assignments]

LEVEL: I

SEMESTER: 1

COURSE CODE: CHIN 1004

COURSE TITLE: LEVEL 1B CHINESE (MANDARIN)

NUMBER OF CREDITS: 2

PREREQUISITES: CHIN 1003/1A CHINESE OR EQUIVALENT

COURSE DESCRIPTION: This course introduces the further study of Mandarin Chinese (listening, speaking, reading, and writing) and Chinese culture begun in CHIN 1003/1A Chinese. Students will develop a minimal level of communicative competence for socializing in everyday situations. The course meets for four hours per week for 13 weeks. In addition, class contact time should be supplemented by two hours of independent study for each contact hour.

ASSESSMENT:

In-course testing: 100%: 40% [mid-semester]; 40% [end of semester]; 20% [two assignments]

LEVEL: I

SEMESTERS: 1 AND 2

COURSE CODE: COMP 1011

COURSE TITLE: INTRODUCTION TO INFORMATION TECHNOLOGY

NUMBER OF CREDITS: 3

PREREQUISITE: NONE

COURSE DESCRIPTION: This course will provide the knowledge needed to formulate a sound but basic understanding of Information Technology, its major components and its broad applications. Students will acquire hands-on experience with computers. They will become familiar with the components of a computer and learn about the various elements that make up an information system. The course deals with hardware, software, telecommunications and computer networks. General Topics: The Technology Revolution; Inside the Computer; Information Input and Output; Storing and Retrieving Information; Software; Networks and Networking; Internet and The Web. Practical Topics: Microsoft Package 2002 - Word, Excel, Access, PowerPoint and Front Page.

ASSESSMENT:

Practical Coursework	50%
Project Report	25%
Mid-term examination	25%
(NO FINAL WRITTEN EXAMINATION)	

LEVEL: I

SEMESTER: 1 AND 2

COURSE CODE: COMP 1400

COURSE TITLE: PROGRAMMING I

NUMBER OF CREDITS: 3

PREREQUISITE: TWO UNITS OF CAPE MATHEMATICS OR ITS EQUIVALENT

COURSE DESCRIPTION: This course uses the C language as a tool to teach fundamental programming concepts. The main concepts covered are sequence selection and repetition logic, character and string manipulation, functions, arrays and their applications.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 1

COURSE CODE: COMP 1401

COURSE TITLE: INTRODUCTION TO COMPUTER SCIENCE CONCEPTS I

NUMBER OF CREDITS: 3

PREREQUISITE: TWO UNITS OF CAPE MATHEMATICS OR ITS EQUIVALENT

COURSE DESCRIPTION: This course presents an overview of computing technology and the field of computer science. Discussion topics will include the organization of modern computers, operating systems, algorithms, programming languages and database systems.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 1 AND 2

COURSE CODE: COMP 1402

COURSE TITLE: COMPUTER SCIENCE MATHEMATICS I

NUMBER OF CREDITS: 3

PREREQUISITE: TWO UNITS OF CAPE MATHEMATICS OR ITS EQUIVALENT

COURSE DESCRIPTION: This course provides students with the mathematical tools for problem solving. Students are taught to develop solutions for problems by mathematical Modelling using fundamental mathematical methods. Finally students are taught to implement solutions using mathematical software.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 1

COURSE CODE: COMP 1403

COURSE TITLE: INTRODUCTION TO WEB PROGRAMMING

NUMBER OF CREDITS: 3

PREREQUISITE: TWO UNITS OF CAPE MATHEMATICS OR ITS EQUIVALENT

COURSE DESCRIPTION: This is an introduction to web technologies and systems, including hypertext, self-descriptive text, web page design, web navigational systems, and various mark-up languages and scripting languages. Programming examples, exercises and projects are drawn from practical web-based applications. Good programming practice and program clarity is emphasized throughout the course.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 1 AND 2

COURSE CODE: COMP 1404

COURSE TITLE: PROGRAMMING II

NUMBER OF CREDITS: 3

PREREQUISITE: COMP 1100 OR COMP 1400

COURSE DESCRIPTION: This course uses the C language as a tool to teach intermediate programming concepts. The main concepts covered are structures, one and two dimensional arrays and applications involving their searching, sorting and merging, random number generation, numerical methods, games and simulation.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 1 AND 2

COURSE CODE: COMP 1405

COURSE TITLE: PROGRAMMING III

NUMBER OF CREDITS: 3

PREREQUISITE: COMP 1100 OR COMP 1400

COURSE DESCRIPTION: This course uses the C language as a tool to teach intermediate programming concepts. The main concepts covered are pointers, linked lists, stacks and queues and their implementations using arrays and linked lists and recursion. This course requires an understanding of basic programming concepts such as variables, assignment, selection and looping constructs as well as being comfortable with working with character, strings and arrays.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 2

COURSE CODE: COMP 1406

COURSE TITLE: COMPUTER SCIENCE MATHEMATICS II

NUMBER OF CREDITS: 3

PREREQUISITE: COMP 1300 OR COMP 1402

COURSE DESCRIPTION: This course provides students with an introduction to number theory, counting, probability, matrices and limits. Students are taught to analyze and develop solutions for solving problems using the topics listed above. Finally students are taught to implement solutions using mathematical software.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 2

COURSE CODE: COMP 1407

COURSE TITLE: INTRODUCTION TO COMPUTER SCIENCE CONCEPTS II

NUMBER OF CREDITS: 3

PREREQUISITE: COMP 1100 OR COMP 1401

COURSE DESCRIPTION: This course presents an overview of some key areas of computing technology and the field of computer science. Discussion topics will include Networking and the Internet, Software Engineering, Data Abstractions, Computer Graphics, Artificial Intelligence and Theory of Computation.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 1 AND 2

COURSE CODE: COMP 2000

COURSE TITLE: DATA STRUCTURES

NUMBER OF CREDITS: 4

PREREQUISITES: COMP 1200 OR (COMP 1404 AND COMP 1405)

COURSE DESCRIPTION: Stacks, queues, linked lists. Methods for solving the 'search and insert' problem. Hashing. Hash functions. Clustering. Methods of resolving collisions, e.g. linear, quadratic, chaining, double hashing. Trees. Binary trees. Search trees. Tree traversal. Analysis of binary search tree algorithm. Build binary trees. Build the best search tree from sorted data. Heaps. Priority queues. Internal and external sorting. Shell sort, quicksort, heapsort, mergesort. Polyphase merge sort. Replacement selection. Graph concepts and terminology. Representation of graphs. Depth-first and breadth-first traversals. Topological sort. Minimal cost paths. Minimal cost spanning trees. Efficiently storing and manipulating matrices with special properties, e.g. symmetric, triangular, band, sparse and others. Write programs using any or all of the above data structures/techniques.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 2

COURSE CODE: COMP 2100

**COURSE TITLE: DISCRETE MATHEMATICS FOR
COMPUTER SCIENCE**

NUMBER OF CREDITS: 4

**PREREQUISITE: MATH 1140 OR COMP 1300 OR (COMP
1402 AND COMP 1406) COURSE DESCRIPTION:**

Propositional logic: connectives, truth tables, tautology, contradiction, logical equivalences, predicate logic, quantifiers and valid arguments. Nature of proof: direct and indirect proofs, proof by contradiction, counterexamples, existence and constructive proofs, mathematical induction. Sets: set theoretic proofs, functions, cardinality, relations. Combinatorics: counting arguments (addition and multiplication principles), permutations and combinations, combinatorial arguments, pigeonhole principle. Probability: probability space, independent and dependent events, random variables and expected values, the binomial theorem and Bayes theorem. Recurrence relations: homogeneous and non-homogeneous linear recurrence relations with constant coefficients. Application of the above content to relevant areas of Computer Science.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 1

COURSE CODE: COMP 2200

COURSE TITLE: COMPUTER ARCHITECTURE

NUMBER OF CREDITS: 4

**PREREQUISITES: COMP 1200 OR (COMP 1404 AND COMP
1405)**

COURSE DESCRIPTION: Computer functions; Memory caching, Internal Memory; Input/output devices and operation; Computer arithmetic; Instruction sets; Reduced instruction set computers; Control unit operation; Micro programmed control.

ASSESSMENT:

Coursework	40%
Final Examination-One 2-hour written paper	60%

LEVEL: II

SEMESTER: 2

COURSE CODE: COMP 2300

**COURSE TITLE: PROGRAMMING
FOR BUSINESS APPLICATIONS**

NUMBER OF CREDITS: 4

**PREREQUISITES: COMP 1200 OR (COMP 1401 AND
EITHER COMP 1404 OR COMP 1405)**

COURSE DESCRIPTION: Basic Concepts: Fundamentals of information systems. Overview of accounting systems. Introduction to data processing. Business Information Systems: The revenue cycle (sales order processing, billing, accounts receivable). The expenditure cycle (purchasing, accounts payable). Value added tax management. Inventory control. Human resources management/payroll/PAYE. General ledger and financial reporting system. Access DBMS and Visual Basic for Access, Develop a database application (Tables, Queries, Forms, Reports). Event driven programming. VBA programming. Working with objects. Class modules. Multi-user applications.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: NOT OFFERED IN 2013/2014

COURSE CODE: COMP 2400

COURSE TITLE: INFORMATION SYSTEMS

NUMBER OF CREDITS: 4

**PREREQUISITES: COMP 1200 OR (COMP 1401 AND
EITHER COMP 1404 OR COMP 1405)**

COURSE DESCRIPTION: Overview of Computer Hardware and Software. The nature of data and information. Types of Information Systems. Identifying and selecting Systems Development Projects (SDPs), corporate and information systems planning. Initiating and planning SDPs, assessing project feasibility. Performing requirements determination: interviews, questionnaires, group interviews, direction observation, joint application design, prototyping. Process modelling: Data Flow Diagrams (DFDs), symbols, rules, decomposition, balancing, completeness, consistency, timing, iterative development. Logic Modelling: Structured English, decision tables, decision trees. Conceptual data modelling, entity-relationship diagrams. Selecting the best alternative design.

Designing forms and reports. Assessing usability. Designing interfaces and dialogues, means of interaction. Finalising design specification: documents, charts, prototypes. System implementation, software testing, installation strategies, documentation, user training and support. Maintenance.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 2

COURSE CODE: COMP 2500

COURSE TITLE: OBJECT-ORIENTED PROGRAMMING

NUMBER OF CREDITS: 4

PREREQUISITES: COMP 1200 OR (COMP 1404 AND COMP 1405)

COURSE DESCRIPTION: Classes and Methods:

Encapsulation, Varieties of Classes, Interface and Implementation, Classes and Methods in Java, Class Variables and Class Methods. Instances, Initialization and Messages: Instance Creation and Initialization, Message-Passing Syntax. Inheritance and Composition: Subclass, Subtype, and Substitutability, Replacement and Refinement, Assignment, Equality, and Type Conversion, Polymorphism. Introduction to Object-Oriented Software Development: Analysis, Design, Programming. Object-Oriented Software Architectures: Model-View Controller, 3-Tier Architecture. Object-Oriented Design. Introduction to Developing User Interfaces using Swing. Introduction to Object-Oriented Frameworks. Introduction to the Java Collections Framework: LinkedList, ArrayList, HashSet, TreeSet, HashMap, TreeMap, Comparators, Generics, Choosing the Right Collection to Use. Object Persistence: Object-oriented database, Relational database, Object serialization.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 1

COURSE CODE: COMP 2600

COURSE TITLE: THEORY OF COMPUTING I

NUMBER OF CREDITS: 4

PREREQUISITES: MATH 1140 OR COMP 1300 OR (MATH 1141 AND MATH 1152 OR COMP 1402 AND MATH 1151)

COURSE DESCRIPTION: Strings and Languages and Induction. Finite Automata and Regular Languages. Context-free Languages. Computability; Turing machine.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 1

COURSE CODE: COMP 2700

COURSE TITLE: DATABASE MANAGEMENT SYSTEMS I

NUMBER OF CREDITS: 4

PREREQUISITES: COMP 1200 OR (COMP 1401 AND EITHER COMP 1404 OR COMP 1405)

COURSE DESCRIPTION: Components of a Relational

database System. The Relational Data Model. Structured Query Language.

Database design; ER Modelling; Functional Dependency and Normalization. Transaction Management. Query Processing and Optimization. Database Administration.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 2

COURSE CODE: COMP 3000

COURSE TITLE: DESIGN AND ANALYSIS OF ALGORITHMS

NUMBER OF CREDITS: 4

PREREQUISITE: COMP 2000

COURSE DESCRIPTION: Analyse algorithms for time and space bounds. Growth of functions. Asymptotic notation. Recurrences: substitution, iteration, master method. Review and analysis of data structures: stacks, queues, linked lists hash tables, binary search trees, graph, spanning trees. Review and analysis of sorting methods: insertion sort, merge sort, heapsort, quicksort. Algorithms design techniques. Brute force. Dynamic programming, Greedy algorithms. Divide-and-conquer algorithms. Graph algorithms. String matching algorithms. Approximation algorithms. Examples of problems which can be solved using each of these techniques. Write programs which employ any or all of these techniques.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: COMP 3100

COURSE TITLE: OPERATING SYSTEMS

NUMBER OF CREDITS: 4

PREREQUISITE: COMP 2200

COURSE DESCRIPTION: Introduction to a systems programming language. Overview of Von Neumann computer architecture. Processes: Process creation/destruction, implementation, process table entries. Process Management: Context. switching, interrupt handling, inter-process communication, race conditions, mutual exclusion, critical regions, busy-waiting solutions, sleep-wakeup solutions, scheduling algorithms. Deadlocks: Pre-emption, necessary conditions, deadlock modelling, detection, avoidance, prevention. Memory Management: Multiprogramming, relocation and protection, swapping, bit-mapped management, linked-list management, partition management, virtual memory. Virtual Memory: Pages, page frames, page tables, address translation, Memory Management Unit (MMU), page faults, translation look aside buffers, and page replacement algorithms. File Systems: Contiguous allocation, linked-list allocation, index nodes, implementing directories. Disk Performance Optimization: Seek optimization strategies. Input/Output: Device controllers, I/O ports, memory-mapped I/O, direct memory access, interrupt handlers, device drivers. Resource Protection: Protection domains, access matrices, access lists, capabilities lists, lock-key mechanisms.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: COMP 3150

COURSE TITLE: COMPUTER NETWORKS

NUMBER OF CREDITS: 4

PREREQUISITE: COMP 2500

COURSE DESCRIPTION: Computer Networks and the Internet. The Internet. Network edge and core. Network access and physical media. Protocol layers and their Service models. This chapter provides a good introduction to networking. The Application Layer. Principles of application layer protocols FTP, Email, SMTP, DNS etc. Socket programming with TCP and UDP. The Transport Layer. Transport-layer services. Multiplexing and demultiplexing. UDP and TCP. Reliability. Congestion control. The Network layer and Routing Service models. Routing. IP. Mobility. Link Layer and Local Area Networks Services. Error detection and correction. Multiple access protocols. Ethernet. Network hardware. Wireless links. PPP. Frame Relay. Introduction to Network Design. The network design and implementation process. Stages: Feasibility Study, preparing network design plan, understanding current network, defining new network requirements, identifying geographic scope, calculating circuit requirements, identifying security and control measures, designing network configurations, determining network costs, network Implementation. Common WAN, LAN and backbone designs. Examples.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 2

COURSE CODE: COMP 3220

COURSE TITLE: HUMAN-COMPUTER INTERACTION

NUMBER OF CREDITS: 4

PREREQUISITE: COMP 1200

COURSE DESCRIPTION: Human-computer interaction (HCI) is concerned with the joint performance of tasks by humans and machines. Task-centered system design. User-centered design and prototyping. Methods for evaluation of interfaces with users.

Characteristics of good representations, information visualization. Graphical screen design. Design principles and usability heuristics.

HCI design standards.

ASSESSMENT:

Coursework	60%
Final Examination - One 2-hour written paper	40%

LEVEL: III

SEMESTER: 2

COURSE CODE: COMP 3250

COURSE TITLE: SOFTWARE ENGINEERING

NUMBER OF CREDITS: 4

PREREQUISITE: COMP 2000

COURSE DESCRIPTION: Fundamentals of Software Engineering, Software Processes. Project Management. Requirements Engineering, Software Modeling and Software Prototyping. Software Cost Estimation and Quality Management. Data Flow Oriented Design, Object-Oriented Design, Design Patterns, and User Interfaces. Validation and Verification.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 2

COURSE CODE: COMP 3275

COURSE TITLE: WIRELESS & MOBILE COMPUTING

NUMBER OF CREDITS: 4

PREREQUISITES: COMP 3150

COURSE DESCRIPTION: Introduction to the ISO and other network architectures. History and Evolution of wireless standards, Special problems of wireless and mobile computing; Wireless Local loops; Mobile Internet Protocol, Mobile aware adaptation, Mobile client/server networks; Mobile data access; Software support for mobile and wireless computing (includes MIDP programming, SMS and Bluetooth based applications); Wireless Local loops; Mobile Internet Protocol; Application aware and application transparent adaptation; Mobile data address; The role of middleware; Performance Issues; Emerging Technologies.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 2**COURSE CODE: COMP 3300**

COURSE TITLE: PROGRAMMING LANGUAGES I

NUMBER OF CREDITS: 4

PREREQUISITE: COMP 2000

COURSE DESCRIPTION: This course will focus on two programming paradigms: imperative and logic. For the imperative paradigm, the programming language C (or any other language representative of this paradigm) will be used. For the logic programming paradigm, the programming language Prolog (or any other language representative of this paradigm) will be used.

The Imperative Programming Paradigm: Basic types. Expressions and statements. Functions/procedures and programme structure.

Arrays, pointers. Structures/records. Structures input/output. File input/output.

The Logic Programming Paradigm. Motivation and introduction. Knowledge bases, unification and variable instantiation, backtracking, relations, conjoined goals, disjoint goals, negative goals, equality testing. Structures and operators, Input/output. Problem-solving strategies.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: NOT OFFERED IN 2014/2015

COURSE CODE: COMP 3400

COURSE TITLE: ARTIFICIAL INTELLIGENCE

NUMBER OF CREDITS: 4

PREREQUISITE: COMP 2000

COURSE DESCRIPTION: The concept of problem solving as search through a state space. Basic search algorithms. Depth-first, breadth-first, best-first, hill-climbing, branch-and-bound, A*. Mini-max algorithm with alpha-beta pruning. Logic and theorem proving. Propositional logic. First order predicate logic. Unification. Clausal form. Resolution theorem proving. Natural language processing. Parsing expressions. Semantic transition trees. Planning. Basic goal regression using STRIPS type actions. Production rule systems. Basic concepts. An expert system shell.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: NOT OFFERED IN 2014/2015

COURSE CODE: COMP 3500

COURSE TITLE: INTERNET TECHNOLOGIES I

NUMBER OF CREDITS: 4

PREREQUISITE: COMP 2500

COURSE DESCRIPTION: Overview of networking. The TCP/IP stack. Domain name resolution. The Hypertext. Transfer Protocol (HTTP): headers, requests, responses, content-negotiation, caching. The Extensible. Hypertext. Mark up Language (XHTML): XML syntax, XHTML DTDs, document structure, text formatting elements, images, tables, forms, links, image maps. Cascading Style Sheets (CSS): separation of content and presentation, selectors, declarations, conflict resolution. Client-side scripting: Control of document appearance and content, browser control, user interaction, window manipulation, client-side object hierarchy, cookies, animation. Applets: Class hierarchy, graphical user interface elements, event handling, component layouts, drawing graphics, applications. Extensible Mark up Language (XML): Advantages and applications, Document Type Definitions (DTDs).

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: COMP 3550

COURSE TITLE: INTERNET TECHNOLOGIES II

NUMBER OF CREDITS: 4

PREREQUISITE: COMP2500 OR COMP 3500

COURSE DESCRIPTION: HTTP; Server-side scripting. Java structures for the Internet. Servlets; Java Server Pages XML, DTD and Schemas, Namespaces. XSLT, XPath Structure and Applications Server-side database connectivity. Security Architecture

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: NOT OFFERED IN 2014/2015

COURSE CODE: COMP 3600

COURSE TITLE: THEORY OF COMPUTING II

NUMBER OF CREDITS: 4

PREREQUISITE: COMP 2100

COURSE DESCRIPTION: Turing machines. Computing with Turing machines. Extensions of Turing machines. Nondeterministic Turing machines. Grammars. Undecidability. The Church-Turing Thesis. The halting problem. Unsolvability problems. Recursively enumerable languages. Chomsky hierarchy. Computational complexity: Classes P and NP. NP-completeness. Special topics, e.g. Methods of tackling NP-hard problems.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 2

COURSE CODE: COMP 3700

COURSE TITLE: DATABASE MANAGEMENT SYSTEMS II

NUMBER OF CREDITS: 4

PREREQUISITE: COMP 2700

COURSE DESCRIPTION: Transaction management and concurrency control. Database recovery management. Performance query optimization. Database administration. Distributed database. Internet technologies and Databases. Databases and XML. Object-Oriented databases. Database Modelling with UML. Data warehousing

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: NOT OFFERED IN 2014/2015

COURSE CODE: COMP 3750

COURSE TITLE: NUMERICAL COMPUTING

NUMBER OF CREDITS: 4

PREREQUISITE: COMP 2100

COURSE DESCRIPTION: Introduction to MATLAB. Review of Calculus, Binary Numbers, Error Analysis. Solution of Non-linear Equations. Solution of Linear Systems. Interpolation and Polynomial Approximation. Numerical Differentiation and Integration.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: NOT OFFERED IN 2014/2015

COURSE CODE: COMP 3800

COURSE TITLE: CRYPTOGRAPHY AND SECURITY

NUMBER OF CREDITS: 4

PREREQUISITE: COMP 2100

COURSE DESCRIPTION: Classical Cryptography. Shift cipher. Substitution cipher. Permutation cipher. Other ciphers. Cryptanalysis applicable to these encodings. Shannon's Theory. Entropy. Huffman encodings. Keys. Cryptosystems. Data Encryption Standard. Block ciphers and the Advanced Encryption Standard. Cryptographic hash functions. Internet Security.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: COMP 3850

COURSE TITLE: INTELLIGENT SYSTEMS

NUMBER OF CREDITS: 4

PREREQUISITE: COMP 2000

COURSE DESCRIPTION: Characteristics of intelligent systems. Rule-based Expert Systems; production rules. Reasoning with uncertainty. Fuzzy logic. Frame-based expert systems. Artificial Neural Networks. Genetic algorithms. Knowledge Engineering and Data Mining.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: COMP 3900

COURSE TITLE: SPECIAL TOPICS IN COMPUTER SCIENCE (GAME PROGRAMMING)

NUMBER OF CREDITS: 4

PREREQUISITES: COMP 2000 AND COMP 2500

COURSE DESCRIPTION: Graphics. Computer Assisted Design (CAD). Computer Assisted Education (CAE). Speech synthesis. Advanced processor architecture. Expert systems. Computability and complexity. Proof of correctness of programs. Image Processing. Any other approved topics. The particular topic taught may change from year to year.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 2

COURSE CODE: COMP 3950

COURSE TITLE: MODELLING AND SIMULATION

NUMBER OF CREDITS: 4

PREREQUISITE: COMP 2100

COURSE DESCRIPTION: Discrete and Continuous Systems. Discrete-Event System Simulation; Dynamic Allocation and Linked Lists. Queuing Models; Steady-State Behavior of Infinite-Population Markovian Models. Single-Server Queues with Poisson Arrivals and Unlimited Capacity. Analysis of Simulation Data; Goodness-of-Fit Tests, Chi-Square Test. Non-stationary Poisson Process. Output Analysis for Terminating Simulations. Error Estimation for Steady-State Simulation.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 2

COURSE CODE: COMP 3990

COURSE TITLE: PROJECT

NUMBER OF CREDITS: 4

PREREQUISITES: COMP 2500 AND COMP 3250

COURSE DESCRIPTION: Assessing project feasibility; Methods of investigation; Project reporting and presentation; Project management. Select and implement an appropriate project on some topic in Computer Science. This may include design and implementation of a computer application.

ASSESSMENT:

Project report	80%
Oral presentation	20%
(No final written examination)	

LEVEL: II

SEMESTER: II

COURSE CODE: ECNG 2001

COURSE TITLE: COMMUNICATION SYSTEMS I

NUMBER OF CREDITS: 3

PREREQUISITES: ECNG 2011 SIGNALS AND SYSTEMS & ECNG 2013 MATHEMATICS FOR ELECTRICAL ENGINEERS II

*** STUDENTS WILL BE ALLOWED TO DO THIS COURSE WITH MODIFIED PREREQUISITE I.E PHYS 2150 (MATHEMATICS FOR PHYSICISTS)**

DEPARTMENT RESPONSIBLE: ELECTRICAL AND COMPUTING ENGINEERING

COURSE DESCRIPTION: This is the introductory course in Communications in the Department. It establishes the technical foundation for the topic by introducing the fundamentals of communications and exploring the common principles that underpin communications systems. The course provides a detailed treatment of amplitude modulation (AM) techniques (such as conventional AM, double-sideband suppressed carrier AM, and single sideband AM) as well as that of angle modulation techniques (i.e., frequency modulation and phase modulation) in the presence of additive white Gaussian noise. Once these communication principles are well established, the course illustrates their application to a representative set of analog communication systems. This course will be assessed through simulation exercises, in-course examination, group project and a final examination.

LEVEL: III

SEMESTER: I

COURSE CODE: ECNG 3001

COURSE TITLE: COMMUNICATION SYSTEMS II

NUMBER OF CREDITS: 3

PREREQUISITE: ECNG 2001 Communication Systems I

DEPARTMENT RESPONSIBLE: ELECTRICAL AND COMPUTING ENGINEERING

COURSE DESCRIPTION: Digital communications is the primary means of electronic communications today, enjoying tremendous levels of reach around the world. ECNG 3001 Communications II provides students with the basic theoretical tools required for the modeling, analysis and design of digital communication systems. It begins with a brief review of analog communication systems and an overview of digital communication systems. The course then explores the key principles which underlie the characterization of information sources and the basic techniques employed in processing analog and digital information signals for transmission. Considerations for the digital transmission of information over various media are explored. Digital signal reception and detection techniques are introduced. The course closes with a concise treatment of the overall design of a basic digital communication system. This course is assessed through a design project and a final examination.

LEVEL: III

SEMESTER: I

COURSE CODE: ECNG 3002

COURSE TITLE: DATA COMMUNICATION SYSTEMS

NUMBER OF CREDITS: 3

PREREQUISITES: NONE

DEPARTMENT RESPONSIBLE: ELECTRICAL AND COMPUTING ENGINEERING

COURSE DESCRIPTION: ECNG 3002 explores the organization and operation of contemporary data networks by presenting fundamental principles and applying these to the architecture of the global Internet. It begins by identifying applications and requirements of data communication and exploring network structure and architecture. It distinguishes between the communication of data between a pair of computers and across a network of computers. Current standards, including the OSI and TCP/IP reference models are investigated. Once layered network architecture is established a top down approach is employed, investigating the functions, implementation and performance of the Application, Transport, Network, Data Link and Physical Layers. This course will be assessed through practical/laboratory based coursework and a final examination.

LEVEL: III

SEMESTER: I/II/SUMMER

COURSE CODE: ECNG 3025

COURSE TITLE: DISCRETE SIGNAL PROCESSING

NUMBER OF CREDITS: 3

PREREQUISITES: NONE

DEPARTMENT RESPONSIBLE: ELECTRICAL AND COMPUTING ENGINEERING

COURSE DESCRIPTION: In this course, we will examine the techniques of discrete-time signal processing and digital signal processing, investigate the development of digital FIR and IIR filters, study the Discrete-time Fourier Transform and in particular, a numerical, efficient version called the Fast Fourier Transform (FFT) and use the FFT to carry out spectral analysis of some sample signals. We will also examine some Digital Signal Processors which are specialized microprocessors created for the sole purpose of performing numerical calculations. This course will be assessed through in-course exam and a final examination.

ASSESSMENT:

Coursework	20%
Final Examination (One 2-hr paper)	80%

LEVEL: III

SEMESTER: II

COURSE CODE: ECNG 3003

COURSE TITLE: TELECOMMUNICATION NETWORKS

NUMBER OF CREDITS: 3

PREREQUISITES: NONE

**DEPARTMENT RESPONSIBLE: ELECTRICAL AND
COMPUTING ENGINEERING**

COURSE DESCRIPTION: ECNG 3003 is a capstone course in contemporary telecommunications networks and technologies. Assuming prior understanding of fundamental communications including coding, modulation and error analysis, the course starts by dismantling the telecommunications network into its transmission, switching/routing, access and signaling network subsystems. Key technologies used in each sub network are explored, paying particular attention to those that facilitate the delivery of voice service over circuit switched networks. The course identifies the benefits, requirements, and challenges of transporting various traffic types on a single, converged network. The example of Voice over Internet Protocol (VoIP) is explored in detail and its implementation and performance compared to that of traditional circuit switched voice service. This course will be assessed through practical based coursework, in-course exam and a final examination.

ASSESSMENT:

Practical	10%
Coursework	20%
Final Examination (One 2-hr paper)	70%

LEVEL: III

SEMESTER: I

COURSE CODE: ECNG 3019

COURSE TITLE: ADVANCED CONTROL SYSTEMS DESIGN

NUMBER OF CREDITS: 3

PREREQUISITE: ECNG 2009 (Control Systems)

**DEPARTMENT RESPONSIBLE: ELECTRICAL AND
COMPUTING ENGINEERING**

COURSE DESCRIPTION: This course first reviews the typical techniques for classical control analysis and design as covered in earlier undergraduate study such as Bode plots, Nyquist, Root Locus etc. Control System Development such as lead/lag compensator design methods are comprehensively reviewed with continuous time approach first covered. After the fundamentals of digital control implementation are introduced, these classical control design methods are revisited in a digital/hybrid system development context. The second part of the course focuses on the introduction to modern control strategy using state space system analysis and development. State space representation, State diagrams, Canonical forms of system representation, controllability and observability as well as observer design are all introduced. This course will be assessed through in-course exam and a final examination.

ASSESSMENT:

Coursework	10%
Final Examination (One 3-hr paper)	90%

*** Students will be allowed to do this course with modified prerequisite i.e. PHYS 3201 (Advance Electronics and Control Theory)**

LEVEL: I

SEMESTER: 1

COURSE CODE: ECON 1001

COURSE TITLE: INTRODUCTION TO ECONOMICS I

NUMBER OF CREDITS: 3

PREREQUISITES: NONE

DEPARTMENT RESPONSIBLE: ECONOMICS

COURSE DESCRIPTION: This course provides students to the history of economic thought highlighting some of the key economic issues, which have preoccupied the discipline from its origins. The course also provides an introduction to the basic principles of micro-economic analysis together with the main perspectives on the functioning of the macro-economy. The micro-economic analysis is illustrated by reference to a key export sector in the Caribbean (e.g. oil or bananas). The implications of trends in the latter for the Balance of Payments and macro economy conclude this first semester course.

LEVEL: I
SEMESTER: 2
COURSE CODE: ECON 1002
COURSE TITLE: INTRODUCTION TO ECONOMICS II
NUMBER OF CREDITS: 3
PREREQUISITES: NONE
CO-REQUIRE: ECON 1001
DEPARTMENT RESPONSIBLE: ECONOMICS
COURSE DESCRIPTION: This course emphasises macro-economic theory and policy and the related national income accounting together with international trade and the balance of payments. There is a significant stress on the implications of these economic issues for the Caribbean reality.

LEVEL: I
SEMESTER:
COURSE CODE: ECON 1005
COURSE TITLE: INTRODUCTION TO STATISTICS
NUMBER OF CREDITS: 3
PREREQUISITES:
DEPARTMENT RESPONSIBLE: ECONOMICS
COURSE DESCRIPTION: Descriptive Statistics; Probability and Probability distributions, Sampling distributions, Estimation, Hypothesis testing, simple correlation and regression.

LEVEL: I
SEMESTER: 2
COURSE CODE: ESST 1000
COURSE TITLE: PHYSICS FOR ENVIRONMENTAL SCIENCES
NO. OF CREDITS: 3
PREREQUISITES: 2 CAPE SCIENCE SUBJECTS (UNITS I & II) OR 'A' LEVEL EQUIVALENT, WITH AN AVERAGE GRADE OF III OR B. MUST HAVE PASSES IN BIOLOGY, CHEMISTRY, MATHEMATICS AND PHYSICS AT CSEC LEVEL OR AN APPROVED ASSOCIATE DEGREE WITH A MINIMUM GPA OF 2.5
COURSE DESCRIPTION: Physics for Environmental Sciences offers an introduction into the physics of the Earth's climate system and the physical methods which are developed and applied to investigate quantitatively different environmental systems. The principal topics covered are the physics of the built environment, the physics of human survival, energy for living, environmental health, revealing the planet, the sun and the atmosphere, the biosphere, the global climate, and climate change. It provides an essentially non-mathematical treatment suitable for a first year undergraduate level course. Course delivery would involve a combination of lectures, practicals, tutorials, and web based materials. Assessments are designed to encourage students to work continuously with the course materials
ASSESSMENT

Coursework	50%
Final Examination	50%

LEVEL: I
SEMESTER: 1
COURSE CODE: ESST 1001
COURSE TITLE: BIOLOGY FOR ENVIRONMENTAL SCIENCES
NO. OF CREDITS: 3
PREREQUISITES: 2 CAPE SCIENCE SUBJECTS (UNITS I & II) OR 'A' LEVEL EQUIVALENT, WITH AN AVERAGE GRADE OF III OR B. MUST HAVE PASSES IN BIOLOGY, CHEMISTRY, MATHEMATICS AND PHYSICS AT CSEC LEVEL OR AN APPROVED ASSOCIATE DEGREE WITH A MINIMUM GPA OF 2.5
COURSE DESCRIPTION: This course introduces the biological principles underlying the study of environmental science, and provides an introduction to the diversity of microbes, plants and animals. It also examines the importance and diversity of the biological component of the environment. It will also cover basic principles of biochemistry and genetics, and is a necessary foundation course for several Level II-III courses in the Environmental Sciences programme. Delivery of course materials would involve a combination of lectures, practicals, tutorials, and web based materials. Assessments are designed to encourage students to work continuously with the course materials
ASSESSMENT:

Coursework	50%
Final Examination	50%

LEVEL: I

SEMESTER: 1

COURSE CODE: ESST 1002

COURSE TITLE: CHEMISTRY FOR ENVIRONMENTAL SCIENCES

NO. OF CREDITS: 3

PREREQUISITES: 2 CAPE SCIENCE SUBJECTS (UNITS I & II) OR 'A' LEVEL EQUIVALENT, WITH AN AVERAGE GRADE OF III OR B. MUST HAVE PASSES IN BIOLOGY, CHEMISTRY, MATHEMATICS AND PHYSICS AT CSEC LEVEL OR AN APPROVED ASSOCIATE DEGREE WITH A MINIMUM GPA OF 2.5

COURSE DESCRIPTION: Introduction to Environmental Chemistry offers an introduction to the field of environmental chemistry. It is designed to provide fundamental understanding in the underlying concepts of Chemistry along with the more specific areas relevant to environmental concepts. Students will be introduced to the fundamentals of general, physical and organic chemistry within the context of their application to environmental issues. To achieve this, qualitative and quantitative aspects of environmental processes will be studied. Specific topics include processes in the atmosphere, natural waters, and soils, along with the transport and fate of chemicals in the environment. Wherever possible, examples involving local/regional issues and current events will be used to illustrate the concepts in the course. The delivery of course materials would involve a combination of lectures, practicals, tutorials, and web based materials. Assessments are designed to encourage students to work continuously with the course materials

ASSESSMENT

Coursework	50%
Final Examination	50%

LEVEL: I

SEMESTER: 1

COURSE CODE: ESST 1004

COURSE TITLE: SCIENCE COMMUNICATION

NO. OF CREDITS: 3

PREREQUISITE(S): 2 CAPE SCIENCE SUBJECTS (UNITS I & II) OR 'A' LEVEL EQUIVALENT, WITH AN AVERAGE GRADE OF III OR B. MUST HAVE PASSES IN BIOLOGY, CHEMISTRY, MATHEMATICS AND PHYSICS AT CSEC LEVEL OR AN APPROVED ASSOCIATE DEGREE WITH A MINIMUM GPA OF 2.5

COURSE DESCRIPTION: The ability to communicate information and ideas to others is fundamental to every branch of science. Communications skills are reported by employers to be the qualities they most desire in potential job applicants. Scientists are often required to report their findings to a range of audiences using various delivery methods. Unfortunately, communication skills do not come naturally, nor can they be learned by simply reading about the subject. They require development, with the opportunity for practice and feedback, before students can feel truly comfortable expressing themselves orally and in writing, in logical, clear and concise terms. The aim of this course is to provide students entering the Environmental Science and Sustainable technology with instruction on developing effective scientific communication skills relevant to areas of research and employment. Some of the main skills would include reporting writing, literature reviews, oral presentation and team-work. The course content would be delivered in 5 modules using a combination of lectures, practicals, tutorials, and web based materials. Assessments are designed to encourage students to work continuously with the course materials.

ASSESSMENT

Coursework	100%
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LEVEL: I

SEMESTER: 2

COURSE CODE: ESST 1005

**COURSE TITLE: INFORMATION TECHNOLOGY
FUNDAMENTALS**

NO. OF CREDITS: 3

**PREREQUISITES: 2 CAPE SCIENCE SUBJECTS (UNITS I & II)
OR 'A' LEVEL EQUIVALENT, WITH AN AVERAGE GRADE
OF III OR B. MUST HAVE PASSES IN BIOLOGY,
CHEMISTRY, MATHEMATICS AND PHYSICS AT CSEC
LEVEL OR AN APPROVED ASSOCIATE DEGREE WITH A
MINIMUM GPA OF 2.5**

COURSE DESCRIPTION: This course provides an introduction of the discipline of IT. It describes how it relates to environmental science and sustainable technology. The goal is to help students understand the diverse contexts in which IT is used and the challenges inherent in the diffusion of innovative technology. The delivery of course materials would involve a combination of lectures, practicals, tutorials, and web based materials. Assessments are designed to encourage students to work continuously with the course materials.

ASSESSMENT

Coursework	50%
Final Examination	50%

LEVEL: 1

SEMESTER: 2

COURSE CODE: ESST 1006

**COURSE TITLE: HUMAN IMPACTS ON THE
ENVIRONMENT**

NO. OF CREDITS: 3

**PREREQUISITES: 2 CAPE SCIENCE SUBJECTS (UNITS I & II)
OR 'A' LEVEL EQUIVALENT, WITH AN AVERAGE
GRADE OF III OR B. MUST HAVE PASSES IN BIOLOGY,
CHEMISTRY, MATHEMATICS AND PHYSICS AT CSEC
LEVEL, OR; AN APPROVED ASSOCIATE DEGREE WITH A
MINIMUM GPA OF 2.5**

COURSE DESCRIPTION: This course gives an overview of human-environment interactions exploring causes, effects and solutions of human impacts using a broad temporal and spatial perspective. We consider the evolutionary and historical changes in human-environment interactions and the main drivers of change: population growth, technological and lifestyle changes. Regional variation in these drivers along with issues of economy, urbanisation and inequality will also be considered. The bulk of the course illustrates the complex and dynamic ecological interactions between humans and specific resources and components of the environment necessary for human wellbeing namely ecosystems and biodiversity, food, freshwater, clean air, materials and energy. The consequences of these interactions such as resource depletion, environmental degradation and global climate change will be highlighted. Future scenarios and management solutions will be explored. The delivery of course materials would involve a combination of lectures, practicals, tutorials, and web based materials. Assessments are designed to encourage students to work continuously with the course materials.

ASSESSMENT

Coursework	50%
Final Examination	50%

LEVEL: II

SEMESTER: 1

COURSE CODE: ESST 2001

COURSE TITLE: PRINCIPLES OF ENVIRONMENTAL CHEMISTRY 1

NUMBER OF CREDITS: 3

PREREQUISITES: ESST, and MATH 1115

COURSE DESCRIPTION: This course is a broad-based introduction to environmental chemistry for advanced environmental science students. The goal of the course is to introduce the application of chemical facts and principles to processes occurring in the environment, and the solution of problems relating to environmental processes and pollution. This course will cover issues surrounding water, air, soil chemistry, and the processes that occur naturally within them, along with the study of what happens when human interference changes the picture. There will be a specific effort made to include local and regional examples to illustrate the concepts covered in this course. The delivery of course materials would involve a combination of lectures, practicals, tutorials, and web based materials. Assessments are designed to encourage students to work continuously with the course materials.

ASSESSMENT

Coursework -	50%
Final Examination -	50%

LEVEL:

SEMESTER: 1

COURSE CODE: ESST 2002

COURSE TITLE: ENVIRONMENTAL TECHNOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: ESST 1006

COURSE DESCRIPTION: ESST 2002 – Environmental Technology provides students with an understanding of the connection between environmental science and technological advancement. Students would gain insights into the basic concepts in environmental sciences, detailing the structure, problems and their interrelated causes in the ecosphere. It explains how technology has contributed to these problems and how clean-up and clean technology initiatives can be used to minimize, mitigate and reduce impacts. It also introduces students to the concepts of green science and green engineering and highlights their role in ensuring sustainability and sustainable development.

ASSESSMENT

Coursework -	50%
Final Examination -	50%

LEVEL:

SEMESTER: 1

COURSE CODE: ESST 2003

COURSE TITLE: DATA MANAGEMENT FOR ENVIRONMENTAL SCIENCE

NUMBER OF CREDITS: 3

PREREQUISITES: ESST 1005

COURSE DESCRIPTION: This course provides an introduction the interdisciplinary field of environmental informatics which provides the information processing and communication mechanisms to the field of environmental sciences. Information processing involves organizing data and therefore students will be introduced to data management tools such as spreadsheets and database technologies from a user perspective rather than a design perspective. In the communication infrastructure aspect of the course students will be introduced to Geographic Information Systems (GIS).

ASSESSMENT

Coursework -	100%
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LEVEL: II

SEMESTER: 2

COURSE CODE: ESST 2004

COURSE TITLE: PHYSICS FOR ENVIRONMENTAL SCIENCE II

NUMBER OF CREDITS: 3

PREREQUISITES: ESST 1000

COURSE DESCRIPTION: Environmental Physics builds on the level I courses, Physics for Environmental Sciences, Chemistry for Environmental Sciences, Mathematics for Environmental Sciences I and Mathematics for Environmental Sciences II. There is a quantitative approach to the physics of the processes of the environment together with a more of an integrated view of the science of the environment. Topics to be covered include energy and the environment, weather and climate, climate change and global warming, radiative forcing and pollution. The delivery of course materials would involve a combination of lectures, practicals, tutorials, and web based materials. Assessments are designed to encourage students to work continuously with the course materials.

ASSESSMENT

Coursework -	50%
Final Examination -	50%

LEVEL: II

SEMESTER: 2

COURSE CODE: ESST 2005

**COURSE TITLE: POLLUTION MANAGEMENT AND
ABATEMENT TECHNOLOGIES**

NUMBER OF CREDITS: 3

PREREQUISITES: ESST 1006; ESST 1002

COURSE DESCRIPTION: This course examines the various approaches used for pollution management taking into account legislative, management systems and engineering approaches. This would be addressed within the context of sustainable development. It also highlights some of the major environmental problems and focuses on how these are addressed. It would cover major strategies used for dealing with waste/pollution control in different matrices (air water and soils). The delivery of course materials would involve a combination of lectures, practicals, tutorials, and web based materials. Assessments are designed to encourage students to work continuously with the course materials.

ASSESSMENT

Coursework -	50%
Final Examination -	50%

LEVEL: II

SEMESTER: 1

**COURSE CODE: ESST 2006 (OFFERED WITH EFFECT
FROM 2015/2016)**

COURSE TITLE: POLLUTION BIOLOGY

NUMBER OF CREDITS: 3

**PRE-REQUISITE(S): ESST 1001 BIOLOGY FOR
ENVIRONMENTAL SCIENCES**

COURSE DESCRIPTION: Healthy ecosystems rely on interactions between the living portions of the environment and its non-living components. However, human activities can cause significant disturbance as a result of the accidental or deliberate introduction of pollutants into the environment. These disturbances can cause significant alterations in the interactions between the various components that make up the ecosystem. The main focus would be on the effects of these pollutants and how they can be assessed using physicochemical and biological endpoints.

Particular attention would be placed on describing (1) what pollution is and how/why it is harmful at multiple levels of biological organization, (2) what the root sources and causes of pollution are, (3) what happens to pollutants (chemical, biological and physical) when they enter the environment, and (4) how each pollutant class affects individual and community health over acute to chronic exposure periods.

The course will focus on a variety of anthropogenic stressors in outdoor and indoor environments such as (1) chemical agents including ozone, asbestos, radon, smoke, nanoparticles, heavy metals, chlorination by-products, pesticides, petroleum hydrocarbons and endocrine active chemicals; (2) physical stressors including radiation, heat and noise; and (3) food/water-borne stressors such as bacteria, viruses, algae/biotoxins and parasites. The delivery of course materials would involve a combination of lectures, practicals, tutorials, and web based materials. Assessments are designed to encourage students to work continuously with the course materials.

ASSESSMENT:

Coursework -	50%
Final Examination -	50%

LEVEL: III

SEMESTER: 2

COURSE CODE: ESST 3000 COURSE TITLE:

ENVIRONMENTAL TOXICOLOGY

NUMBER OF CREDITS: 3

PREREQUISITES: ESST 2001

COURSE DESCRIPTION: Healthy ecosystems rely on interactions between the living portions of the environment and its non-living components. However, human activities can cause significant disturbance as a result of the accidental or deliberate introduction of contaminants into the environment. These disturbances can cause significant alterations in the interactions between the various components that make up the ecosystem. This course introduces the concepts of environmental toxicology. It is concerned with the toxic effects of environmental chemicals (both natural and anthropogenic) on living organisms. Fundamental toxicological concepts will be covered including dose-response relationships; absorption of toxicants; distribution and storage of toxicants; biotransformation and elimination of toxicants; acute and sub-lethal toxicity; target organ toxicity and risk assessment. The interaction between toxicants and organisms would be investigated at varying levels of biological organizations, ranging from molecular, tissue, organ, individual, population and ecosystem. The delivery of course materials would involve a combination of lectures, practicals, tutorials, and web based materials. Assessments are designed to encourage students to work continuously with the course materials.

ASSESSMENT

Coursework -	50%
Final Examination -	50%

LEVEL: I

SEMESTERS: 1 AND 2

COURSE CODE: FOUN 1101

COURSE TITLE: CARIBBEAN CIVILISATION

NUMBER OF CREDITS: 3PREREQUISITES:

FACULTY RESPONSIBLE: FACULTY OF HUMANITIES & EDUCATION

COURSE DESCRIPTION: (NOT FOR HUMANITIES STUDENTS)

OBJECTIVES:

1. 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.
2. To develop a perception of the Caribbean as wider than island nations or linguistic blocs.
3. To stimulate students' interest in, and commitment to Caribbean civilisation and to further their self-definition.

Modules:

1. Origins
 - I Caribbean space / physical environment / Amerindian peoples and Cultures: their legacy.
 - II European conquest, settlement and demographic changes.
2. Fighting for Freedom
 - I Slavery, marronage and rebellion.
 - II New in/out- migration, indenture, and their consequences: 19th and 20th centuries.
3. Quest for Identity
 - I Race and nationalism.
 - II Independence, dependence and regionalism.
 - III Creolisation and ethnic identity.
4. Ideas, Ideologies and Theologies
 - I Education/religion in the Caribbean.
 - II Caribbean Intellectual Traditions.
5. Caribbean Expressions
 - I Caribbean music - Calypso, Reggae.
 - II Caribbean festivals.
 - III Sports.
 - IV Caribbean voices - French, English, Spanish, Linguistic Identity.

ASSESSMENT

In-course test	40%
Final 2-hour examination	60%

LEVEL: I

SEMESTER: 2

COURSE CODE: FOUN 1105

COURSE TITLE: SCIENTIFIC AND TECHNICAL WRITING

NUMBER OF CREDITS: 3

PREREQUISITES:

Any one of the following:

- CSEC English Language Grade I (General Proficiency) Grade I or II in CAPE Communication Studies
- General Paper Grade A or B
- A Pass in the English Language Proficiency Test
- A Pass in English as a Foreign Language (Intermediate)

FACULTY RESPONSIBLE: FACULTY OF HUMANITIES & EDUCATION

COURSE DESCRIPTION: The aim of this course is to develop students writing skills in areas related to their academic disciplines. There will be twenty-four (24) contact hours. Classroom activity will be supplemented by printed materials.

Option C

Scientific and Technical Writing (Compulsory for FST Students)

Technical Description

Expository Writing for Scientific and Technical Purposes

ASSESSMENT

Coursework 50%

Final Examination 50%

Students must pass both coursework and final examination in order to qualify for an overall pass in the course.

Attendance Regulation:

A student in any of the Foundation courses in English Language who misses two (2) out of any six (6) class hours will be warned, and after two warnings any further absence without prior permission or an acceptable medical certificate will result in automatic exclusion from the examination.

NB: FST students should **not** register for FOUN 1001 – English for Academic Purposes

FOUN 1210 Not offered to FST Students.

LEVEL: I

SEMESTERS: 1 AND 2

COURSE CODE: FOUN 1301

COURSE TITLE: LAW, GOVERNANCE, ECONOMY AND SOCIETY (UNIVERSITY FOUNDATION COURSE) (FACULTY OF SOCIAL SCIENCES)

NUMBER OF CREDITS: 3

PREREQUISITES:

FACULTY RESPONSIBLE: FACULTY OF SOCIAL SCIENCES

COURSE DESCRIPTION: This course is delivered through the medium of print. The print package comprises a student manual, a study guide and a reader. In addition to the print material there are teleconferencing and/or tutorials.

The course introduces students to some of the major institutions in Caribbean society. It exposes the student to both the historical and contemporary aspects of Caribbean society, including Caribbean legal, political and economic systems. In addition, Caribbean culture and Caribbean social problems are discussed.

Assessment is based solely on a final examination at the end of the semester. It consists of twelve (12) essay-type questions, of which students are required to write on three (3). All questions carry equal marks. The examination is divided into four (4) sections corresponding to the four (4) subject areas in the course. Students are not allowed to do more than one question in any one section.

LEVEL: I

SEMESTERS: 1 AND 2

COURSE CODE: FREN 1001

COURSE TITLE: LEVEL 1A FRENCH

NUMBER OF CREDITS: 2

PREREQUISITES: NONE

COURSE DESCRIPTION: This is a beginners' course for students with no previous knowledge of French. It develops the communicative, linguistic, and intercultural competence of learners by focusing on their speaking, listening, reading and writing skills. The course meets for four hours per week for 13 weeks. In addition, class contact time should be supplemented by one hour of independent study for each contact hour.

ASSESSMENT:

In-course testing: 100%: 40% [mid-semester]; 40% [end of semester]; 20% [two assignments]

LEVEL: I

SEMESTERS: 1 & 2

COURSE CODE: FREN 1002

COURSE TITLE: LEVEL 1B FRENCH

NUMBER OF CREDITS: 2

PREREQUISITES: FREN 1001/1A FRENCH OR EQUIVALENT

COURSE DESCRIPTION: This course is the next level after FREN 1001/1A French with the aim to further develop the communicative, linguistic, and inter cultural competence of learners. Emphasis is placed on the development of learners' speaking, listening, reading, and writing skills. The course meets for four hours per week for 13 weeks. In addition, class contact time should be supplemented by one hour of independent study for each contact hour..

ASSESSMENT:

In-course testing: 100%: 40% [mid-semester]; 40% [end of semester]; 20% [two assignments]

LEVEL: I

SEMESTER: 1

COURSE CODE: INFO 1500

COURSE TITLE: INTRODUCTION TO INFORMATION TECHNOLOGY FUNDAMENTALS

NUMBER OF CREDITS: 3

PREREQUISITE: NONE

COURSE DESCRIPTION: This course provides an overview of the discipline of IT. It describes how it relates to other computing disciplines. The goal is to help students understand the diverse contexts in which IT is used and the challenges inherent in the diffusion of innovative technology.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 1

COURSE CODE: INFO 1501

COURSE TITLE: INTRODUCTION TO WWW PROGRAMMING

NUMBER OF CREDITS: 3

PREREQUISITE: NONE

COURSE DESCRIPTION: This is an introduction to web technologies and systems, including hypertext, self-descriptive text, web page design, web navigational systems, and various mark-up languages and scripting languages. Programming examples, exercises and projects are drawn from practical web-based applications. Good programming practice and program clarity is emphasized throughout the course.

ASSESSMENT:

Attendance and Participation	10%
5 Lab Examinations	10% each
Project	40%

(NO FINAL WRITTEN EXAMINATION)

LEVEL: I

SEMESTER: 1

COURSE CODE: INFO 1502

COURSE TITLE: INTRODUCTION TO PROBLEM SOLVING

NUMBER OF CREDITS: 3

PREREQUISITE: NONE

COURSE DESCRIPTION: This course provides mostly a non-language specific introduction to problem-solving and computer programming. Topics include: structured problem-solving, structured program design, control (logic) structures, working with arrays and data files, and an overview of data management and object-oriented programming. Students will be exposed to a variety of tools and methods that are useful in all aspects of developing software applications and writing program code. There is a small hands-on java (or other language of choice) component of the course with the bulk of the course focusing instead on designing program logic.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 1

COURSE CODE: INFO 1503

COURSE TITLE: INTRODUCTION TO MATHEMATICS FOR CRITICAL THINKING

NUMBER OF CREDITS: 3

PREREQUISITE: NONE

COURSE DESCRIPTION: This course provides students with the mathematical tools for problem solving. Students are taught to develop solutions for problems by mathematical Modelling using fundamental mathematical methods.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 2

COURSE CODE: INFO 1504

COURSE TITLE: INTRODUCTION TO PROGRAMMING FUNDAMENTALS I

NUMBER OF CREDITS: 3

PREREQUISITE: NONE

COURSE DESCRIPTION: Programming fundamentals develops skills and concepts that are essential to good programming practice and problem solving. The course introduces students to the basics of programming, including programming constructs, basic data structures, and arrays. Throughout the course these concepts are applied to the solution of simple business type problems..

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 2

COURSE CODE: INFO 1505

COURSE TITLE: INTRODUCTION TO COMPUTER SYSTEMS

NUMBER OF CREDITS: 3

PREREQUISITE: NONE

COURSE DESCRIPTION: The course introduces the student to the basics of hardware, storage and system software. It covers the relationship between different parts of a computer system and how they work together to get a job completed. Additionally it gives the student an appreciation for data organization techniques and their applicability to real world scenarios.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 2

COURSE CODE: INFO 1506

COURSE TITLE: INTRODUCTION TO INFORMATION AND DATA MANAGEMENT

NUMBER OF CREDITS: 3

PREREQUISITE: NONE

COURSE DESCRIPTION: Data Management is the process of organizing data from the resource perspective. It introduces students to spreadsheets and databases. This course looks at databases from a user perspective rather than a design perspective to give an appreciation for its place in the Information Technology area. The spreadsheets will be presented with the purpose of students being able to create models required by the working environment

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 2

COURSE CODE: INFO 1507

COURSE TITLE: INTRODUCTION TO BUSINESS PRINCIPLES

NUMBER OF CREDITS: 3

PREREQUISITE: NONE

COURSE DESCRIPTION: This course gives an introduction to economics, managerial accounting and project management. Additionally, it gives the student a grasp of the role each of these areas perform and an appreciation as to why they are critical to any organization.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 2 AND EVENING UNIVESITY – SEMESTER 2

COURSE CODE: INFO 2400

COURSE TITLE: INFORMATION SYSTEMS DEVELOPMENT

NUMBER OF CREDITS: 4

PREREQUISITE: INFO 1400 OR INFO 1500

COURSE DESCRIPTION: Systems development.

Throughout the course, information is seen as a valuable corporate resource, one that can be used to maximize profit and improve competitiveness of a business organization. Consequently, the course takes an in-depth look at business processes and the ways in which they can be automated through an Information System. There is extensive coverage of the technical foundations of modern Information Systems as well as the process of developing and implementing a suitable Information System for an organization. The development of web-based information systems is also covered.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 2 AND

EVENING UNIVERSITY - SEMESTERS 2 AND 3

COURSE CODE: INFO 2405

COURSE TITLE: DISCRETE MATHEMATICS

NUMBER OF CREDITS: 4

PREREQUISITES: INFO 1415 OR INFO 1503

COURSE DESCRIPTION: This course seeks to build formal mathematical competence required in many fields in Information Technology such as information security, cryptography and data structures. Students are exposed to formal logic and reasoning and use this to construct proofs and develop algorithms. The course also introduces various problem solving strategies especially thinking algorithmically both iterative and recursive. The course also motivates the need for discrete structures and techniques by introducing computer applications.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 2 AND EVENING UNIVERSITY - SEMESTER 2

COURSE CODE: INFO 2410

COURSE TITLE: FUNDAMENTAL DATA STRUCTURES

NUMBER OF CREDITS: 4

PREREQUISITE: INFO 2420

COURSE DESCRIPTION: This course covers the major data structures used in programming. The properties of the various data structures are studied as well as their appropriate use for different applications. In-memory data structures as well as structures for file organizations are considered.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 1 AND

EVENING UNIVERSITY - SEMESTERS 1 AND 3

COURSE CODE: INFO 2415

COURSE TITLE: ENTERPRISE DATABASE SYSTEMS

NUMBER OF CREDITS: 4

PREREQUISITES: (INFO 1400 AND INFO 1405) OR (INFO 1506 AND INFO 1501) OR [INFO 1400 AND INFO 1501] OR (INFO 1506 AND INFO 1405)

COURSE DESCRIPTION: The course covers the design, implementation and management of Database Systems. Emphasis is placed on database design of real world business applications using Entity-Relationship modeling. SQL programming is covered in detail. Query Optimization concepts are introduced in the context of database performance tuning. Data Management concepts such as Transaction Management, Concurrency Control, Recovery, and Security are discussed. Several current database environments and applications including Distributed Databases and Web-enabled Databases are discussed.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 1 AND

EVENING UNIVERSITY - SEMESTERS 1 AND 3

COURSE CODE: INFO 2420

COURSE TITLE: PROGRAMMING FUNDAMENTALS II

NUMBER OF CREDITS: 4

PREREQUISITE: INFO 1420 OR INFO 1504

COURSE DESCRIPTION: The course introduces simple data structures that every novice programmer should become familiar with. It introduces the concept of Abstract Data Types, their characteristics and implementation, such as Linked list, stacks and queues.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 1 AND

EVENING UNIVERSITY - SEMESTERS 1 AND 3

COURSE CODE: INFO 2425

COURSE TITLE: COMPUTER ARCHITECTURE

NUMBER OF CREDITS: 4

PREREQUISITES: (INFO 1415 AND INFO 1420) OR (INFO 1503 AND INFO 1504) OR (INFO 1415 AND INFO 1504) OR (INFO 1503 AND INFO 1420)

COURSE DESCRIPTION: This course covers the fundamentals of the operation and design of computers from the programmer's and architect's point of view. It describes the components of a computer, functions of each component, and how components interact with each other and with software.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 1 AND EVENING UNIVERSITY - SEMESTER: 3

COURSE CODE: INFO 2430

COURSE TITLE: BUSINESS INFORMATION SYSTEMS

NUMBER OF CREDITS: 4

PREREQUISITE: (INFO 1400 AND INFO 1405) OR (INFO 1506 AND INFO 1501) OR (INFO 1400 AND INFO 1501) OR (INFO 1506 AND INFO 1405)

COURSE DESCRIPTION: The course focuses on Information Systems in terms of business processes. It covers transaction cycles, events, and activities of Revenue, Expenditure, Production, and Human Resources business processes. The course covers core application frameworks – customer relationship management, enterprise resource planning, revenue and expenditure management, and human resource management – with emphasis on modeling of business processes and data. The material is covered from the perspective of business in Trinidad & Tobago. E-Business concepts and principles are introduced.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 1 AND EVENING UNIVERSITY – SEMESTER: 1

COURSE CODE: INFO 2500

**COURSE TITLE: NETWORKING TECHNOLOGIES
FUNDAMENTALS**

NUMBER OF CREDITS: 4

PREREQUISITE: INFO 1500 AND INFO 1505 OR INFO 1400

COURSE DESCRIPTION: The course introduces the student to the world of computer networks. Principles and protocols for data communication are covered. Network architecture models are visited and students get exposure to the practical aspects of networking e.g. setting up a basic network, router configuration, crimping of cables.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 1 AND EVENING UNIVERSITY-SEMESTER 1

COURSE CODE: INFO 3400

**COURSE TITLE: FUNDAMENTALS OF OPERATING
SYSTEMS**

NUMBER OF CREDITS: 4

PREREQUISITE: INFO 2425 OR INFO 2420

COURSE DESCRIPTION: This course provides the student with an introductory understanding of the role and functioning of an operating system. The basic algorithms used to manage processes, memory and disk devices will be presented.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 2 AND

EVENING UNIVERSITY - SEMESTERS: 2 AND 3

COURSE CODE: INFO 3410

COURSE TITLE: WEB SYSTEMS AND TECHNOLOGIES

NUMBER OF CREDITS: 4

PREREQUISITE: INFO 2420

COURSE DESCRIPTION: This course covers the design, implementation and testing of web-based applications and social software, and the incorporation of a variety of digital media into these applications. Students are exposed to a range of web technologies, both client-side and server-side.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: I AND EVENING UNIVERSITY-SEMESTER 1

COURSE CODE: INFO 3415

**COURSE TITLE: INFORMATION ASSURANCE AND
SECURITY**

NUMBER OF CREDITS: 4

PREREQUISITE: INFO 2400 OR COMP 2200

COURSE DESCRIPTION: This course provides the knowledge to understand, apply and manage information assurance and security in computing, communication, and organizational systems. It covers operational issues, policies and procedures, attacks and defense mechanisms, risk analyses, recovery, and information security.

ASSESSMENT:

Coursework (test/assignments)	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 2

COURSE CODE: INFO 3420

COURSE TITLE: PROGRAMMING LANGUAGES

NUMBER OF CREDITS: 4

PREREQUISITE: INFO 2420 OR COMP 2500

COURSE DESCRIPTION: The aim of this course is to provide a conceptual framework that will enable students to understand already-learned programming languages more deeply and to learn new languages effectively as they will require skills in adopting new programming languages. Students will gain an understanding of the fundamental concepts and design issues of programming languages and become familiar with the major programming paradigms.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: EVENING UNIVERSITY - SEMESTER 3

COURSE CODE: INFO 3425

COURSE TITLE: PROFESSIONAL ETHICS AND LAW

NUMBER OF CREDITS: 4

PREREQUISITE: INFO 2400

COURSE DESCRIPTION: This course provides an overview of current ethical standards and practices in the computing and information technology area. Students will develop an awareness of both the ethical and legal issues facing the computerized workplace. The course also introduces the student to policy development in computer technology related environments.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: NOT OFFERED IN 2014/2015

COURSE CODE: INFO 3430

COURSE TITLE: INTRODUCTION TO SCIENTIFIC COMPUTING

NUMBER OF CREDITS: 4

PREREQUISITE: INFO 2405 AND INFO 2420

COURSE DESCRIPTION: This course provides a broad overview of numerical methods for students in computationally oriented disciplines who need to solve mathematical problems that arise in many fields, especially science and engineering. It focuses on the motivation and ideas behind the numerical algorithms and on the use of professionally written mathematical software for obtaining solutions whenever possible.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 2 AND EVENING UNIVERSITY - SEMESTER 2

COURSE CODE: INFO 3435

COURSE TITLE: E-COMMERCE

NUMBER OF CREDITS: 4

PREREQUISITE: INFO 2400

COURSE DESCRIPTION: This course provides broad coverage of e-commerce systems. It covers the various e-commerce business models and e-commerce payment systems.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 1 AND EVENING UNIVERSITY - SEMESTER 3

COURSE CODE: INFO 3440

COURSE TITLE: SOFTWARE ENGINEERING

NUMBER OF CREDITS: 4

PREREQUISITES: INFO 2400 AND INFO 2420

COURSE DESCRIPTION: This course introduces students to the fundamental concepts and techniques of software engineering. It examines various approaches for developing a software product, from the initial request for development right down to the delivery of the final product to the customer. All of these approaches involve steps such as determining the user requirements, structuring these requirements in the form of a requirements specification document, and designing, coding and testing the software. These aspects of software engineering form the major component of the course. Since project management skills are crucial for the successful development of a software product, the course also covers project management techniques as they pertain to software engineering. This includes the topics of project scheduling, software estimation, and risk management

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 2

EVENING UNIVERSITY – SEMESTER 2

COURSE CODE: INFO 3490

COURSE TITLE: PROJECT

NUMBER OF CREDITS: 4

PREREQUISITES: INFO 2400 AND INFO 2420

COURSE DESCRIPTION: This course requires the student to implement an IT project of an appropriate scope. The student will liaise with an academic supervisor. Several lectures will be given on project management and research methodologies.

ASSESSMENT:

Coursework	80%
Presentation	20%

(NO FINAL WRITTEN EXAMINATION)

LEVEL: III

SEMESTER: NOT OFFERED --1

COURSE CODE: INFO 3500

COURSE TITLE: USER INTERFACE DESIGN AND DEVELOPMENT

NUMBER OF CREDITS: 4

PREREQUISITES: INFO 2400

COURSE DESCRIPTION: Human-computer Interaction is an interdisciplinary field that integrates theories and methodologies from Computer Science, cognitive psychology, design, and many other areas. The course is intended to introduce the student to the basic concepts of Human-computer Interaction. It will cover the basic theory and methods that exist in the field. The course will unfold by examining design and evaluation. Case studies are used throughout the readings to exemplify the methods presented and to lend a context to the issues discussed. The students will gain principles and skills for designing and evaluating interactive systems.

Among the topics studied are the design and evaluation of effective user interaction designs, including principles and guidelines for designing interactive systems. Additionally, much emphasis is given to the development process for user interaction designs as an integral, but different, part of interactive software development. User interaction development activities include requirements and task analysis, usability specifications, design, prototyping, and evaluation. It is a goal of this course to help students realize that user interface development is an ongoing process throughout the full product life cycle, and developing the human-computer interface is not something to be done at the last minute, when the "rest of the system" is finished. During the course the students will be involved with a real problem solving/software development project. Students will be required to gather functional requirements, identify the problem, form a solution and present this solution.

ASSESSMENT:

Coursework	70%
Final Examination - One 2-hour written paper	30%

LEVEL: III

SEMESTER: 2

COURSE CODE: INFO 3510

COURSE TITLE: NETWORKING FOR PROFESSIONALS

NUMBER OF CREDITS: 4

PREREQUISITES: INFO 2500

COURSE DESCRIPTION: This course introduces students to Local-Area-Network (LAN) switching equipment, protocols and topologies. Students learn about Classless Routing, RIP V2, Single Area OSPF, EIGRP, the Spanning Tree Protocol and differentiate between cut-through and store-and-forward LAN switching. Lab activities include implementing VLSM, RIP V2, OSPF, EIGRP, and trunking and routing VLANs. Students create virtual LANs and analyze various LAN segmentations.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: INFO 3520

COURSE TITLE: DATABASE ADMINISTRATION FOR PROFESSIONALS

NUMBER OF CREDITS: 4

PREREQUISITES: INFO 2415

COURSE DESCRIPTION: This course introduces students to Database Administration. Students taking the course should have a basic understanding of how database concepts and SQL commands. The course provides practical experience in setting up and maintaining a MySQL/Oracle server, including backing up, recovery, configuration and optimization strategies.

This course is suitable for delegates intending to sit the 'Certified MySQL DBA I' and 'Certified MySQL DBA 2' examinations.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: NOT OFFERED 2014/2015

COURSE CODE: INFO 3530

COURSE TITLE: GEOGRAPHIC INFORMATION SYSTEMS FOR BUSINESS

NUMBER OF CREDITS: 4

PREREQUISITES: INFO 2415

COURSE DESCRIPTION: This course introduces students to the subject of geographic information systems. Students are introduced to the characteristics of geographical data including coordinate systems and projections. Spatial data models are presented with a view of laying the foundation to understanding the usefulness of Geographic Information Systems (GIS) in organizations that use geographic data. Database structure and design are delivered in the context of managing spatial records and analysis techniques for interrogating such data are discussed. GIS is also presented as a tool used to effect business process re-engineering; the type of Information System enhancement which can significantly alter the productivity of business positively.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 1

COURSE CODE: JAPA 1003

COURSE TITLE: LEVEL 1A JAPANESE

NUMBER OF CREDITS: 2

PREREQUISITES: NONE

COURSE DESCRIPTION: This is a beginners' Japanese course that introduces students to the Japanese language and some aspects of Japanese culture and daily life. Classes are conducted as far as possible in the target language to give students maximum exposure to the new language and culture. During the course, students develop an ability to communicate in Japanese in basic situations relating to their personal lives. The course meets for four hours per week for 13 weeks. In addition, class contact time should be supplemented by two hours of independent study for each contact hour.

ASSESSMENT:

In-course testing: 100%:

40% [mid-semester];

40% [end of semester];

20% [two assignments]

LEVEL: I

SEMESTER: 2

COURSE CODE: JAPA 1004

COURSE TITLE: LEVEL 1B JAPANESE

NUMBER OF CREDITS: 2

PREREQUISITES: JAPA 1003/1A JAPANESE OR EQUIVALENT

COURSE DESCRIPTION: JAPA 1004 is the second part of the introductory Japanese programme continuing the work begun in JAPA 1003/1A Japanese. Classes are conducted as far as possible in the target language to give students maximum exposure to the language and culture during class time. During the course, students develop an ability to communicate in Japanese in basic situations relating to their personal lives. The course meets for four hours per week for 13 weeks. In addition, class contact time should be supplemented by two hours of independent study for each contact hour.

ASSESSMENT:

In-course testing: 100%:

40% [mid-semester];

40% [end of semester];

20% [two assignments]

LEVEL: 0 (PRELIMINARY)

SEMESTER: 1

COURSE CODE: MATH 0100

COURSE TITLE: PRE-CALCULUS

NUMBER OF CREDITS: 0

PREREQUISITES: CSEC MATHEMATICS OR EQUIVALENT

COURSE DESCRIPTION: The following topics will be treated with the minimum of rigour, but with emphasis on the understanding of the concepts involved.

Algebra: Elementary logic, number sets, real numbers, functions, inequalities, complex numbers, surds, logarithms, linear and quadratic equations, finite series, binomial theorem, mathematical induction.

Trigonometry: Trigonometric functions and their inverses, addition and multiplication formulae, identities, trigonometric equations, solutions of triangles.

ASSESSMENT:

Coursework - Test

40%

Final Examination - One 3-hour paper 60%

LEVEL: 0 (PRELIMINARY)

SEMESTER: 2

COURSE CODE: MATH 0110

COURSE TITLE: CALCULUS AND ANALYTICAL GEOMETRY

NUMBER OF CREDITS: 0

PREREQUISITES: CSEC MATHEMATICS OR EQUIVALENT

COURSE DESCRIPTION: The following topics will be treated with the minimum of rigour, but with emphasis on the understanding of the concepts involved. Calculus:

Functions, limits, continuity, differentiability, higher derivatives and application, anti-derivatives, Simpson's rule and the integral. Elementary methods of integration and solutions of simple differential equations. Analytical Geometry: Equations and representations of elementary plane curves. Applications of calculus to determine equations of tangents, normals and in the computation of areas and volumes.

ASSESSMENT:

Coursework - Test

40%

Final Examination - One 3-hour paper 60%

LEVEL: I - UNDERGRADUATE SERVICE COURSE
SEMESTERS: 1, 2
COURSE CODE: MATH 1115
COURSE TITLE: FUNDAMENTAL MATHEMATICS FOR THE GENERAL SCIENCES I
NUMBER OF CREDITS: 3
PREREQUISITES: NONE
NB: STUDENTS WITH ANY TWO UNITS OF CAPE LEVEL MATHEMATICS (OR EQUIVALENT), AGRI 1003 (MATHEMATICS FOR SCIENTISTS) AND/OR MATH 0100 (PRE-CALCULUS) WILL NOT RECEIVE CREDITS FOR THIS COURSE.

COURSE DESCRIPTION: Algebra: Types of numbers, scientific notation, precision and accuracy, manipulating numbers, factorials, inequalities, simultaneous equations, indices, partial fractions, quadratic equations, remainder theorem, solving polynomial equations. Functions: Logarithms, exponentials, inverse functions. Trigonometry: Trigonometric functions and their graphs, common identities, solution of trigonometric equations. Coordinate Geometry: gradients and intercepts, extrapolation techniques, linear regression. Statistics: Introduction to descriptive statistics, frequency distribution, mean, median, mode and standard deviation, measures of central tendency, normal and binomial distributions, chi-squared test.

ASSESSMENT:

Coursework	40%
Final Examination: One 2-hour written paper	60%

LEVEL: I - UNDERGRADUATE SERVICE COURSE
SEMESTERS: 1, 2
COURSE CODE: MATH 1125
COURSE TITLE: FUNDAMENTAL MATHEMATICS FOR THE GENERAL SCIENCES II
NUMBER OF CREDITS: 3
PREREQUISITES: EITHER CSEC MATHEMATICS (OR EQUIVALENT) OR MATH 1115
COURSE DESCRIPTION: Differentiation: Functions of a single real variable, polynomials, exponentials and basic trigonometric functions. Product, quotient and 'function of a function' rules. Implicit differentiation. Finding and classifying stationary points. Basic curve sketching for quadratic, polynomial, exponential and logarithmic functions. Application to velocity, acceleration, deceleration, distance traveled. Calculating rates of change. Basic rules for partial differentiation for functions of more than one real variable. Taylor series for a function of a single real variable. Limits: Concept of a limit. Evaluation of basic limits. Errors: precision of calculations, round-off errors. Integration: Definition as reverse of differentiation. Definite integrals and areas under curves. Integration by substitution ($u=f(x)$), integration by parts, integration by partial fractions. Calculation of work done. Differential Equations (Topic to be motivated by models of physical systems): First order separable and linear equations. Second order linear with constant coefficients - complementary functions and particular integrals

ASSESSMENT:

Coursework	40%
Final Examination: One 2-hour written paper	60%

LEVEL: 2
SEMESTER: II
COURSE CODE: MATH 1141
COURSE TITLE: INTRODUCTORY LINEAR ALGEBRA AND ANALYTICAL GEOMETRY
NUMBER OF CREDITS: 3
PREREQUISITES: TWO UNITS OF CAPE PURE MATHEMATICS, OR EQUIVALENT

COURSE DESCRIPTION: Vectors in two and three dimensions, the dot product and cross – product. Applications to geometry of lines and planes. Complex numbers as vectors. De Moivre's Theorem; basic algebra of matrices of any order. Determinants. Solutions of systems of linear equations

ASSESSMENT:

Coursework	40%
Final Examination: One 2-hour written paper	60%

LEVEL: I

SEMESTER: 1

COURSE CODE: MATH 1142

COURSE TITLE: CALCULUS I

NUMBER OF CREDITS: 3

PREREQUISITES: TWO UNITS (1&2) OF CAPE PURE MATHEMATICS OR MATH 0100 AND MATH 0110, OR EQUIVALENT

COURSE DESCRIPTION: Functions; elementary functions; definition of derivative and rules of differentiation. Applications to maxima, minima and curve tracing; Taylor and Maclaurin Series. Evaluation of indefinite integrals using substitution, integration by parts and partial fractions. Length of curve and areas of regions. First order differential equations and second order differential equations with constant coefficients.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 2

COURSE CODE: MATH 1151

COURSE TITLE: CALCULUS II

NUMBER OF CREDITS: 3

PREREQUISITES: TWO UNITS (1&2) OF CAPE PURE MATHEMATICS OR MATH 0100 AND MATH 0110. OR EQUIVALENT

COURSE DESCRIPTION: Neighbourhoods and bounds of a function; definition of limit; properties of limits; continuity; the Intermediate Value Theorem; The derivative; Rolle's Theorem; The Mean Value Theorem; L'Hospital's Rule. The Riemann Integral : Fundamental Theorem of the Calculus. Partial Derivatives. Double integrals.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: I

SEMESTER: 1

COURSE CODE: MATH 1152

COURSE TITLE: SETS AND NUMBER SYSTEMS

NUMBER OF CREDITS: 3

PREREQUISITES: TWO UNITS OF CAPE PURE MATHEMATICS, OR MATH 0100 AND MATH 0110 OR EQUIVALENT

COURSE DESCRIPTION: Set Theory. Elementary mathematical logic: logical statements, logical operations AND, OR and NOT. Illustration using Venn diagrams, Algebra of Sets. Relations and Binary operation Properties of the natural numbers; basic arithmetic of complex numbers. The polar and exponential forms of a complex number.

ASSESSMENT:

Coursework	40%
Final Examination: One 2-hour written paper	60%

LEVEL: I

SEMESTER: 1

COURSE CODE: MATH 1192

COURSE TITLE: MATHEMATICAL SOFTWARE I - A PRIMER ON EXCEL

NUMBER OF CREDITS: 1

PREREQUISITES: CAPE PURE MATHEMATICS (UNITS 1 & 2) OR MATH 1125 OR EQUIVALENT.

COURSE DESCRIPTION: This course will enhance the student's knowledge of Microsoft Excel, which will be used to solve frequently encountered mathematics and statistics problems.

Microsoft Excel will be introduced as data management software, and popular features of Excel such as formatting, editing, chart types and 'autofill' will be covered at the beginning of the course. The student will later be introduced to statistical tools in Excel which assist in solving problems in inferential statistics. An introduction to the Visual Basic Editor and programming in Visual Basic is then offered to the student.

Teaching will take place entirely in weekly interactive lab sessions where the emphasis will be on active learning. Assessment will be based on coursework examinations and several lab assignments.

ASSESSMENT:

Coursework	100%
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LEVEL: I

SEMESTER: 2

COURSE CODE: MATH 1193

COURSE TITLE: MATHEMATICAL SOFTWARE II - A PRIMER ON MAPLE

NUMBER OF CREDITS: 1

PREREQUISITES: CAPE PURE MATHEMATICS (UNITS 1 & 2) OR MATH 1125 OR EQUIVALENT.

COURSE DESCRIPTION: This course covers Maple software, which can be used to solve frequently encountered mathematics problems. Maple is a symbolic mathematical package with a wide range of applications. In this course, problem solving in algebra, calculus and differential equations will be covered. Maple's word processing features will be shown to students, who will be expected to produce scientific documents using the Maple word processor. An introduction to the Maple programming language is also included in this module.

Teaching will take place entirely in weekly interactive lab sessions where the emphasis will be on active learning. Assessment will be based on coursework examinations and several lab assignments

ASSESSMENT:

Coursework	100%
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LEVEL: I

SEMESTER: 1 AND 2

COURSE CODE: MATH 1194

COURSE TITLE: MATHEMATICAL SOFTWARE III - A PRIMER ON MATLAB

NUMBER OF CREDITS: 1

PREREQUISITES: CAPE PURE MATHEMATICS (UNITS 1 & 2) OR MATH 1125 OR EQUIVALENT.

COURSE DESCRIPTION: MATLAB, which stands for Matrix Laboratory, is a software package for high-performance numerical computation and visualization. It provides an interactive environment with hundreds of built-in functions for technical computation, graphics and animation, while providing easy extensibility with its own high-level programming language.

This course prepares the student to understand and properly apply MATLAB in analyzing and solving problems without a previous knowledge of either MATLAB or computer programming. It first introduces the student to the most useful and easily accessible features of MATLAB. Students will be guided through the MATLAB environment and shown basic functionalities of the package such as the use of MATLAB as a calculator. Online documentation and Help features will be delineated to the students, followed by interactive computation, including but not limited to matrices and vectors. The use of built-in functions and a thorough study on plots, graphics, and animations will be performed. The latter part of the course introduces the student to the programming language of MATLAB, particularly as it relates to the creation of user-designed functions.

Teaching will take place entirely in weekly interactive lab sessions where the emphasis will be on active learning. Assessment will be based on coursework examinations and several lab assignments

ASSESSMENT:

Coursework	100%
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LEVEL II

SEMESTER 1

COURSE CODE: MATH 1201

COURSE TITLE: APPLIED MATHEMATICS I

NUMBER OF CREDITS: 3

PREREQUISITES: CAPE PURE MATHEMATICS (UNITS 1 & 2) OR GCE A-LEVEL MATHEMATICS OR EQUIVALENT.

COURSE DESCRIPTION: This course will cover the basic concepts and techniques of vectors and some common topics in statics. It will provide undergraduate students with a good understanding of the fundamental laws and associated applications of vectors, as well the necessary tools used in solving elementary common problems in vectors and statics.

ASSESSMENT:

Coursework:	50%
Final Examination -one 2-hour written paper	50%

LEVEL II

SEMESTER 2

COURSE CODE: MATH 1202

COURSE TITLE: APPLIED MATHEMATICS II

NUMBER OF CREDITS: 3

PREREQUISITES: CAPE PURE MATHEMATICS (UNITS 1 & 2) OR GCE A-LEVEL MATHEMATICS OR EQUIVALENT.

COURSE DESCRIPTION: This course will cover the basic concepts and techniques of Dynamics, mostly particle dynamics. It will provide students with a good understanding of the laws and associated applications of particles in motion, as well as supply the necessary tools used in solving elementary common problems in the field.

ASSESSMENT:

Coursework:	50%
Final Examination -one 2-hour written paper	50%

LEVEL: II

SEMESTER: : 1- EVENINGS - COURSE CODE: MATH 2100

COURSE TITLE: ABSTRACT ALGEBRA

NUMBER OF CREDITS: 4

PREREQUISITE: MATH 1140 OR MATH1141 AND MATH1152

COURSE DESCRIPTION: Fundamental concepts in Set Theory, and philosophy of sets. Relations and Functions: Algebra of permutations, Elementary Theory of Groups and Rings, group homomorphisms. Development of the number systems. Properties of the Natural Numbers, the Integers, the Rationals, the Reals and the Complex numbers. Infinite sets and their cardinalities. Transfinite arithmetic.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 2 – EVENINGS

COURSE CODE: MATH 2110

COURSE TITLE: LINEAR ALGEBRA

NUMBER OF CREDITS: 4

PREREQUISITE: MATH 1140 OR MATH 1141 AND MATH 1152

COURSE DESCRIPTION: Abstract vector spaces: Linear dependence and basis and Linear transformations and their matrices; Elementary row transformations and elementary matrices, row equivalence and rank. Solutions of systems of linear equations. Determinants, The Gram-Schmidt Orthogonalisation Process; Characteristic roots and vectors. Similarity. Diagonalisation. Quadratic forms and their reduction; The Cayley-Hamilton Theorem.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 1 – EVENINGS

COURSE CODE: MATH 2120

COURSE TITLE: ANALYSIS & MATHEMATICAL METHODS I

NUMBER OF CREDITS: 4

**PREREQUISITES: MATH 1140 AND MATH 1150 OR
MATH 1141, MATH 1142, MATH 1151 AND
MATH 1152**

COURSE DESCRIPTION: Limits of sequences of real numbers. Convergence of series of real terms. Tests for convergence of positive series. Comparison, quotient, ratio, nth root, integral tests. Absolute convergence. The alternating series test.

Power series: Functions of two (or more) real variables; limits, continuity, partial derivatives, differentiability, stationary points, Lagrange multipliers, Riemann double integral, change of variables and the Jacobian, polar, spherical and cylindrical coordinates, vector calculus, line, surface and volume integrals. Stokes and Gauss Divergence theorems.

ASSESSMENT:

Coursework 40%

Final Examination - One 2-hour written paper 60%

LEVEL: II

SEMESTERS: 1 AND 2 – EVENINGS

COURSE CODE: MATH 2140

COURSE TITLE: INTRODUCTION TO PROBABILITY

NUMBER OF CREDITS: 4

**PREREQUISITES: MATH 1140 OR MATH 1150 OR
MATH 1141 AND MATH 1152 OR MATH 1142 AND
MATH 1151**

COURSE DESCRIPTION: Basic Probability rules, including Bayes's rule, theorem on total probability; Conditional Probability; Random Variable; Mathematical Expectation; means, variance; Covariance of variables. Variance of sum of n random variables. Chebychev's is theorem; Standard density functions and mass functions; Moment generating function. Random sample; some important statistics, sampling distributions. Central limit theorem.

ASSESSMENT:

Coursework 40%

Final Examination - One 2-hour written paper 60%

LEVEL: II

SEMESTERS: NOT OFFERED IN 2014/2015

COURSE CODE: MATH 2150

COURSE TITLE: INTRODUCTION TO STATISTICS

NUMBER OF CREDITS: 4

PREREQUISITES: MATH 2140 OR MATH 3110

COURSE DESCRIPTION: Theory of Estimation: Ideas of point estimation; mean-squared error; interval estimation; method of maximum likelihood; Cramer-Rao Inequality. Hypothesis Testing: Type I and Type II errors; tests concerning means, variances and proportions; Goodness of fit Tests; non-parametric tests.

Ideas of Regression Analysis including simple linear Regression in detail; Experimental Design and the Analysis of Variance (Completely Randomised Design, Block Designs, Latin Squares, Factorial Designs).

ASSESSMENT:

Coursework 40%

Final Examination - One 2-hour written paper 60%

LEVEL: II

SEMESTER: 2 EVENINGS

COURSE CODE: MATH 2160

**COURSE TITLE: ANALYSIS & MATHEMATICAL
METHODS II**

NUMBER OF CREDITS: 4

**PREREQUISITES: MATH 1140 AND MATH 1150 OR
MATH 1141, MATH 1142, MATH 1151 AND
MATH 1152**

COURSE DESCRIPTION: The Laplace transform and applications to differential and integral equations. Ordinary linear differential equations, Wronskian, linear independence. Existence and uniqueness (no proofs). Classification of points of second-order differential equations. Series solutions about ordinary and regular singular points. Fourier series. Solution of the two-dimensional heat, wave and Laplace equation using the separation of variables technique. Functions of a single complex variable, continuity, differentiability, analyticity and the Cauchy-Riemann equations; power series and contour integrals, Cauchy's theorem and integral formulae. Singularities and their classification. Residue theorem and its application to the evaluation of definite integrals.

ASSESSMENT:

Coursework 40%

Final Examination - One 2-hour written paper 60%

LEVEL: II

SEMESTER: 1

COURSE CODE: MATH 2170

COURSE TITLE: INTRODUCTION TO COMBINATORICS

NUMBER OF CREDITS: 4

PREREQUISITE: MATH 1140 OR MATH 1141 AND MATH 1152

COURSE DESCRIPTION: Permutations and Combinations. The Inclusion - Exclusion Principle. Linear equations with unit coefficients; Recurrence relations; Generating functions; Geometry of the plane; Colouring problems; Combinatorial probability. Partitions of integer; Random walks; Designs.

ASSESSMENT:

Coursework	25%
Final Examination - One 2-hour written paper	75%

LEVEL: II

SEMESTER: 2

COURSE CODE: MATH 2180

COURSE TITLE: INTRODUCTION TO OPTIMIZATION

NUMBER OF CREDITS: 4

PREREQUISITE: MATH 1140 OR MATH 1141 AND MATH 1152

COURSE DESCRIPTION: Graphs and Digraphs; Ranking; Shortest Path; Communication Networks; Convex sets; Linear programming; Simplex Method; Theory of games.

ASSESSMENT:

Coursework Examination	25%
Final Examination - One 2-hour written paper	75%

LEVEL: II

SEMESTER: 1

COURSE CODE: MATH 2190

COURSE TITLE: PROBABILITY AND STATISTICS I

NUMBER OF CREDITS: 4

PREREQUISITE: MATH 1140 OR MATH 1150 OR MATH 1141 AND MATH 1152 OR MATH 1142 AND MATH 1151

N.B. STUDENTS TAKING MATH 2190 CANNOT ALSO GET CREDIT FOR MATH 2140 AND MATH 2150

COURSE DESCRIPTION: Foundations of Probability, basic discrete and continuous distributions; expectation. Joint distribution of several discrete and continuous random variables. Covariance and correlation. The Central Limit Theorem. Basic ideas of point and Interval Estimation. Maximum likelihood. Estimation Type I and Type II errors, significance level and power. Hypothesis of means, variances and proportions. Regression Analysis (mainly simple linear regression). Experimental Design. One and two-way ANOVA. Basic ideas of sampling from finite populations.

Comment:

MATH 2190 is a four (4) credit alternative to both MATH 2140 and MATH 2150 and is primarily aimed at non-Mathematics Majors.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour paper	60%

LEVEL: II

SEMESTER: 1

COURSE CODE: MATH 2210

COURSE TITLE: MATHEMATICS OF FINANCE

NUMBER OF CREDITS: 4

PREREQUISITE: MATH 1140 AND MATH 1150 OR MATH 1141, MATH 1142, MATH 1151 AND MATH 1152

COURSE DESCRIPTION: Introduction to actuarial science; measurement of interest; solutions of problems in interest, basic annuities; more general annuities, yield rates, amortization schedules and sinking funds, bonds and other securities, practical applications.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 2

COURSE CODE: MATH 2220

COURSE TITLE: INTRODUCTION TO ACTUARIAL MATHEMATICS

NUMBER OF CREDITS: 4

PREREQUISITES: (I) MATH 2140 OR MATH 3110, (II) MATH 2210

COURSE DESCRIPTION: Survival distributions and life tables, utility theory, life insurance, life annuities, commutation functions, net premiums and premium reserves, introduction to multiple life functions.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: II

SEMESTER: 1

COURSE CODE: MATH 2270

COURSE TITLE: MULTIVARIABLE CALCULUS

NUMBER OF CREDITS: 3

PREREQUISITES: MATH 1142 AND MATH 1151

COURSE DESCRIPTION: This is a one-semester, three-credit course at the intermediate level in multivariate calculus intended for students who have satisfactorily completed six credits in elementary differential and integral calculus. For this reason, MATH 1142 - Calculus I and MATH 1151 - Calculus II (or their equivalents) are listed as prerequisite courses.

In this course, vector notation is introduced and utilized for modelling and solving problems in multidimensional space. The first section of the course deals with the Calculus of functions of several real variables. The fundamental ideas of limits and continuity are introduced, followed by the technique of partial differentiation via the chain rule and its related applications. One key application covered is the use of the method of Lagrange multipliers for the determination of constrained extrema. This is followed by the calculus of vectors and their description of curves and surfaces in space. Differentiation of vectors is more fully developed, extending elementary notions of differentiation to those involving multiple variables. Integration is developed to encompass double integrals and triple integrals. Finally, line and surface and volume integrals are considered. The Green's Theorem in a plane, Stokes' Theorem and the Divergence Theorem are introduced and utilized for the calculation of line, surface and volume integrals.

This course includes proofs and discussions at a level of complexity suitable for those intending to specialize in mathematics, as well as many examples and applications of the theory for those more interested in being able to make use of the theory in their various fields of interest.

ASSESSMENT:

Coursework:	50%
Final Examination - one 2-hour written paper	50%

LEVEL: II

SEMESTER: 2

COURSE CODE: MATH 2271

COURSE TITLE: ORDINARY DIFFERENTIAL EQUATIONS

NUMBER OF CREDITS: 3

PREREQUISITES: MATH1142, MATH1151 AND MATH 2273

COURSE DESCRIPTION: This is an introductory course that involves the solving of various ordinary differential equations of first and second order, as well as the solution of systems of differential equations. Methods of solution include separation of variables, various substitution techniques and use of integrating factors, undetermined coefficients, and variation of parameters. Laplace transforms, infinite series, and selected numerical methods are also incorporated. Uniqueness and existence theorems are covered.

A solid grounding in Calculus is necessary, as is knowledge of linear algebra for the theory of solution of systems of equations. For this reason, these are considered to be prerequisite courses. Prior knowledge of mathematical software (such as Maple and Matlab) will be an asset for the numerical work involved, but should not be considered to be a prerequisite.

Active learning will be achieved through assigned problem sheets allowing continuous feedback and guidance on problem solving techniques in tutorials and on myeLearning and through four major assignments.

ASSESSMENT:

Coursework	50%
Final Examination - one 2-hour written paper	50%

LEVEL: II

SEMESTER: 2

COURSE CODE: MATH 2272

COURSE TITLE: ABSTRACT ALGEBRA I

NUMBER OF CREDITS: 3

PREREQUISITES: MATH 1141 AND MATH 1152

COURSE DESCRIPTION: Students who take this course will require a basic grounding in set theory and logic. For this reason, Math 1152 is listed as a prerequisite.

This course introduces students to basic structures of abstract algebra, including groups, rings and fields. In the introduction, the focus is on binary operations and equivalence relations, which will be used throughout this course. Then groups are introduced, and students will learn that they come in many varieties. Subgroups and maps between groups are studied. In the second part of the course, rings are studied. Again, examples are studied, some familiar and some new. As usual, subrings, ideals and maps between rings are studied. After this, Euclidean rings are studied. Finally, a brief introduction to fields is given. Since cogent communication of mathematical ideas is important in the presentation of proofs, the course will emphasize clear, concise exposition. This course will therefore be useful for all students who wish to improve their skills in mathematical proof and exposition, or who intend to study more advanced topics in mathematics.

ASSESSMENT:

Coursework	50%
Final Examination - one 2-hour written paper	50%

LEVEL: II

SEMESTER: 1

COURSE CODE: MATH 2273

COURSE TITLE: LINEAR ALGEBRA I

NUMBER OF CREDITS: 3

PREREQUISITES: MATH 1141

COURSE DESCRIPTION: Students who take this course will require a solid grounding in set theory and basic logic. For this reason, MATH 1140 is listed as a pre-requisite.

The course begins with a study of abstract linear algebra which involves vector spaces and linear transformations. Formulating such an approach leads to a study of linear equations and the technique of elementary row transformations used for solving them. The concepts of rank and equivalence are introduced. Determinants are discussed in terms of permutations. The important concepts of orthogonality, eigenvalues, eigenvectors are studied. A treatise on quadratic forms, diagonalisation of matrices and the Cayley – Hamilton theorem is included. The writing of detailed proofs is incorporated throughout.

ASSESSMENT:

Coursework:	50%
Final Examination - one 2-hour written paper	50%

LEVEL: II

SEMESTER: 1

COURSE CODE: MATH 2274

COURSE TITLE: PROBABILITY THEORY I

NUMBER OF CREDITS: 3

PREREQUISITES: MATH 1142 AND MATH 1151

COURSE DESCRIPTION: This is an introductory course that approaches probability theory from two perspectives: Probability theory is a branch of mathematics. As such, we will focus on the fundamental assumptions of Probability Theory and how the main properties of Probability Measures proceed from these assumptions. Throughout the course, therefore, students will be expected to be able to derive the main results that they use. Very little will be assumed without proof.

Probability Theory is primarily concerned with modelling phenomena with uncertain outcomes. The course emphasizes this. It is most definitely not a course in Pure Mathematics.

A knowledge of calculus (including a good understanding of limits, continuity, differentiability) is assumed (hence the need for Math1150). An appreciation of the idea of proof is expected but Math1140 is not essential (though it is desirable).

The course begins with a discussion of the basic ideas of probability, including the axioms of probability, combinatorial probability, conditional probability and independence. The rest of the course focuses on distribution theory. The distribution theory of one discrete and one continuous random variable is discussed. Special attention is paid to well-known discrete and continuous distributions such as the Bernoulli, Binomial, Poisson, Exponential, Gamma and Normal. Then the distribution theory of several random variables is discussed. The idea of a statistic is introduced and the distribution theory of the mean and the sample variance is described. This leads finally to the idea of convergence in distribution and the Central Limit Theorem (without proof)

The approach taken is non-rigorous. In particular, there will be no mention of sigma algebras or of measure theory. Assessment is designed to encourage students to work continuously with the course materials. Active learning will be achieved through weekly assignments and problem sheets allowing continuous feedback and guidance on problem solving techniques in tutorials and lectures.

ASSESSMENT:

Coursework	50%
Final Examination - one 2-hour written paper	50%

LEVEL: II

SEMESTER: 2

COURSE CODE: MATH 2275

COURSE TITLE: STATISTICS I

NUMBER OF CREDITS: 3

PREREQUISITES: MATH 2274

COURSE DESCRIPTION: The course is a survey of the major ideas of inference, experimental design and statistical methods. The course may be viewed as consisting of three closely connected parts. In the first section, students are introduced to the basics of the statistical packages Minitab and R and their use in descriptive statistics. Emphasis is placed on the use of real data and both summary statistical measures and graphical descriptive devices for continuous and discrete data are discussed.

In the second section, we discuss the frequentist theory of inference, including point estimation, confidence intervals and hypothesis testing. Section three is devoted to various statistical methods. The major ones are regression models and the use of ANOVA in designed experiments. Several of the important basic designs are discussed. We also discuss methods for the analysis of discrete data, such as in contingency tables, and non-parametric procedures. A knowledge of Probability Theory I is assumed. This is needed since we derive the distributions of most statistics that are used and also discuss systematic mathematical methods for finding point estimators and constructing tests.

ASSESSMENT:

Coursework	50%
Final Examination - one 2-hour written paper	50%

LEVEL: II

SEMESTER: 1

COURSE CODE: MATH 2276

COURSE TITLE: DISCRETE MATHEMATICS

NUMBER OF CREDITS: 3

PREREQUISITES: MATH1141 AND MATH1152

COURSE DESCRIPTION: Students who take this course will require a solid foundation of most topics that are examined in the level 1 courses Math 1141 and Math 1152.

We begin with a study of methods of proofs and discrete mathematical structures. Some basic definitions in combinatorics and graph theory are given. In such a situation recurrence relations are formulated but linear type ones are solved. The solutions of various problems in enumeration are expressed in terms of recurrences.

We introduce different general network structures and the models that generate them. Some of the notations and terminology of graphs are used that would lead to established properties of networks, combinatorial designs and the efficiency of the Hungarian algorithm.

ASSESSMENT:

Coursework	50%
Final Examination - one 2-hour written paper	50%

LEVEL: II

SEMESTER: 2

COURSE CODE: MATH 2277

COURSE TITLE: INTRODUCTION TO REAL ANALYSIS I

NUMBER OF CREDITS: 3

PREREQUISITES: MATH1141, MATH1142, MATH1151

AND MATH1152 OR EQUIVALENT

COURSE DESCRIPTION: This is a classical course in analysis, providing a foundation for many other mathematical courses. Knowledge of Calculus, analytical geometry and basic set theory is required.

The course exposes students to rigorous mathematical definitions of limits of sequences of numbers and functions, classical results about continuity and series of numbers and their proofs. A major emphasis is placed on the proper use of definitions for the rigorous proof of theorems. The following topics will be covered: The real number system, topological properties of real numbers, sequences, continuity and differentiation.

ASSESSMENT:

Coursework	50%
Final Examination - one 2-hour written paper	50%

LEVEL: III

SEMESTER: 2

COURSE CODE: MATH 3240

COURSE TITLE: REAL ANALYSIS

NUMBER OF CREDITS: 4

PREREQUISITE: MATH 2120

COURSE DESCRIPTION: Properties of real numbers, real line topology (open sets, cluster points, compactness, connectedness). Introduction of topological spaces. Metric space. Continuity and homeomorphism. Point wise and uniform convergence of sequence and series of real valued functions.

ASSESSMENT:

Coursework	25%
Final Examination - One 2-hour written paper	75%

LEVEL: III

SEMESTER: 1

COURSE CODE: MATH 3250

COURSE TITLE: FLUID DYNAMICS I

NUMBER OF CREDITS: 4

PREREQUISITES: MATH 2120 AND MATH 2160

COURSE DESCRIPTION: Orthogonal Curvilinear Coordinates: Cartesian, Cylindrical and Spherical. Introduction to Tensors. Kinematics and Equations of motion for Inviscid fluids. Simple Inviscid Flows. Axisymmetric 3-D flows and Stokes stream function. Viscous flows: Navier-Stokes equations and some exact solutions.

ASSESSMENT:

Coursework	40%
Final Examination - one 2-hour written paper	60%

LEVEL: III

SEMESTER: NOT OFFERED IN 2014/2015

COURSE CODE: MATH 3272

COURSE TITLE: ABSTRACT ALGEBRA II

NUMBER OF CREDITS: 3

PREREQUISITES: MATH 2272 AND MATH 2273

COURSE DESCRIPTION: Students who take this course will require knowledge of the basic concepts of Algebra. Thus, ABSTRACT ALGEBRA I and LINEAR ALGEBRA are both listed as pre-requisites.

The first part of the course continues the treatment of Groups started in ABSTRACT ALGEBRA I. Some important subgroups are defined, and the important concept of a group acting on a set is introduced. The power of group actions is demonstrated by using the technique to prove several key results about finite groups. The investigation of finite groups is concluded with the famous Sylow Theorems.

The construction of the (finite) direct product should be familiar to any mathematician, and so the course proceeds to do this. Abelian groups are discussed briefly; a statement of the Decomposition Theorem for finite groups is given. The section on Group Theory is concluded with a discussion of subgroup series – an important technique in determining the structure of a group. The Jordan-Holder Theorem is proved, and an important class of groups - the solvable groups are introduced.

The course then shifts focus to one of the most important examples of a Euclidean ring – the polynomial ring over a field. (Euclidean rings were introduced in ABSTRACT ALGEBRA I.) The fundamental results that transfer from Euclidean rings are restated in context, and the idea of irreducibility is introduced. The course then specialises to the rational field, and several key results concerning polynomials over the rationals are proved.

The course naturally progresses to investigate the existence of roots of polynomials over their base field. The extremely important construction of the algebraic extension containing the root of a polynomial is done in detail, with several interesting and motivating examples. The course continues to prove the existence of a splitting field, and concludes with a statement of the Fundamental Theorem of Algebra. Straightedge and compass constructions will be presented as an application if time permits.

Since cogent communication of mathematical ideas is important in the presentation of proofs, the course will emphasize clear, concise exposition. This course will therefore be useful for all students who wish to improve their skills in mathematical proof and exposition, or who intend to study more advanced topics in mathematics.

ASSESSMENT:

Coursework 50%

Final Examination - one 2-hour written paper 50%

LEVEL: III

SEMESTER: NOT OFFERED IN 2014/2015

COURSE CODE: MATH 3273

COURSE TITLE: LINEAR ALGEBRA II

NUMBER OF CREDITS: 3

PREREQUISITES: MATH 2272, MATH 3272 AND

MATH 2273

COURSE DESCRIPTION: Students who take this course will require knowledge of the basic and some advanced concepts of Algebra. Thus, ABSTRACT ALGEBRA I & II and LINEAR ALGEBRA I are both listed as prerequisites.

The first part of the course continues the treatment of Vector Spaces and Linear Transformations started in LINEAR ALGEBRA I. The Rank-Nullity Theorem is stated and proved. Linear transformations are then viewed as elements of a larger algebraic structure, the algebra. In this formal context, the idea of polynomials of linear transformations is developed.

The theory of eigenvalues and eigenvectors is fundamental to Linear Algebra, and the course proceeds to study the same in detail. The connection between polynomials of matrices and their eigenvalues is explored and the celebrated Cayley-Hamilton Theorem is proved.

At this point, the students become aware that an algorithm for writing a matrix in a standard form, where the eigenvalues of the matrix may be easily obtained, is desirable. With this motivation, the existence and uniqueness of the Jordan Normal Form is proved.

Techniques for computing the Jordan Normal Form are presented. The applications and limitations of the Jordan Normal Form are discussed.

The module is a natural generalisation of a vector space, and any student of advanced Linear Algebra should be familiar with the structure. The course therefore proceeds to define the module, giving motivating examples. The fundamental theorems are proved, drawing parallels with the algebraic structures which the students have already met. The existence and uniqueness of the Rational Canonical Form are stated here. Proofs may be sketched, but are not examinable.

The course then turns to vector spaces over the complex numbers, where the concept of an inner product is introduced. The properties of the inner product are discussed, and the fundamental definitions of unitary and Hermitian (in the context of linear transformations and matrices) are made. The base field is then further restricted to the reals, and the results developed are specialised to this case. An elegant proof of the Spectral Theorem for real symmetric matrices is given. The material developed here is applied to the study of quadratic forms.

The true power of Linear Algebra lies in its adaptability to computational tasks. As an illustration of this, the Singular Value Decomposition is introduced and its applications are discussed.

Traditionally, the tools of Linear Algebra have been heavily used in geometrical applications. As a demonstration of this, the material developed on quadratic forms is used to investigate the nature of quadric surfaces.

Since cogent communication of mathematical ideas is important in the presentation of proofs, the course will emphasize clear, concise exposition. This course will therefore be useful for all students who wish to improve their skills in mathematical proof and exposition, or who intend to study more advanced topics in mathematics.

ASSESSMENT:

Coursework	50%
Final Examination - one 2-hour written paper	50%

LEVEL: III

SEMESTER: NOT OFFERED IN 2014/2015

COURSE CODE: MATH 3274

COURSE TITLE: SET THEORY

NUMBER OF CREDITS: 3

PREREQUISITES: MATH 2272 AND MATH 2277

COURSE DESCRIPTION: Students who take this course will require knowledge of the basic concepts of Algebra. They will also be required to have a solid grounding in elementary set theory and basic logic. Thus, ABSTRACT ALGEBRA I is listed as a prerequisite.

The first part of the course involves axiomatic set theory, which includes philosophy of sets. The language of set theory is used to describe representations of relations and functions. A fundamental approach to concepts in set and the algebraic structures of groups, rings and fields is utilized to develop number systems. These systems include the natural numbers, integers, rationals, reals and complex numbers. The course proceeds onto a treatise on infinite sets and on the different cardinal numbers that lead to transfinite arithmetic. Axiom of Choice and its equivalent representations are then introduced, as well as point-set topology.

Since cogent communication of mathematical ideas is important in the presentation of proofs, the course will emphasize clear, concise exposition. This course will therefore be useful for all students who wish to improve their skills in mathematical proof and exposition, or who intend to study more advanced topics in mathematics.

ASSESSMENT:

Coursework	50%
Final Examination - one 2-hour written paper	50%

LEVEL: III

SEMESTER: NOT OFFERED IN 2014/2015

COURSE CODE: MATH 3275

COURSE TITLE: INTRODUCTION TO COMPLEX ANALYSIS

NUMBER OF CREDITS: 3

PREREQUISITES: MATH 2277

COURSE DESCRIPTION: This course provides an introduction to the theory and application of complex variables and complex functions. The properties of elementary complex functions are outlined, and the concept of analyticity is developed in its entirety. The most fundamental theorems are stated, proved and utilized throughout. Particular emphasis is placed on the development of integral calculus in the complex plane. Practice problems will be incorporated throughout to provide concrete examples of how to apply the theory. A sound knowledge of introductory Real Analysis is required. For this reason, Analysis I is listed as a course prerequisite.

ASSESSMENT:

Coursework	50%
Final Examination - one 2-hour written paper	50%

LEVEL: III

SEMESTER: NOT OFFERED IN 2014/2015

COURSE CODE: MATH3277

COURSE TITLE: INTRODUCTION TO REAL ANALYSIS II

NUMBER OF CREDITS: 3

PREREQUISITES: MATH 2277 OR EQUIVALENT

COURSE DESCRIPTION: This is the follow-up course for MATH 2277 Introduction to Real Analysis I. The course exposes students to rigorous mathematical definitions, proofs and classical results on differentiation, Riemann integration, sequences and series of functions. Major emphasis is placed on the proper use of definitions for the rigorous proof of theorems. The following topics will be covered: Differentiation, Riemann integration, sequences and series of functions and metric spaces.

Assessment is designed to encourage students to work continuously with the course materials. Active learning will be achieved through weekly problem sheets, allowing continuous feedback and guidance on problem solving techniques in tutorials and lectures, and periodic marked assignments

ASSESSMENT:

Coursework	50%
Final Examination - one 2-hour written paper	50%

LEVEL: III

SEMESTER: 2

COURSE CODE: MATH 3280

COURSE TITLE: INTRODUCTION TO MATHEMATICAL MODELLING I

NUMBER OF CREDITS: 4

PREREQUISITES: MATH 2120 AND MATH 2160

COURSE DESCRIPTION: Idea of modelling real life and situations using Mathematics. Theory of ordinary differential equations (eigenvalues and eigenvectors) and the linear stability. Application to Medicine (e.g. testing of diabetics). Predator-Prey models (struggle for survival between two species). Epidemiology (e.g. model of the spread of gonorrhea). A theory of war.

ASSESSMENT:

Coursework	25%
Final Examination - One 2-hour written paper	75%

LEVEL: III

SEMESTER: 2

COURSE CODE: MATH 3290

COURSE TITLE: COMBINATORICS

NUMBER OF CREDITS: 4

PREREQUISITE: MATH 2100 OR MATH 2110

COURSE DESCRIPTION: Permutations and Combinations; Generating functions; Recurrence Relations; The Principle of Inclusion and Exclusion; Matching polynomials and Rook polynomials; Polya's theory of counting.

ASSESSMENT:

Coursework	25%
Final Examination - One 2-hour written paper	75%

LEVEL: III

SEMESTER: 1

COURSE CODE: MATH 3310

COURSE TITLE: LIFE CONTINGENCIES

NUMBER OF CREDITS: 4

PREREQUISITES: MATH 2140, MATH 2150 AND MATH2220

COURSE DESCRIPTION: Multiple life functions, multiple decrement model; insurance models Including expenses; non-forfeiture, benefits and dividends; valuation theory for pension plans.

ASSESSMENT:

Coursework (one in-course test)	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 2

COURSE CODE: MATH 3320

COURSE TITLE: Risk Theory

NUMBER OF CREDITS: 4

PREREQUISITES: MATH 2120, MATH 2140 AND MATH2150

COURSE DESCRIPTION: Review of earlier statistical work: individual risk theory; other frequency distributors; mixed distributions; stoploss insurance; ruin theory

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

SEMESTER: 2

COURSE CODE: MATH 3321

COURSE TITLE: PRINCIPLES OF ASSET/LIABILITY MANAGEMENT FOR ACTUARIAL SCIENCE

NUMBER OF CREDITS: 4

PREREQUISITES: MATH 2210, MGMT 2023 AND MGMT 3048

COURSE DESCRIPTION: Review of Macroeconomics; characteristics of the various types of investments used to fund financial security programmes; traditional techniques of financial analysis used in selecting and managing investment portfolios. The course builds on the material in courses MGMT2023 (MS28D) and MGMT3048 (MS38H), introducing further tools and techniques of asset/liability management, general product design, as well as issues of pricing and valuation and asset management.

ASSESSMENT:

Coursework	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: MATH 3351

COURSE TITLE: REGRESSION AND TIME SERIES ANALYSIS

NUMBER OF CREDITS: 4

PREREQUISITE: MATH 2140 AND MATH 2150

COURSE DESCRIPTION: This course continue on the applied aspects of M25B such as analysis of variance, regression analysis, design of experiments and categorical data analysis, time series analysis, stochastic processes and decision theory.

ASSESSMENT:

Coursework:	
In-course Tests	30%
Assignments	10%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 2

COURSE CODE: MATH 3354

COURSE TITLE: ACTUARIAL PROJECT

NUMBER OF CREDITS: 4

PREREQUISITE: MATH2210, MATH2220 AND MATH3310

COURSE DESCRIPTION: This course requires the student to develop an actuarial solution to a problem define of an appropriate scope. The project may be application oriented where the student builds a business solution similar to what is required to solve actuarial problems. The project should require the student to draw on the skills developed across several Actuarial Science courses.

ASSESSMENT:

Coursework:

Project report 80%

Presentation 20%

LEVEL: III

SEMESTER: 1

COURSE CODE: MATH 3400

COURSE TITLE: GRAPH THEORY

NUMBER OF CREDITS: 4

PREREQUISITE: MATH 2100

COURSE DESCRIPTION: Graphs: Trees, Spanning trees Algorithms for spanning trees, and for tree-coding Planarity, Colouring Network Algorithms: Matchings, Graph polynomials Applications in Operations Research.

ASSESSMENT:

Coursework 15%

Final Examination - One 2-hour written paper 85%

LEVEL: III

SEMESTER: 1

COURSE CODE: MATH 3430

COURSE TITLE: ADVANCED ALGEBRA I - THEORY

NUMBER OF CREDITS: 4

PREREQUISITES: MATH 2100 AND MATH 2110

COURSE DESCRIPTION: Group Theory: Fundamentals, Cyclic groups, Cosets, Homomorphism Theorems; The Sylow Theorems, Theory of p-groups, Direct products of groups, Solvable groups. Ring Theory: Ideals; Quotient rings, Polynomial Rings, Euclidean Domains. Unique factorization domains; Irreducible criteria. Field Theory: Characteristics of Fields, Fields of Quotients, Sub-fields and Field Extensions, Splitting Fields, Elements of Galois Theory.

ASSESSMENT:

Coursework - (Assignment 5%) 25%

(Two written exams 10% each)

Final Examination - One 2-hour written paper 75%

LEVEL: III

SEMESTER: 2

COURSE CODE: MATH 3440

COURSE TITLE: ADVANCED ALGEBRA II - APPLICATIONS

NUMBER OF CREDITS: 4

PREREQUISITES: MATH 3430

COURSE DESCRIPTION: Straight-edge and Compass constructions; Coding theory; Polynomial and matrix representation of codes; Applied Linear Algebra; Change of basis; Linear transformation; Functions of matrices; The Jordan Canonical form of a matrix; Solution of systems of differential equations; Quadric surfaces.

ASSESSMENT:

Coursework - (Assignment 5%) 25%

(Two written exams 10% each)

Final Examination - One 2-hour written paper 75%

LEVEL: III

SEMESTER: 1

COURSE CODE: MATH 3450

COURSE TITLE: STATISTICAL THEORY I

NUMBER OF CREDITS: 4

PREREQUISITES: MATH 2120 AND EITHER MATH 2140 OR MATH3110

COURSE DESCRIPTION: Joint and Conditional Distributions; Distribution of Functions of Random variables; Moment Generating Function Techniques; Order statistics; Poisson Process; Finite Markov Chains; Introduction to Queueing Theory.

ASSESSMENT:

Coursework 40%

Final Examination - One 2-hour written paper 60%

LEVEL: III

SEMESTER: 2

COURSE CODE: MATH 3460

COURSE TITLE: STATISTICAL THEORY II

NUMBER OF CREDITS: 4

PREREQUISITES:

(I) MATH 2140 OR MATH 3110 (II) MATH 2150 OR MATH 3120 (III) MATH 2120

COURSE DESCRIPTION: Methods of finding estimators and their properties Bayesian Inference; Regression Analysis; Time Series Analysis; Testing of Hypotheses; Design of Experiments; Sampling Theory.

ASSESSMENT:

Coursework 40%

Final Examination - One 2-hour written paper 60%

LEVEL: III

SEMESTER: 2

COURSE CODE: MATH 3470

COURSE TITLE: SAMPLING THEORY

NUMBER OF CREDITS: 4

PREREQUISITES: MATH 2150 OR ECON 2006 (MINIMUM QUALITY POINTS 3.3)

COURSE DESCRIPTION: 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 and survey report writing.

Topics in the sampling of non-human populations.

ASSESSMENT:

Coursework - (in-course examinations and projects)	40%
Final Examination - One 2-hour written paper	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: MATH 3500

COURSE TITLE: COMPLEX ANALYSIS

NUMBER OF CREDITS: 4

PREREQUISITES: MATH 2120 AND MATH 2160

COURSE DESCRIPTION: Analytic functions, Elementary functions, Advanced complex integration (for many valued functions). Conformal mapping (Mobius transformation and their properties). The Schwarz Christoffel transformation.

Power series (convergence, absolute convergence and uniform convergence), sequence and series of functions. Zeros and poles of meromorphic functions. Analytic continuation.

ASSESSMENT:

Coursework	25%
Final Examination - One 2-hour written paper	75%

LEVEL: II

SEMESTER: 2

COURSE CODE: MGMT 2006

COURSE TITLE: MANAGEMENT INFORMATION SYSTEMS I

NUMBER OF CREDITS: 3

PREREQUISITES: NONE

COURSE DESCRIPTION: This course provides an overview of Management Information Systems. It describes the components of Management Information Systems and the relationship of MIS to the larger area of Organisation and Management. Information Systems Technology is covered.

ASSESSMENT:

Coursework	25%
Final Examination	75%

LEVEL: II

SEMESTER:

COURSE CODE: MGMT 2007

COURSE TITLE: INTRODUCTION TO E-COMMERCE

NUMBER OF CREDITS: 3

PREREQUISITES/CO-REQUISITE: MKTG 2080 AND MGMT 2006

COURSE DESCRIPTION: This course aims to prepare students with the requisite fundamentals to enable them to provide the business perspective/inputs to the e-commerce adoption process. Emphasis will be on the underlying commercial principles of e-commerce rather than on the technological processes. Topics to be covered include: internet demographics; internet business models; customer support strategies; security issues in e-commerce; legal issues in e-commerce; logistical challenges for Caribbean e-commerce.

ASSESSMENT:

Coursework	40%
Final Examination	60%

LEVEL:II

SEMESTERS: 2

COURSE CODE: MGMT 2008

COURSE TITLE: ORGANISATIONAL BEHAVIOUR

NUMBER OF CREDITS: 3

PREREQUISITES FOR CHEMISTRY AND MANAGEMENT STUDENTS: SOCI 1002 OR MGMT 1001 OR AGEX 1000

FOR COMPUTER SCIENCE AND MANAGEMENT STUDENTS: SOCI 1002 OR MGMT 1001 OR AGEX 1000

OR COMP 1100

DEPARTMENT RESPONSIBLE: MANAGEMENT STUDIES

COURSE DESCRIPTION: This course uses the systems approach to organisations to highlight how interrelated variables such as people, technology, task, structure and external environments impact on organisational effectiveness. Emphasis is on the nature of behavioural issues and how and why they impact on the functioning of organisations.

ASSESSMENT:

Coursework	40%
Final Examination	60%

LEVEL:

SEMESTER: 1

COURSE CODE: MGMT 2012

COURSE TITLE: QUANTITATIVE METHODS

NUMBER OF CREDITS: 3

PREREQUISITES: FOR CHEMISTRY AND MANAGEMENT

STUDENTS: ECON 1001 AND CHEM1060

FOR COMPUTER SCIENCE & MANAGEMENT STUDENTS:

ECON1002 AND MATH1140

DEPARTMENT RESPONSIBLE: MANAGEMENT STUDIES

COURSE DESCRIPTION: This course is an introductory level survey of quantitative techniques commonly used to provide insight into business decisions. The primary emphasis is on preparing the student to become an intelligent user of these techniques.

ASSESSMENT:

Coursework 25%

Final Examination 75%

LEVEL: II

SEMESTERS: 2

COURSE CODE: MGMT 2021

COURSE TITLE: BUSINESS LAW

NUMBER OF CREDITS: 3

PREREQUISITES: NONE

DEPARTMENT RESPONSIBLE: MANAGEMENT STUDIES

COURSE DESCRIPTION: The main focus of this course is the general principles of the law of contract, the law of Agency as well as other related areas of interest like the Sale of Goods Act and the Hire Purchase Act 1938 and 1954. Background material covers the role and function of the law in society, the sources of the law, the legal system etc.

ASSESSMENT:

Coursework 25%

Final Examination 75%

LEVEL: II

SEMESTERS: 2

COURSE CODE: MGMT 2023

COURSE TITLE: FINANCIAL MANAGEMENT I

NUMBER OF CREDITS: 3

PREREQUISITES:

FOR CHEMISTRY AND MANAGEMENT STUDENTS:

ACCT 1002 AND ECON 1003 OR CHEM1060

FOR COMPUTER SCIENCE & MANAGEMENT STUDENTS:

ACCT 1002 AND MATH 1140

FOR BSC ACTUARIAL STUDENTS: ECON 1002 AND

ACCT 1002

DEPARTMENT RESPONSIBLE: MANAGEMENT STUDIES

COURSE DESCRIPTION: This course is concerned with the core concepts of financial decision-making; the time-value of money, the cost of capital and trade-offs between risk and return. Students should develop a thorough understanding of these basic concepts and how to apply them in real-world examples

ASSESSMENT:

Coursework 40%

Final Examination 60%

LEVEL: II

SEMESTER: 2

COURSE CODE: MGMT 2032

COURSE TITLE: MANAGERIAL ECONOMICS

NUMBER OF CREDITS: 3

PREREQUISITES:

For Chemistry and Management Students:

ECON 1001 AND CHEM 1060

For Computer Science & Management Students:

ECON1002 AND MATH1140

DEPARTMENT RESPONSIBLE: MANAGEMENT STUDIES

COURSE DESCRIPTION: This course is concerned with the application of economic principles and methodologies to the decision-making process of the business firm operating under conditions of risk and uncertainty. Emphasis is also placed on the firm's competitive strategy.

ASSESSMENT:

Coursework 25%

Final Examination 75%

LEVEL: II

SEMESTERS: 2

COURSE CODE: MKTG 2001

COURSE TITLE: PRINCIPLES OF MARKETING

NUMBER OF CREDITS: 3

PREREQUISITES: ECON 1001 AND ACCT 1002

DEPARTMENT RESPONSIBLE: MANAGEMENT STUDIES

COURSE DESCRIPTION: This course is intended to provide students with the conceptual framework and analytical skills necessary for the analysis of markets and marketing activities of firms in a dynamic environment.

ASSESSMENT:

Coursework 40%

Final Examination 60%

LEVEL: III

SEMESTER: 1

COURSE CODE: MKTG 3000

COURSE TITLE: MARKETING MANAGEMENT

NUMBER OF CREDITS: 3

PREREQUISITES: MGMT 2003

DEPARTMENT RESPONSIBLE: MANAGEMENT STUDIES

COURSE DESCRIPTION: This course is concerned with the development of the student's marketing decision-making and students are expected to undertake a marketing project based on fieldwork.

ASSESSMENT:

Coursework	30%
Final Examination	70%

LEVEL: III

SEMESTER:

COURSE CODE: MGMT 3011

COURSE TITLE: MANAGEMENT INFORMATION SYSTEMS II (ANALYSIS AND DESIGN)

NUMBER OF CREDITS: 3

PREREQUISITES: MGMT 2006

DEPARTMENT RESPONSIBLE: MANAGEMENT STUDIES

COURSE DESCRIPTION: This course addresses the need for managers to understand the requirements for Information Systems, to participate in the design of systems and to manage the procurement of systems.

LEVEL: III

SEMESTER: 1

COURSE CODE: MGMT 3017

COURSE TITLE: HUMAN RESOURCE MANAGEMENT

NUMBER OF CREDITS: 3

PREREQUISITES: MGMT 2008

DEPARTMENT RESPONSIBLE: MANAGEMENT STUDIES

COURSE DESCRIPTION: This course provides participants with a broad overview of issues pertaining to human resource management with special reference to the Caribbean environment.

LEVEL: III

SEMESTER: 2

COURSE CODE: MKTG 3007

COURSE TITLE: MARKETING PLANNING

NUMBER OF CREDITS: 3

PREREQUISITES: MGMT 2003, MGMT 2012 AND MGMT 2023

COURSE DESCRIPTION: This intention is to equip students with the tools necessary for effective marketing planning in the public and private sectors. Analytical methods and data sources necessary in defining competition, analysing an industry and customers, and forecasting market potential is covered in depth. Students are expected to develop an actual marketing plan as a coursework project.

ASSESSMENT:

Coursework	30%
Final Examination	70%

LEVEL: III

SEMESTER: 1

COURSE CODE: MGMT 3057

COURSE TITLE: PRODUCTION AND OPERATIONS

NUMBER OF CREDITS: 3

PREREQUISITES: MGMT 2012

COURSE DESCRIPTION: This course is intended to present students with an up-to-date view of primary activities of the production/operations functions in organisations. The production/operations function is an area of management that has a profound effect on efficiency, productivity and the quality of our daily lives. Focusing on Caribbean economies, the course will examine the resources that are required in the production of goods and services and illustrate the method of their acquisition utilisation, and upkeep. The topics to be covered will be shown to apply not only to the manufacturing sector but to the service sectors as well such as banks, hospitals, etc.

ASSESSMENT:

Coursework	30%
Final Examination	70%

LEVEL: III

SEMESTER: 2

COURSE CODE: MGMT 3060

COURSE TITLE: OPERATIONS, PLANNING AND CONTROL

NUMBER OF CREDITS: 3

PREREQUISITES: MGMT 3057

COURSE DESCRIPTION: Building on the earlier course in Production and Operations Management, this course is intended to illustrate the array of planning and control techniques available to management to ensure the maximum productivity, quality, efficiency and profitability of the various operation systems involved in the production of goods and services.

ASSESSMENT:

Coursework	25%
Final Examination	75%

LEVEL: 0 (PRELIMINARY)

SEMESTER: 1

COURSE CODE: PHYS 0070

COURSE TITLE: PRELIMINARY PHYSICS I

NUMBER OF CREDITS: 0

PREREQUISITES: CSEC PHYSICS OR EQUIVALENT.

COURSE DESCRIPTION: Mechanics, Heat and Waves & Sound.

SI system and standard units, dimensional analysis, vectors (graphical analytical); Equilibrium, Newton's first law, third law, friction, motion in a straight line, average and instantaneous velocity and acceleration, accelerated motion, free fall. Relative velocity; motion in a plane, projectiles, circular motion, centripetal force, Newton's second law and applications; Gravitation, mass and weight, satellite motion; Work and kinetic energy, gravitational and elastic potential energy, dissipative and conservative forces, power, equilibrium: Stress, strain, elastic moduli, force constant, Hooke's law, simple harmonic motion (basic concepts), SHM and 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-Boltzmann 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, periodic waves, wave speed, traveling waves, mathematical representation, waves at boundaries, standing waves, interference of sound waves, beats, sound intensity, the decibel, the ear and hearing, quality and pitch, Doppler effect, ultrasonics and applications.

ASSESSMENT:

Theory Coursework	10%
Practical Coursework	30%
One 3-hour Final Examination	60%
Students must pass coursework	

LEVEL: 0 (PRELIMINARY)

SEMESTER: 2

COURSE CODE: PHYS 0071

COURSE TITLE: PRELIMINARY PHYSICS II

NUMBER OF CREDITS: 0

PREREQUISITES: CSEC PHYSICS OR EQUIVALENT.

COURSE DESCRIPTION: Electricity and Magnetism, Optics and Modern Physics Charge, Coulomb's law, insulators and conductors, electric field, lines of force, electric potential, potential differences, electron volt (Millikan's experiment,). Capacitance, series and parallel combination, energy in a charged 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, focal point and length, refraction at plane and spherical surfaces, graphical and analytical methods, images and objects, thin lens, diverging lens, lensmaker equation, aberrations, the eye, defects of vision, magnifier, camera projector, compound microscope, telescope,

Atomic nucleus, nuclear radiation, isotopes and isobars, binding energy and stability; alpha, beta and gamma rays, decay law, half-life, decay constant, activity, radioactivity series, nuclear reactions, nuclear fission, nuclear fusion, radioactive shielding, radiation and the life sciences.

ASSESSMENT:

Theory Coursework	10%
Practical Coursework	30%
One 3-hour Final Examination	60%
Students must pass coursework	

LEVEL: I

SEMESTER: 1

COURSE CODE: PHYS 1001

COURSE TITLE: INTRODUCTION TO ASTRONOMY

NUMBER OF CREDITS : 3

PREREQUISITES: NONE

COURSE DESCRIPTION: This course develops the ideas of Ancient Astronomy leading up to the contributions of Copernicus, Brahe, Galileo and Newton. Optics and instrumentation. The solar system, stars: composition and evolution, white dwarfs, neutron stars, black holes. Extragalactic Astronomy: Galaxies, dark matter, dark energy, Cosmology. Life in the Universe.

ASSESSMENT:

Coursework	40%
One 2- hour Final Examination	60%

LEVEL: I

SEMESTER: 1

COURSE CODE: PHYS 1211

COURSE TITLE: INTRODUCTION TO MECHANICS AND HEAT

NUMBER OF CREDITS: 3

PREREQUISITES: CAPE PHYSICS (UNITS I AND II) OR CAPE MATHEMATICS (UNITS I AND II) AND CSEC (CXC) PHYSICS OR PHYS 0070 AND PHYS 0071 OR THEIR EQUIVALENT

COURSE DESCRIPTION: Newtonian mechanics including: kinematics, laws of motion, work and energy, systems of particles, momentum, circular motion, oscillations, and gravitation and concludes with topics in fluid mechanics, thermal physics, and kinetic theory

ASSESSMENT:

Final Examination (one 2-hr paper):	60%
Coursework:	40%

LEVEL: I

SEMESTER: 2

COURSE CODE: PHYS 1212

COURSE TITLE: INTRODUCTION TO ELECTRICITY & MAGNETISM AND MODERN PHYSICS

NUMBER OF CREDITS: 3

PREREQUISITES: CAPE PHYSICS (UNITS I AND II) OR CAPE MATHEMATICS (UNITS I AND II) AND CSEC (CXC) PHYSICS OR PHYS 0070 AND PHYS 0071 OR THEIR EQUIVALENT

COURSE DESCRIPTION: Electrostatics: Charge, Coulombs Law, The Electric Field and its determination by integration and Gauss's Law; Work, Energy and Electric Potential; Potential for point charge and extended sources; Determination of Electric Field from electric potential and vice versa; Capacitance; Energy stored in capacitors; Dielectrics; **Current Electricity:** Field within a wire; Electric current; Current Density; Ohm's Law; Resistance across a coaxial cable; Resistances in series and parallel; Energy dissipated; DC circuits and Kirchhoff's Law; Charging and discharging of capacitors; Time constant; **Magnetism:** The phenomenon; Definition of the magnetic force and comparison with the electric force and gravitation; Force on a wire carrying a current; torque on a rectangular wire carrying a current; Motion of charge in a magnetic field; Lorentz force; Mass spectrometer, cyclotron; Hall Effect; Biot-Savart Law; Ampere's Law and applications; Earth's magnetic Field Faraday's Law; B,H and M vectors; Inductance; Combination of laws to introduce Maxwell's Electromagnetic equation for free space propagation; **AC Theory:** AC currents and voltages; Complex and Vector and Phasor representations; LCR circuits, Q factor, power; Transformers; **Introduction to Modern Physics:** Modern Physics: Black body radiation, Thermal radiation; Stefan's, Wein's and Rayleigh-Jean's Laws; Quanta; Planck's Law; Photoelectric effect; Davisson-Germer and Thomson's experiments; The Atom; Atomic spectra; Energy levels and the Hydrogen Atom; Bohr model; X-rays; Moseley's Law.

ASSESSMENT:

Final Examination (one 2-hr paper):	60%
Coursework:	40%

LEVEL: I

SEMESTER: 1

COURSE CODE: PHYS 1213

COURSE TITLE: INTRODUCTION TO OSCILLATIONS AND WAVES

NO. OF CREDITS: 1.5

PREREQUISITES: CAPE PHYSICS (UNITS I AND II) OR CAPE MATHEMATICS (UNITS I AND II) AND CSEC (CXC) PHYSICS OR PHYS 0070 AND PHYS 0071 OR THEIR EQUIVALENT

COURSE DESCRIPTION: Oscillations and the analysis of oscillations. Acoustics: Wave propagation and velocity in elastic media, wave concepts: power intensity, superposition, coherence, interference and resonance. Types of waves: ultrasonic, audible and infrasonic. Theory of vibrating systems, sources of sound, Doppler effect. Electromagnetic waves: theory of transverse waves with examples.

ASSESSMENT:

Coursework 100%

LEVEL: I

SEMESTER: 1

COURSE CODE: PHYS 1214

COURSE TITLE: INTRODUCTORY PHYSICS LABORATORY I

NO. OF CREDITS: 1.5

PREREQUISITES: CAPE PHYSICS (UNITS I AND II) OR CAPE MATHEMATICS (UNITS I AND II) AND CSEC (CXC) PHYSICS OR PHYS 0070 AND PHYS 0071 OR THEIR EQUIVALENT

COURSE DESCRIPTION: The students will be expected to perform laboratory exercises and collect their data and depending on the complexity of the exercise will submit the written report at the end of the exercise or submit it the following week for assessment.

ASSESSMENT:

Coursework 100%

Students will be required to submit the lab report for each of the experiment they will perform. Each lab will be marked and this will constitute the coursework.

LEVEL: I

SEMESTER: 2

COURSE CODE: PHYS 1215

COURSE TITLE: INTRODUCTORY PHYSICS

LABORATORY II

NO. OF CREDITS: 1.5

PREREQUISITES: CAPE PHYSICS (UNITS I AND II) or CAPE MATHEMATICS (UNITS I AND II) and CSEC (CXC) PHYSICS OR PHYS 0070 AND PHYS 0071 or their equivalent.

COURSE DESCRIPTION: The students will be expected to perform laboratory exercises and collect their data and depending on the complexity of the exercise will submit the written report at the end of the exercise or submit it the following week for

ASSESSMENT:

Coursework 100%

Students will be required to submit the lab report for each of the experiment they will perform. Each lab will be marked and this will constitute the coursework.

LEVEL: I

SEMESTER: 2

COURSE CODE: PHYS 1216

COURSE TITLE: INTRODUCTION TO OPTICS

NO. OF CREDITS: 1.5

PREREQUISITES: CAPE PHYSICS (UNITS I AND II) or CAPE MATHEMATICS (UNITS I AND II) and CSEC (CXC) PHYSICS OR PHYS 0070 AND PHYS 0071 or THEIR EQUIVALENT

COURSE DESCRIPTION: The visible spectrum: intensity & dispersion, superposition of light from coherent & incoherent sources, interference thin films, diffraction of light and diffraction gratings, calculation of intensity.

ASSESSMENT:

Final Examination (one 2-hr paper): 40%

Coursework: 60%

LEVEL: I

SEMESTER: 1

COURSE CODE: PHYS 1221

COURSE TITLE: INTRODUCTION TO MECHANICS

NO. OF CREDITS: 3

PREREQUISITES: CAPE PHYSICS (UNITS I AND II) or CAPE MATHEMATICS (UNITS I AND II) and CSEC (CXC) PHYSICS OR PHYS 0070 AND PHYS 0071 or THEIR EQUIVALENT

COURSE DESCRIPTION: This course is designed to introduce the students to topics in Mechanics. This subject is a stepping stone to understanding the world and many of the new technologies being developed today. Additionally, experimentation, observation and recording skills are essential for Physics. For this reason the topics covered address Newtonian Mechanics including: kinematics, laws of motion, work and energy, systems of particles, momentum, circular motion, oscillations, and gravitation and concludes with topics in fluid mechanics. Through in-class discussions, problem-solving sessions and practical sessions, the student will have the opportunity to improve his/her ability to reason through challenging situations in the physical world using basic principles to develop appropriate solutions. **ASSESSMENT:**

Final Examination (one 2-hr paper): 60%

Coursework: 40%

LEVEL: I

SEMESTER: 1

COURSE CODE: PHYS 1222

COURSE TITLE: INTRODUCTION TO OPTICS, OSCILLATIONS AND WAVES

NO. OF CREDITS: 3

PREREQUISITES: CAPE PHYSICS (UNITS I AND II) or CAPE MATHEMATICS (UNITS I AND II) and CSEC (CXC) PHYSICS OR PHYS 0070 AND PHYS 0071 or THEIR EQUIVALENT

COURSE DESCRIPTION: This course is designed to introduce the student to topics in the fundamentals of Optics, Oscillations and Waves. Understanding Physics is crucial to the study of all sciences. Additionally, experimentation, observation and recording skills are essential for Physics. Physics is the study of matter, energy, space and time and gaining a better understanding of this subject is a stepping stone to understanding the world and many of the new technologies being developed today. The theoretical aspect of this course provides students with the fundamentals of Optics, Oscillations and Waves whereas the practical component allows all the Year I students to be exposed to a variety of techniques, concepts and skills in the experimental sciences. Through in-class discussion, problem solving sessions and practical exercises students will have the opportunity to improve their ability to reason through challenging situations in the physical world using basic principles to develop appropriate solutions.

ASSESSMENT:

Final Examination (one 2-hr paper): 60%

Coursework: 40%

LEVEL: I

SEMESTER: 2

COURSE CODE: PHYS 1223

COURSE TITLE: INTRODUCTION TO ELECTRICITY AND MAGNETISM

NO. OF CREDITS: 3

PREREQUISITES: CAPE PHYSICS (UNITS I AND II) or CAPE MATHEMATICS (UNITS I AND II) and CSEC (CXC) PHYSICS OR PHYS 0070 AND PHYS 0071 or THEIR EQUIVALENT

COURSE DESCRIPTION: This course is designed to introduce you to topics in Electricity and Magnetism. Understanding Physics is crucial to the study of all sciences. Physics is the study of matter, energy, space and time and gaining a better understanding of this subject is a stepping stone to understanding the world and many of the new technologies being developed today. This course required the use of Calculus, Vector analysis and Complex variable theory to understand the basic concepts of Electricity, Magnetism and AC theory. Through in-class discussion, problem-solving sessions and practical sessions, the student will have the opportunity to improve his/her ability to reason through challenging situations in the physical world using basic principles to develop appropriate solutions.

ASSESSMENT:

Final Examination (one 2-hr paper): 60%

Coursework: 40%

LEVEL: I

SEMESTER: 2

COURSE CODE: PHYS 1224

COURSE TITLE: INTRODUCTION TO THERMODYNAMICS & MODERN PHYSICS

NO. OF CREDITS: 3

PREREQUISITES: CAPE PHYSICS (UNITS I AND II) or CAPE MATHEMATICS (UNITS I AND II) and CSEC (CXC) PHYSICS OR PHYS 0070 AND PHYS 0071 or THEIR EQUIVALENT

COURSE DESCRIPTION: This course is designed to introduce the student to topics in the fundamentals of Thermodynamics and Modern Physics. Understanding Physics is crucial to the study of all sciences. Experimentation, Observation and recording skills are essential for Physics. Physics is the study of matter, energy, space and time and gaining a better understanding of this subject is a stepping stone to understanding the world and many of the new technologies being developed today. The theoretical aspect of this course provides students with the fundamentals of Thermodynamics and Modern Physics whereas the practical component allows all the Year 1 students to be exposed to a variety of techniques, concepts and skills in the experimental sciences. Through in-class discussion, problem solving sessions and practical exercises students will have the opportunity to improve their ability to reason through challenging situations in the physical world using basic principles to develop appropriate solutions.

ASSESSMENT:

Final Examination (one 2-hr paper): 60%

Coursework: 40%

LEVEL: II

SEMESTER: 1

COURSE CODE: PHYS 2150

COURSE TITLE: MATHEMATICS FOR PHYSICISTS

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 and PHYS 1111, or all credits from PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 and PHYS 1216

COURSE DESCRIPTION: Probability and Statistics: Introduction to probability, Methods of counting, Conditional probability, Distribution functions, Sampling theory, Applications in Physics; Cartesian and Curvilinear Coordinate Systems; Vector Analysis; Complex Variable Theory; Fourier Series Analysis; Differential Equations (up to second order); and Applications of these methods in Physics.

ASSESSMENT:

Coursework	40%
Final Examination (one 2-hour paper)	60%

LEVEL: II

SEMESTER: 1

COURSE CODE: PHYS 2151

COURSE TITLE: CLASSICAL AND STATISTICAL MECHANICS

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111, or all credits from PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 And PHYS 1216

COURSE DESCRIPTION: This course provides a formal introduction to classical mechanics and statistical mechanics. Classical mechanics describes the motion of large bodies using two different analytical frameworks: (1) Newtonian Mechanics and (2) Lagrangian and Hamiltonian Dynamics. Newtonian mechanics is a physical framework and set of laws in which the motion of a system of particles under the influence of externally applied forces are analyzed. Lagrangian and Hamiltonian Dynamics are frameworks in which physical observables are expressed as generalized coordinates and momenta, and variational principles and concepts of energy, virtual work, and energy conservation are used to analyze the motion of a particle or system of particles. Statistical mechanics is concerned with the probabilistic description of a system of microscopic particles through microcanonical, canonical, and grand canonical ensembles to predict energy fluctuations and macroscopic properties of thermodynamic systems involving ideal gases, solids, and quantum gases.

ASSESSMENT:

Coursework	40%
Final Examination (One 2-hr paper)	60%

LEVEL: II

SEMESTER: 2

COURSE CODE: PHYS 2152

COURSE TITLE: VIBRATIONS, WAVES AND OPTICS

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111, OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: Optics: Review of thin lens imaging; reflection and refraction at a spherical surface; Lensmaker formula; Vergence and refracting power; Newtonian equation for a thin lens; Matrix methods; Aberration Theory. Oscillations and Waves: Simple, damped and forced harmonic motion; Equations of motion and their solutions; Different aspects and applications of these motions; Equation of wave motion in one dimension; Longitudinal and transverse waves and the consideration of different examples of the propagation of these waves.

ASSESSMENT:

Coursework	40%
Final Examination (One 2-hr paper)	60%

LEVEL: II

SEMESTER: 2

COURSE CODE: PHYS 2153

COURSE TITLE: ASTROPHYSICS

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION:

Special Relativity (10 lectures): Introduction to theory of Special Relativity: Galilean transformation, Postulates of Special Relativity, Lorentz transformation equations. The Foundations of Special Relativity. Relativistic kinematics and Relativistic Particle Mechanics. Space-time intervals and Minkowski diagrams.

Astronomy (15 lectures): Observational Instruments, Celestial Sphere and coordinate systems, Solar System, Astrobiology, Stars and their evolution, Galaxies, Extragalactic Astronomy, Cosmology and New Frontiers.

ASSESSMENT:

Coursework	40%
Final Examination (one 2 hour paper)	60%

LEVEL: II

SEMESTER: YEAR-LONG

COURSE CODE: PHYS 2155

COURSE TITLE: MAJOR LABORATORY LEVEL II

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111, OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: Laboratory experiments and numerical modelling using MAPLE and/or MATLAB are to be performed corresponding to the theory courses of the Major. The students will be expected to perform the exercises and collect their data and depending on the complexity of the exercise will submit the written report at the end of the exercise or submit it the following week for assessment.

ASSESSMENT:

Coursework: 100%

Students will be required to submit a lab report for each of the experiments they will perform. Each lab report will be marked and this will constitute the coursework.

LEVEL: II

SEMESTER: 1

COURSE CODE: PHYS 2156

COURSE TITLE: METEOROLOGY AND CLIMATOLOGY

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: Meteorology: Structure and composition of the atmosphere. Meteorological elements and measurements. Physical processes in the atmosphere. Atmosphere motion and circulation, Geostrophic wind, gradient wind, cyclones, thermal wind, frictional effects, vorticity. The general circulation, frontal systems, circulation and disturbances of the tropics. Climatology and pollution: Climate controls, classification, regional climates, climates of the Caribbean. Land use, water resources, pollution. Aerosols. El Nino-Southern Oscillation. ITCZ.

ASSESSMENT:

Coursework 40%

Final Examination (One 2-hour paper) 60%

LEVEL: II

SEMESTER: 2

COURSE CODE: PHYS 2157

COURSE TITLE: SOLID EARTH GEOPHYSICS

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: Physics of the Earth: The shape of the Earth: The Geoid and reference Spheroid, Gravity of the Earth, Measurement of gravity, Corrections to gravity measurements (gravity reductions); Latitude; Elevation; Topographs of surrounding terrain; Earth tides, and Density variations in the subsurface. Testing Isostasy by gravity measurements. Geoid height anomalies.

Gravity Prospecting; Earth's internal structure and origin; Heat Flow: Continental and Oceanic. Geophysical Prospecting: Propagation of seismic waves, The principles of seismic refraction and reflection. Electrical properties of rocks and minerals, Electrical prospecting methods: self-potential, dc resistivity, Wenner and Schlumberger arrangements. Earth's Magnetic Field and Magnetic Prospecting.

ASSESSMENT:

Coursework 40%

Final Examination (One 2-hour paper) 60%

LEVEL: II

SEMESTER: 2

COURSE CODE: PHYS 2159

COURSE TITLE: INTRODUCTORY MEDICAL PHYSICS & BIOENGINEERING

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: The structure, function, properties and Physics of bone, muscles, cardiovascular and nervous system. Feedback and Control systems in the body and homeostasis.

Biomedical potentials, electrooculogram (EOG), electrocardiogram (ECG), electromyogram (EMG), electroencephalogram (EEG) and magnetocardiogram (MCG). The visual system and the auditory system.

ASSESSMENT:

Coursework 40%

Final Examination (One 2-hr paper) 60%

LEVEL: II

SEMESTER: 1

COURSE CODE: PHYS 2160

COURSE TITLE: ADVANCED MEDICAL PHYSICS AND BIOENGINEERING

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: Review of radiation interaction with matter; Medical radiation sources and their applications in diagnosis and therapy (focus on detectors, scanners and image processing in the medical environment); Nuclear medicine: radioisotopes, tracer studies and system modeling; Biomechanics as applied in orthopaedic and cardiac surgery; Biomaterials: focusing on the properties of implantable materials and their preparation for implantation; Kinetic and blood flow studies.

ASSESSMENT:

Coursework	40%
Final Examination (One 2-hr paper)	60%

LEVEL: II

SEMESTER: 1

COURSE CODE: PHYS 2165

COURSE TITLE: MATERIALS SCIENCE I

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: The scope of materials science, importance of studying materials, interdisciplinary nature of materials science, principal aim to relate properties to structure, brief historical survey, the basic classification of materials – metals, polymer, ceramics, alloys, composites with brief description of structure, properties and applications.

The Structure of Solids: Structure of atom, molecules, bonding, relationship between bonding and properties, thermal vibration and structure sensitivity, crystal structure, lattice parameters, crystal geometries, defects in materials, point defects, line defects, area defects, defects in polymers, strengthening mechanisms, alloys. Amorphous structure, microstructure, alloys and composites.

Phase Diagrams: Introduction, solubility limit, phases, microstructure, phase equilibria, unary and binary phases, interpretation of phase diagrams, lever rule, eutectic and eutectoid alloys (binary systems), Iron-Iron carbide phase diagram, influence of alloying elements.

Polymers: Introduction, various polymer materials, molecular weight distribution, synthesis, properties, crystalline polymer, amorphous polymers, applications, models for various polymers.

Properties of Materials: Electrical properties, thermal properties, magnetic properties, optical properties, mechanical properties.

ASSESSMENT:

Coursework	40%
Final Examination (One 2-hr paper)	60%

LEVEL: II

SEMESTER: 2

COURSE CODE: PHYS 2166

COURSE TITLE: TECHNOLOGICAL MATERIALS

NO. OF CREDITS: 3

PREREQUISITES: PHYS 2165 OR PHYS 2294

COURSE DESCRIPTION: Earth Materials: Raw Materials, metals and their ores, importance of these materials, basic building blocks of earth materials, mineral chemistry, metal chemistry, glasses, ion conducting glasses, crystal structures, effect of temperature, pressure and environment on these minerals and metals

Material Extraction Processes: Importance of extraction, principles of extraction, crushing of ores, separation of ores: gravity separation, magnetic separation, froth floatation process, leaching, calcination, roasting, reduction of free metal: smelting, reduction of aluminium, self-reduction process, electrolytic reduction, cyanide method, refining/purification; liquation, distillation, poling, zone refining, Mond's process, Van Arkel process.

Characterization: Structure of metals and minerals, methods to determine structure, metallography, X-ray diffraction, scanning electron microscopy, transmission electron microscopy, phase diagrams, electrical properties and their variations with phases, physical property determination.

ASSESSMENT:

Coursework	40%
Final Examination (One 2-hr paper)	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: PHYS 3150

COURSE TITLE: ELECTROMAGNETISM

NO. OF CREDITS: 3

PREREQUISITES: PHYS 2150 or PHYS 2280

COURSE DESCRIPTION:

Electromagnetic Theory

The electric field: Coulomb's law. Discrete and continuous charge distributions. Divergence and curl of electrostatic fields; The electric potential: The potential of a localized charge distribution. Work and energy in electrostatics; Electric fields in matter: Polarization. The electric displacement and linear dielectrics; The magnetic field: The magnetic field, magnetic forces and currents. The Biot-Savart law. The magnetic field of a steady current. The divergence and curl of magnetic fields; Magnetic fields in matter: Magnetization. Response of materials to magnetic fields. The magnetic field inside matter. Ampere's law in magnetized materials; Electrodynamics: Electromotive force and electromagnetic induction. Maxwell's equations and the displacement current in vacuum and in matter; Electromagnetic waves: The wave equation for E and B. Electromagnetic waves in a vacuum. Electromagnetic waves in conductors and dielectrics.

Applications of Electromagnetism:

Waveguides: The rectangular waveguide. Transverse electric modes (TE) and transverse magnetic modes (TM). Propagation characteristics of rectangular waveguides; Antennas: Introduction to types of antennas. Antenna parameters in terms of the time-averaged Poynting vector.

ASSESSMENT:

Coursework	40%
Final Examination (one 2-hr paper)	60%

LEVEL: III

SEMESTER: 2

COURSE CODE: PHYS 3151

COURSE TITLE: QUANTUM MECHANICS

NO. OF CREDITS: 3

PREREQUISITES: PHYS 2150 or PHYS 2280

COURSE DESCRIPTION:

- The origins of quantum physics: Review of Blackbody radiation, the Photoelectric effect and the Compton Effect. Wave properties of material particles and electron diffraction. The Bohr atom.
- The Schrödinger equation: Wave-particle duality: radiation as particles and electrons as waves. Development of a wave equation for a free particle and for a particle moving in a potential. The time-dependent and time-independent Schrödinger equations. The wave function and Born's probability interpretation of the wave function. Heisenberg's Uncertainty Principle. The momentum and energy operators.
- One-dimensional problems: The free particle. Solutions to the Schrödinger equation for the infinite potential well. Stationary states of the infinite well. The potential barrier and quantum tunnelling. The harmonic oscillator. Applications.
- Three-dimensional problems: Wave functions of the infinite cubical well. Degeneracy of the energy levels. Wave functions of the hydrogen atom and degeneracy of the spectrum.
- Eigenfunctions, eigenvalues and operators: The eigenfunctions, eigenvalues and Hamiltonian operator of the Schrödinger equation. Normalization and completeness of the eigenfunctions. Eigenvalues and measurement. The superposition principle and generalized time-dependent wave functions. Properties of wave functions. Expectation values of position and momentum.
- Orbital and spin angular momentum: Representation of orbital angular momentum in quantum mechanics. Eigenfunctions of L^2 and L_z . Orbital magnetic moment in terms of orbital angular momentum. The Stern-Gerlach experiment and the spin hypothesis. Theory of spin 1/2 and the Pauli matrices. Spin magnetic moment of the electron in terms of spin angular momentum. Applications.

ASSESSMENT:

Coursework	40%
Final Examination (one 2-hr paper)	60%

LEVEL: III

SEMESTER: 2

COURSE CODE: PHYS 3152

COURSE TITLE: ADVANCED THERMODYNAMICS AND SOLID STATE PHYSICS

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216
COURSE DESCRIPTION:

Thermodynamics: Heat, Work, First and Second Laws of Thermodynamics – Applications: engines, refrigerators, Entropy, Maxwell's relations, Joule-Thomson effect, Thermodynamic potentials, Magneto-thermal relations, Thermodynamic applications.

Solid State Physics: Structure of solids, elementary crystallography and crystal diffraction, free electron theory of metals, energy band theory, semiconductors, superconductivity.

ASSESSMENT:

Coursework	40%
Final Examination (one 2-hr paper)	60%

LEVEL: III

SEMESTER: 1 AND 2

COURSE CODE: PHYS 3153

COURSE TITLE: PHYSICS MAJOR RESEARCH PROJECT

NO. OF CREDITS: 3

PREREQUISITES: AVAILABLE ONLY TO PHYSICS MAJORS

COURSE DESCRIPTION: Students will be required to complete a 12 weeks research project for completion of their Major in Physics. Projects will be offered in the various disciplines of Physics and each Project will be assigned a Project Supervisor. Projects may involve pure research study toward a fundamental aspect of Physics or address more applied issues. It may involve field or laboratory based work or may be a desk study involving data analysis or interrogation of legal documents. The project should, however, give the student a chance to further develop skills from the toolbox and a more detailed understanding of some component of the course. This course is offered in both Semester I & II

ASSESSMENT:

Oral	20%
Report	80%

1. Only students who need **not more than 30 credits to graduate** will be assigned a project.
2. This course will run in both semesters 1 and 2.

LEVEL: III

SEMESTER: 1

COURSE CODE: PHYS 3156

COURSE TITLE: PRINCIPLES OF PHYSICAL OCEANOGRAPHY AND GEOHYDROLOGY

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: Introduction to Physical Oceanography: Instruments and Measurements, Remote Sensing, Characteristics of sea water, Principles of fluid dynamics, Application to ocean circulation, Surface and deep water currents, Waves and wave generation, Tides, Coastal oceanography, Uses and problems of the oceans. Introduction to Geohydrology: Water bearing formations, Groundwater flow, Darcy's law, Equation of continuity, Laplace equation, Well hydraulics, Aquifer, Characteristics, Storage and transmissivity, Saline intrusion in coastal aquifers.

ASSESSMENT:

Coursework	40%
Final Examination (One 2-hour paper)	60%

LEVEL: III

SEMESTER: 2

COURSE CODE: PHYS 3157

COURSE TITLE: EARTH SCIENCE

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 and PHYS 1111 or all credits from PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 and PHYS 1216

COURSE DESCRIPTION: Earth processes and Caribbean Stratigraphy: Properties of minerals and crystals; composition, occurrence, distribution, classification and field recognition of igneous, sedimentary and metamorphic rocks; tectonic and structural features of the earth; volcanic activity; formation of soils and sediments; stratigraphy and geologic time; plate tectonics. The Caribbean environment in relation to: man, water supply, soils, petroleum, engineering geology and minerals. Introduction to Earth Materials: the origin, occurrence, world distribution and development of major earth resources- metalliferous and non-metal ores, petroleum, coal building materials, chemical raw materials, biomass resources.

Earth seismology: the nature of earthquakes; the propagation and detection of seismic wave; geographical distribution of earthquakes; surface effects of earthquakes, earthquake history of the Caribbean.

ASSESSMENT:

Coursework	40%
Final Examination (One 2-hour paper)	60%

LEVEL: III

SEMESTER: 2

COURSE CODE: PHYS 3158

COURSE TITLE: FUNDAMENTALS OF RENEWABLE ENERGY

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: Introduction to current sources of Energy and World's Oil production; Renewable Energy requirements, types and effects; Renewable Energy Technologies; Conservation, conversion and efficiency; applications and evaluation of renewable energy systems - solar energy, biomass, wind energy, geothermal energy and hydropower.

ASSESSMENT:

Coursework	40%
Final Examination (One 2-hour paper)	60%

LEVEL: III

SEMESTER: YEAR-LONG

COURSE CODE: PHYS 3159

COURSE TITLE: ENVIRONMENTAL PHYSICS LABORATORY

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215, AND PHYS 1216

COURSE DESCRIPTION: Laboratory experiments and field trips with site work are to be performed corresponding to the taught components of the Environmental Physics Minor. Students will be expected to perform the exercises and collect their data and depending on the complexity of the exercise will submit the written report at the end of the exercise or submit it the following week for assessment.

ASSESSMENT:

Coursework:	100%
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The students will be required to submit a lab report for each of the experiments they will perform. Each lab report will be marked and this will constitute the coursework.

LEVEL: III

SEMESTER: YEAR-LONG

COURSE CODE: PHYS 3160

COURSE TITLE: MEDICAL PHYSICS & BIOENGINEERING LABORATORY

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR ALL CREDITS FROM PHYS 1211, PHYS 1212,

PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: Laboratory experiments and field trips with site work are to be performed corresponding to the taught components of the Medical Physics & Bioengineering minor. The students will be expected to perform the exercises and collect their data and depending on the complexity of the exercise will submit the written report at the end of the exercise or submit it the following week for assessment.

ASSESSMENT:

Coursework: 100%

Students will be required to submit a lab report for each of the experiments they will perform. Each lab report will be marked and this will constitute the coursework.

LEVEL: III

SEMESTER: YEAR-LONG

COURSE CODE: PHYS 3163

COURSE TITLE: ELECTRONICS LABORATORY

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR ANY NINE CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: Laboratory experiments and fieldtrip with site work are to be performed corresponding to the taught components of the Electronics Minor. The students will be expected to perform the exercises and collect their data and depending on the complexity of the exercise will submit the written report at the end of the exercise or submit it the following week for assessment.

ASSESSMENT:

Coursework: 100%

Students will be required to submit a lab report for each of the experiment they will perform. Each lab report will be marked and this will constitute the coursework.

LEVEL: III

SEMESTER: 1

COURSE CODE: PHYS 3164

COURSETITLE: CERAMICS SCIENCE

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: Definition and classification of ceramics; typical properties; engineering/industrial applications based on properties; crystal structure; raw materials; fabrication and processing; mechanical, thermal, electrical and magnetic properties; glasses; cement and concrete.

ASSESSMENT:

Coursework 40%

Final Examination (One 2-hr paper) 60%

LEVEL: III

SEMESTER: 2

COURSE CODE: PHYS 3165

COURSE TITLE: MATERIALS SCIENCE II

NO. OF CREDITS: 3

PREREQUISITES: PHYS 2165 OR PHYS 2294

COURSE DESCRIPTION: Iron and Steel: Raw Materials, Iron ore, purification processes, steel, steel making, blast furnace, electric arc furnace, types of steels and applications, processing of steels, forging, dye formation, extrusion, rolling, heat treatment. Steel phase diagram, isothermal phase transformations, cooling curves, properties and effect of impurities

Testing of the Materials: Destructive Testing: Brinell's test, Rockwell test, Vicker's test (macro and micro), knoop test (micro), izod and charpy tests. Non Destructive Testing: Visual, liquid penetration, eddy current, electric current perturbation, magnetic particle, ultrasonic testing, microwave testing, holography.

Microstructure of Polymers: Introduction to polymers, polymerization processes, crystallinity and amorphicity in polymers, microstructure of polymers, architecture, crystallization, mechanical and other properties of polymers, viscoelasticity, elastic after effect, stress relaxation, models for viscoelasticity and stress relaxation, dynamic response.

Composites: Introduction, different types of composites (particle reinforced, fiber reinforced, structural composites), microstructure of ceramics, mechanical and other properties of ceramics.

ASSESSMENT:

Coursework 40%

Final Examination (One 2-hr paper) 60%

LEVEL: III

SEMESTER: YEAR-LONG

COURSE CODE: PHYS 3166

COURSE TITLE: MATERIALS SCIENCE LABORATORY

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111, OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 121 AND PHYS 1216

COURSE DESCRIPTION: Laboratory experiments and a field trip with site work are to be performed corresponding to the taught components of the Materials Science Minor. The students will be expected to perform the exercises and collect their data and depending on the complexity of the exercise will submit the written report at the end of the exercise or submit it the following week for assessment.

ASSESSMENT:

Coursework: 100%

Students will be required to submit a lab report for each of the experiments they will perform. Each lab report will be marked and this will constitute the coursework.

LEVEL: III

SEMESTER: 2

COURSE CODE: PHYS 3167

COURSE TITLE: RADIATION BIOPHYSICS AND MEDICINE

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION:

Introduction to cell biology and DNA: this part of the course addresses cell structure, division and functioning, DNA as the main target for radiation, genetics, functioning of cell and damages caused by different types of radiation.

Radiation damage and DNA repair. Cell death and mutation. Organ, tissue and organism effects of irradiation: This part of course addresses cell survival after irradiation and different biological and chemical mechanisms affecting the survival as well as DNA damage and repair. Tissue, organs and organism, effects of irradiation. Here the key knowledge of radiation effects is learned.

Modern methods of radiotherapy: This part of course addresses the main principles, modern methods of radiotherapy and combined therapies as well as tumor biology and responses of tumor and of normal tissues to radiation.

Radiation Carcinogenesis: This part of course addresses the development of cancer after radiation: type of malignancy, dosage, time responses and concepts of for risk estimations.

Radiation protection and legislation: This part of course addresses radiation accidents, radioecology, risk estimation and current legislation in radiation (International and Local). What we have learned after certain accidents and how to avoid high radiation doses or to minimize the consequences of irradiation.

ASSESSMENT:

Coursework	40%
Final Examination (One 2-hr paper)	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: PHYS 3168

COURSE TITLE: MEDICAL INSTRUMENTATION

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1110 AND PHYS 1111 OR ALL CREDITS FROM PHYS 1211, PHYS 1212, PHYS 1213, PHYS 1214, PHYS 1215 AND PHYS 1216

COURSE DESCRIPTION: Electronic Instruments: voltmeters e.g. VTVM Transistor voltmeter, multimeter, use of cathode-ray oscilloscope for the measurement of voltage, current phase and frequency, special purpose oscilloscopes, measurement of resistance, inductance, capacitance, using Kelvin's, Maxwell's and Schering bridge, measurement of effective resistance at high frequency, R meter, LCR meter. Signal generators, function generator, wave analyzer, harmonic distortion analyzer, spectrum analyzer, spectrum analysis.

Transducers: operation of strain gauge, electromechanical transducer e.g. Linear Variable Differential Transformer (LVDT), thermocouple, piezo- electric crystal, photoelectric transducers, light detecting resistor (LDR), SQUID, thermistors. Digital-to-analog and analog-to-digital conversion techniques.

Data Acquisition System for patient monitoring: recording equipment: types e.g. graphic, strip chart, magnetic tape, digital tape and requirements. Safety issues: Macro and micro current shock, special design from safety consideration, safety standards, testing, ensuring protection of equipment and personnel.

ASSESSMENT:

Coursework	40%
Final Examination (One 2-hr paper)	60%

LEVEL: II

SEMESTER: 1

COURSE CODE: PHYS 2401

COURSE TITLE: OPTOELECTRONICS

NO. OF CREDITS: 3

PREREQUISITES: PHYS 1223 OR PHYS 1212 OR PHYS 1110 AND PHYS 1111

COURSE DESCRIPTION: This course introduces the student to the fundamentals of analog electronics. It begins with semiconductor theory and its application to various electronic and optoelectronic devices. Semiconductor diodes, zener diodes and bipolar junction transistors, their types, construction, related theory, I/V characteristics, biasing techniques, ac/dc analysis and their applications are studied. Optoelectronics related to devices/systems such as light emitting diodes, laser diodes, optical detectors, fiber-optics and solar cells are discussed along with applications. The course provides the fundamentals for other electronics courses in particular the course on PHYS 3201 - Advance Electronics and Control Theory for which it is the prerequisite. Assessment and evaluation is done in the form of in-course tests and a final examination.

LEVEL: II

SEMESTER: 2

COURSE CODE: PHYS 2402

COURSE TITLE: DIGITAL CIRCUITS AND LOGIC DESIGN

NUMBER OF CREDITS: 3

PREREQUISITES: PHYS 2401 OR PHYS 2163

COURSE DESCRIPTION: This course introduces the student to the fundamentals of digital electronic and logic circuit design. It covers basics of digital electronic i.e. logic gates, Boolean algebra, logic minimization & implementation, logic families, number systems, binary codes and binary arithmetic. Combinational and sequential logic circuit design fundamentals are explained along with their applications. Various type of registers and counters along with design steps and applications are also covered in this course. As such it provides building blocks for the other courses in particular the course on Modern Digital Design and Microprocessor for which it is the prerequisite. Assessment and evaluation is done in the form of in-course tests and a Final examination.

ASSESSMENT:

Coursework	40%
Final Examination (one 2-hr paper)	60%

LEVEL: III

SEMESTER: 1

COURSE CODE: PHYS 3201

COURSE TITLE: ADVANCE ELECTRONICS AND CONTROL THEORY

NO. OF CREDITS: 3

PREREQUISITES: PHYS 2401 OR PHYS 2163

COURSE DESCRIPTION: This course deals with two major areas of electronics. First part deals with the advance analog electronics and covers the concept of feedback, feedback amplifiers, multivibrators, differential amplifiers, operational amplifiers; related theory and their applications. Second part deals with control theory and explores modeling, analysis and design of feedback control systems using classical approach. This course builds foundation for the course ECNG 3019 - Advance Control System Design and prepares students for automation industry. This course will be assessed through in-course assignments and a final examination.

LEVEL: III
SEMESTER: (YEAR-LONG)
COURSE CODE: PHYS 3202
COURSE TITLE: PRACTICAL ELECTRONICS - I
NO. OF CREDITS: 3
PREREQUISITES: PHYS 24014
OR PHYS 2162 AND PHYS 2163
COURSE DESCRIPTION: This laboratory course addresses the practical component of the Electronics Minor and covers all topic areas taught in four courses of the minor. This course provides the necessary practical knowledge in the field of basic as well as advance analog and digital electronics. The purpose of this laboratory course is to give students hands-on experience and to allow them to test the principles which they learn from the theoretical components of the courses. The students will be expected to perform the laboratory exercises and collect their data and depending on the complexity of the exercise will submit the written report at the end of the exercise or submit it the following week for assessment.
ASSESSMENT:
Coursework 100%

LEVEL: III
SEMESTER: 2
COURSE CODE: PHYS 3203
COURSE TITLE: MICROPROCESSOR AND MODERN DIGITAL DESIGN
NUMBER OF CREDITS: 3
PREREQUISITES: PHYS 2402 OR PHYS 2162
COURSE DESCRIPTION: This course is one of the five courses that we offer at Physics Department as a part of the minor in Electronics and is an extension of the course Digital Circuits and Logic Design (PHYS 2402) taught in Semester I. The main objective is to build strong foundation for the students in the area of modern digital electronics and microprocessors fundamentals and to expose them to the entire digital systems design process from gate level to system level. An overview of advanced digital system design technologies and industrial grade Electronics Design and Automation (EDA) tools is provided to develop skilled manpower in the highly demanding area of System-On-Chip Design and to encourage entrepreneurship. This course will be assessed through in-course assignments and a final examination.
ASSESSMENT:
Coursework 40%
Final Examination (One 2-hr paper) 60%

LEVEL: III
SEMESTER: 2
COURSE CODE: PHYS 3204
COURSE TITLE: PRACTICAL ELECTRONICS II
NO. OF CREDITS: 3
PREREQUISITES: (PHYS) AND ECNG 2001 OR PHYS 3161
COURSE DESCRIPTION: This laboratory based course consists of advance level laboratory exercises and mini project from analog & digital communication and control systems. Laboratory experiments covering topic areas of the courses ECNG 2001 –Communication System –I, ECNG 3001 - Communication Systems–II and PHYS 3201 - Advance Electronics and Control Theory will be performed. The purpose of this experimental based laboratory course is to give students hands-on experience and to allow them to test the principles which they learn from the theoretical components of the courses. The students will be expected to perform the laboratory exercises and collect their data and depending on the complexity of the exercise will submit the written report at the end of the exercise or submit it the following week for assessment.
ASSESSMENT:
Coursework 100%

LEVEL: I
SEMESTERS: 1 AND 2
COURSE CODE: SPAN 1101
COURSE TITLE: LEVEL 1A SPANISH
NUMBER OF CREDITS: 2
PREREQUISITES: NONE
COURSE DESCRIPTION: This is a beginners' course for students with no previous knowledge of Spanish. This communicative course focuses on the development of the four skills: listening, speaking, reading and writing as well as on the development of knowledge of the Hispanic culture. The course meets for four hours per week for 13 weeks. In addition, class contact time should be supplemented by one hour of independent study for each contact hour.
ASSESSMENT:
In-course testing: 100%:
40% [mid-semester];
40% [end of semester];
20% [two assignments]

LEVEL: I

SEMESTERS: 1 AND 2

COURSE CODE: SPAN 1102

COURSE TITLE: LEVEL 1B SPANISH

NUMBER OF CREDITS: 2

PREREQUISITES: SPAN 1101/1A SPANISH OR

EQUIVALENT

COURSE DESCRIPTION: Students in this course have some basic knowledge of Spanish. This course will build on the skills learnt in SPAN 1101/1A Spanish and aims to continue to promote communicative and intercultural competence. The focus will be on the development of the four skills: speaking, listening, reading and writing. The course meets for four hours per week for 13 weeks. In addition, class contact time should be supplemented by one hour of independent study for each contact hour.

ASSESSMENT:

In-course testing: 100%:

40% [mid-semester];

40% [end of semester];

20% [two assignments]

APPENDIX 1 - PRE-REQUISITES FOR CROSS FACULTY COURSES

BANNER CODE	TITLE	FSS PREREQUISITES	FST B.SC. ACTUARIAL SCIENCE PREREQUISITES	FST B.SC. CHEMISTRY & MANAGEMENT PREREQUISITES	FST B.SC. COMPUTER SCIENCE & MANAGEMENT PREREQUISITES
ACCT 1002	Introduction to Financial Accounting	NONE	NONE	NONE	NONE
ACCT 1003	Introduction to Cost and Managerial Accounting	NONE	NONE	NONE	NONE
ACCT 2017	Management Accounting	ACCT 1002 and ACCT 1003		This course is NOT offered to these students	ACCT 1002 and ACCT 1003
ECON 1001	Introduction to Economics I	NONE	NONE	NONE	NONE
ECON 1002	Introduction to Economics II	NONE	NONE	This course is Not offered to these students	NONE
ECON 1005	Introduction to Statistics	NONE	This course is NOT offered to these students	NONE	This course is NOT offered to these students
MGMT 2003	Principles of Marketing	ACCT 1002 and ECON 1001	ACCT 1002 and ECON 1001	ACCT 1002 and ECON 1001	ACCT 1002 and ECON 1001
MGMT 2006	Management Information Systems I	NONE	This course is NOT offered to these students	NONE	This course is NOT offered to these students
MGMT 2008	Organisational Behaviour	SOCI 1002 or MGMT 1001	This course is NOT offered to these students	MGMT 1001 OR SOCI 1002 OR AGEX 1000 OR CHEM 1060 OR CHEM 1065 AND CHEM 1066	MGMT 1001 OR SOCI 1002 OR AGEX 1000 OR COMP 1100
MGMT 2012	Quantitative Methods	ECON 1002 and ECON 1003	This course is NOT offered to these students	ECON 1002 and CHEM 1060	ECON 1002 and MATH 1140
MGMT 2021	Business Law	NONE	This course is NOT offered to these students	NONE	NONE
MGMT 2023	Financial Management I	ACCT 1002 and ECON 1003	ACCT 1002 and MATH 1140	ACCT 1002 and/or CHEM 1060	ACCT 1002 and MATH 1140
MGMT 2032	Managerial Economics	ECON 1001 and ECON 1003	This course is NOT offered to these students	ECON 1001 and CHEM 1060	ECON 1001 and MATH 1140
MGMT 3017	Human Resource Management	MGMT 2008	This course is NOT offered to these students	MGMT 2008	This course is NOT offered to these students

APPENDIX 1 continued

BANNER CODE	TITLE	FSS PREREQUISITES	FST B.SC. ACTUARIAL SCIENCE PREREQUISITES	FST B.SC. CHEMISTRY & MANAGEMENT PREREQUISITES	FST B.SC. COMPUTER SCIENCE & MANAGEMENT PREREQUISITES
MGMT 3048	Financial Management II	MGMT 2023 and MGMT 2032 OR ECON 2000 OR ECON 2001	MATH 2210	This course is NOT offered to these students	This course is NOT offered to these students
MGMT 3057	Production and Operation	MGMT 2012	This course is NOT offered to these students	MGMT 2012	This course is NOT offered to these students
MGMT 3060	Operations, Planning and Control	MGMT 3057	This course is NOT offered to these students	MGMT 3057	This course is NOT offered to these students
MKTG 3000	Marketing Management	MGMT 2003	This course is NOT offered to these students	MGMT 2003	MGMT 2003
MKTG 3007	Marketing Planning	MGMT 2003/MGMT 2012 and MGMT 2023	This course is NOT offered to these students	MGMT 2003. MGMT 2012 and MGMT 2023	This course is NOT offered to these students
SOCI 1002	Introduction to Sociology	NONE	This course is NOT offered to these students	NONE	This course is NOT offered to these students

APPENDIX 2 – APPROVED SCIENCE CAPE/GCE A-LEVEL SUBJECTS

- Applied Mathematics
- Biology
- Botany
- Chemistry
- Computer Science
- Environmental Science
- Further Mathematics
- Geography
- Geology
- Information Technology
- Mathematics
- Pure Mathematics
- Physics
- Zoology

APPENDIX 3 – UNIVERSITY REGULATIONS ON PLAGIARISM

Application of these Regulations

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

Definition of plagiarism

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

“Level 1 plagiarism” means plagiarism which does not meet the definition of Level 2 plagiarism;

“Level 2 plagiarism” means plagiarism undertaken with the intention of passing off as original work by the plagiariser work done by another person or persons.

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

Other definitions

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

Evidence of plagiarism

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

Student Statement on Plagiarism

- 7 When a student submits for examination work under Regulation 1, the student shall sign a statement, in such form as the Campus Registrar may prescribe, that as far as possible the work submitted is free of plagiarism including unattributed quotation or paraphrase of the work of another except where justified under Regulation 3.
- 8 Quotation or paraphrase is attributed for the purpose of Regulation 7 if the writer has indicated using conventions appropriate to the discipline that the work is not the writer’s own.
- 9 The University is not prohibited from proceeding with a charge of plagiarism where there is no statement as prescribed under Regulation 7.

Electronic vetting for plagiarism

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

Level 1 plagiarism

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

Level 2 plagiarism

- 12 Where an examiner has evidence of Level 2 plagiarism in the material being examined, that examiner shall report it to the Head of Department or the Dean and may at any time provide the Registrar with a copy of that report. In cases where the examiner and the Dean are one and the same, the report shall be referred to the Head of the Department and also to the Campus Registrar.
- 13 Where any other person who in the course of duty sees material being examined which he or she believes is evidence of Level 2 plagiarism that other person may report it to the Head of Department or the Dean and may at any time report it to the Campus Registrar who shall take such action as may be appropriate.
- 14 Where a Dean or Head of Department receives a report either under Regulation 12 or 13, the Dean or Head of Department, as the case may be, shall
- a. where in concurrence with the report's identification of evidence of Level 2 plagiarism, report the matter to the Campus Registrar; or
 - b. where not concurring in the identification of evidence of plagiarism, reply to the examiner declining to proceed further on the report; or
 - c. where concluding that there is evidence of Level 1 plagiarism, reply to the examiner indicating that conclusion and the Examiner shall proceed as under Regulation 11.
- 15 Where a report is made to the Campus Registrar under Regulation 14a or 16, the Campus Registrar shall lay a charge and refer the matter to the Campus Committee on Examinations.
- 16 Where the Campus Registrar receives a report alleging Level 2 plagiarism from the Examiner or any other person except the Dean or Head of Department, the Campus Registrar shall refer the matter to a senior academic to determine whether there is sufficient evidence to ground a charge of plagiarism and where such evidence is found, the Campus Registrar shall proceed as under Regulation 15.
- 17 Where the matter has been referred to the Campus Committee on Examinations pursuant to Regulation 15, the proceedings under these Regulations prevail, over any other disciplinary proceedings within the University initiated against the student based on the same facts and, without prejudice to Regulation 21, any other such disciplinary proceedings shall be stayed, subject to being reopened.

- 18 If the Campus Committee on Examinations is satisfied, after holding a hearing, that the student has committed Level 2 plagiarism, it shall in making a determination on the severity of the penalty take into consideration:
- a. the circumstances of the particular case;
 - b. the seniority of the student; and
 - c. whether this is the first or a repeated incidence of Level 2 plagiarism.
- 19 Where the Campus Committee is of the view that the appropriate penalty for an offence of Level 2 plagiarism is for the student to be:
- (i) awarded a fail mark;
 - (ii) excluded from some or all further examinations of the University for such period as it may determine;
 - (iii) be dismissed from the University, it shall make such recommendation to the Academic Board.

Clearance on a charge of Level 2 plagiarism

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

Level 2 plagiarism: Appeal to the Senate

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

Delegation by Dean or Head of Department

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

Conflict of interest disqualification

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

PLAGIARISM DECLARATION

THE UNIVERSITY OF THE WEST INDIES The Office of the Board for Undergraduate Studies INDIVIDUAL PLAGIARISM DECLARATION

STUDENT ID:

COURSE TITLE:

COURSE CODE:

TITLE OF ASSIGNMENT:

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

STATEMENT

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

NAME _____

SIGNATURE _____

DATE _____

GROUP PLAGIARISM DECLARATION

COURSE TITLE:

COURSE CODE:

TITLE OF ASSIGNMENT:

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

We the undersigned declare that:

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

NAME _____

SIGNATURE _____

NAME _____

SIGNATURE _____

NAME _____

SIGNATURE _____

DATE _____

ADDITIONAL ACCOUNTABILITY STATEMENT WHERE WORK HAS BEEN PREVIOUSLY SUBMITTED

1. I/We have set out in an attached statement the details regarding the circumstances under which this paper or parts thereof has been previously submitted.
2. I/We have received written permission from my Supervisor/Lecturer/Instructor regarding the submission of this paper and I have attached a copy of that written permission to this statement.
3. I/We hereby declare that the submission of this paper is in keeping with the permission granted.

NAME _____

SIGNATURE _____

DATE _____

APPENDIX 4 – LIST OF ANTI-REQUISITES

COURSE CODE	ANTI-REQUISITES	COURSE CODE	ANTI-REQUISITES
BIOC2061	BIOL2361 or BIOL2360 or BIOL2365	CHEM 1060	CHEM 1065 or CHEM 1066 or CHEM 1067 or CHEM 1068
BIOC2161	BIOL2363	CHEM 1061	CHEM 1065 or CHEM 1066 or CHEM 1067 or CHEM 1068
BIOC2162	BIOL2364	COMP 1100	INFO 1420
BIOC2262	BIOL2362	COMP 1200	INFO 2420
BIOC3062	BIOL3361	COMP 1400	COMP 1100
BIOC3069	BIOL3069	COMP 1401	INFO 1425
BIOC3162	BIOL3061 or BIOL2164	COMP 1402	COMP 1300 or MATH 1140
BIOC3262	BIOL3364	COMP 1403	INFO 1405
BIOC3364	BIOL3362	COMP 1404	COMP 1200
BIOL1061	BIOL 1362 or BIOL 1364 or AGRI 1011 or AGRI 1013	COMP 1405	COMP 1200
BIOL1065	BIOL 1262 or BIOL 1263	COMP 1406	COMP 1350 or MATH 1150
BIOL1261	BIOL 1065 or BIOL 1262 or BIOL 1263 or AGRI 1012	COMP 2000	INFO 2410
BIOL1362	AGRI 1013 OR BIOL1061	COMP 2100	INFO 2405
BIOL1364	AGRI 1011 OR BIOL1061	COMP 2200	INFO 2425
BIOL2164	BIOL3061	COMP 2300	INFO 2430
BIOL2165	BIOL2162	COMP 2400	INFO 2400
BIOL2262	BIOL3662	COMP 2700	INFO 2415
BIOL2265	BIOL2263 OR BIOL2261	COMP 3750	INFO 3430
BIOL2360	BIOL2365	COMP 3990	INFO 3490
BIOL2363	HUEC 2000 OR BIOL 2361	INFO 1500	INFO 1400
BIOL2764	BIOL2761	INFO 1501	INFO 1405
BIOL2867	BIOL2862	INFO 1503	INFO 1415
BIOL3063	BIOL2063	INFO 1504	INFO 1420 or COMP 1100
BIOL3162	BIOL3262	INFO 1505	INFO 1410
BIOL3164	BIOL 3264	MATH 1160	MATH 1201
BIOL3264	BIOL 2861	MATH 1170	MATH 1202
BIOL3366	BIOL 3762	MATH 2100	MATH 2272
BIOL3462	BIOL2062	MATH 2110	ECON 2015 or MATH 2273
BIOL3465	BIOL3464	MATH 2120	ECON 2016 or MATH 2270 or MATH 2277
BIOL3466	BIOL3461	MATH 2140	ECON 2006 or MATH 2190 or MATH 2274
BIOL3468	BIOL3062	MATH 2150	ECON 2006, MATH 2190 or MATH 3120 or MATH 2275
BIOL3761	BIOL 3765	MATH 2160	MATH 2271
BIOL3770	BIOL 3767	MATH 2170	MATH 2276
BIOL3771	BIOL3766	MATH 2190	ECON 2006 or MATH 2140 or MATH 2150
BIOL3869	BIOL 3069	PHYS 1110	PHYS 1211 or PHYS 1213 or PHYS 1216
BIOL3870	BIOL 2866	PHYS 1111	PHYS 1211 or PHYS 1212
CHEM 1062	CHEM 1060 or CHEM 1061 or CHEM 0060 or CHEM 0061	PHYS 2165	CHNG 1003
		PHYS 3294	CHMG 1003



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