The University of the West Indies
Mona Campus, Jamaica

FACULTY OF SCIENCE & TECHNOLOGY

Undergraduate Prospectus

Connect With Us

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Office Hours
Monday – Friday, 8:30 am – 4:30 pm

Contents

Welcome to the Faculty of Science and Technology

We are pleased that you are considering studying with us in the Faculty of Science and Technology at The University of the West Indies, Mona Campus. This is where the world of technology meets that of experimental and applied science. We take our students on a journey to discover and increase their knowledge and understanding of the various disciplines under the guidance of prominent lecturers and researchers.

Teaching in the Faculty of Science and Technology commenced at Mona in 1949 with students in the Departments of Botany, Chemistry, Mathematics, Physics, and Zoology. The first eleven graduates appeared in 1952 and by 2000 over 9,000 graduates had been produced. Today, the Faculty is among the largest in the University with our Preliminary Courses being offered at Community Colleges in Jamaica.

Our faculty consists of 7 departments: Biotechnology, Chemistry, Computing, Geography and Geology, Life Sciences, Mathematics, Physics, and the School of Engineering. If you join us next year, you will find yourself as part of a 2,600-strong undergraduate student body enrolled in one of over 30 degree programmes including Actuarial Science, Medical Physics, Information Technology, Environmental Biology, Geology, Civil Engineering and Food Chemistry.

In addition to undergraduate teaching, postgraduate teaching and research form an important aspect of the work of the Faculty. Almost all departments offer Diploma, MSc, MPhil and PhD programmes.

Having chosen to investigate this pathway, we now look forward to helping you make a difference in whatever field of study you decide to pursue. Being a part of a large university means we can offer students access to numerous resources, internationally-recognized faculty, scholarships, student clubs and services and research opportunities.

Why study with us?

01

Being a part of a large university means we can **offer students access to numerous resources:**

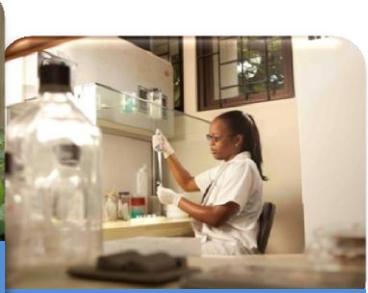
- State-of-the-art laboratory facilities and computer rooms, an up-to-date library, and specialized museums and collections
- Scholarships and awards
- Opportunities to take part in and conduct research projects
- Academic advisors assigned to every student
- Work experience through several internship programmes

02

We offer a wide variety of **courses and programmes** that provide training in your chosen field:

- Over 40 undergraduate degrees to choose from with 9 different areas of study
- Course offerings that span various scientific disciplines
- Laboratory sessions that teach the necessary steps for effective experimentation, specialized lab techniques and the ability to operate and understand complex apparatus
- Field trips that encourage hands-on learning
- Undergraduate research courses

03



Graduating from the Faculty of Science and Technology opens up a variety of **options and opportunities**:

- Employment with private industry, government and global organizations
- Entrance into graduate study
- Pursuit of professional degrees (Medicine, Dentistry, Business, Pharmacy, Law etc.)
- Research opportunities with various organizations, universities, the private sector and government agencies

What can you study?

PROGRAMME OVERVIEW

The Bachelor of Science (BSc) is awarded on the basis of a programme of studies comprising combinations of courses in science disciplines, together with certain Foundation courses. Approved Out-of-Faculty courses may also be included.

The Faculty of Science and Technology offers BSc degrees which must include at least a major in a FST discipline **or** an Option **or** a Special Degree. The chosen FST major may be combined with another major **or** two minors, selected from other FST disciplines or from other Faculties.

The degrees offered may therefore comprise:

a) **A general degree with a single major** (32 credits from Levels 2 and 3) or **a double major in two FST disciplines** (2x32 credits from Levels 2 and 3).

b) **A general degree with a single major** in an FST discipline **plus**

   (i) one or two minors from other distinct FST disciplines (each **16** credits from Levels 2 and 3) **or**

   (ii) a major (30 credits) **or** one **or** two minors (15 credits each) from other Faculties. **Out-of-Faculty majors and minors are governed by the regulations of the Faculty of origin.**

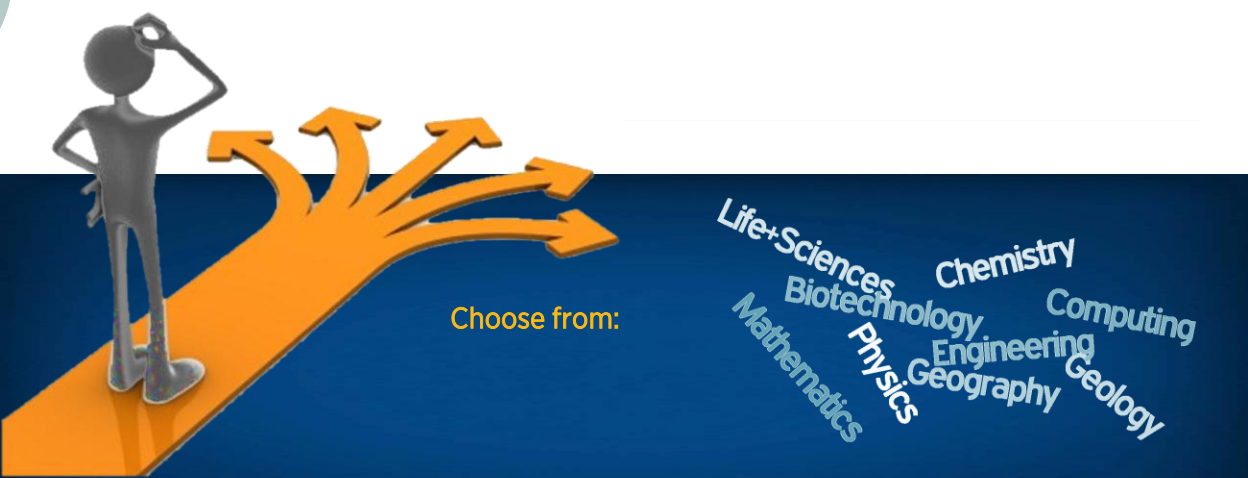
c) **Options** comprising a prescribed set of departmental, inter-departmental or inter-faculty courses which satisfy the requirements for a specific degree.

d) **Special Degrees** offered by the Faculty as listed by the respective departments.

REQUIREMENTS FOR THE AWARD OF A DEGREE

In all cases a degree is granted for successful completion of courses in a specified programme such that the student has obtained, at minimum, the following:

Level 1 Compulsory	24 credits
Levels 2 and 3	60 credits
Foundation courses	9 credits
Total	**93 credits**



Programmes at a Glance

DISCIPLINE	MAJORS	MINORS	OPTIONS
Agriculture	Horticulture		
Chemistry	▶ Food Chemistry ▶ Environmental Chemistry ▶ General Chemistry ▶ Industrial Chemistry	▶ General Chemistry ▶ Industrial Chemistry ▶ Food Processing ▶ Food Chemistry ▶ Environmental Chemistry	▶ Special Chemistry ▶ Chemistry with Education* ▶ Chemistry and Management
Computing	▶ Computer Science ▶ Information Technology ▶ Computer Systems Engineering*	Computer Science	Computer Studies
Engineering	▶ Civil Engineering ▶ Computer Systems Engineering* ▶ Electronics Engineering		
Geography	Geography	Geography	
Geology	Geology	Geology	
Life Sciences	▶ Animal Biology ▶ Applied Plant Sciences ▶ Experimental Biology† ▶ Environmental Biology† ▶ Horticulture ▶ Marine Biology ▶ Terrestrial and Freshwater Ecology	▶ Plant Sciences ▶ Human Biology ▶ Conservation Biology	Biology with Education*
Mathematics	▶ Mathematics ▶ Mathematics and Modelling Processes	Mathematics	▶ Actuarial Science ▶ Mathematics with Education
Physics	▶ Electronics ▶ Energy and Environmental Physics ▶ General Physics ▶ Materials Science ▶ Medical Physics	▶ Electronics ▶ Energy and Environmental Physics ▶ General Physics ▶ Materials Science ▶ Medical Physics	

* jointly offered by Computing and the Mona School of Engineering
* in collaboration with the School of Education
† cannot be taken with any other major due to the number of credits required for degree

Entry Requirements

Core Requirements

CXC Requirements

- All applicants must have a minimum of 5 CXC/CSEC subjects (grades I – III)
  - English Language and Mathematics
  - **Any two** (2) Lab Subjects namely: the best two from Biology, Chemistry, Physics
  - Any other subject (the best)

Advanced Level Requirements

CXC requirements above, plus

- 2 science subjects at CAPE, grades 1-5 (both Units I & II) or
- 2 science subjects at GCE A'Level, grades A-E

Note

- 2 science subjects must include: Chemistry, Biology, Physics or Geography
- Applicants with two A' Levels are fully matriculated

Alternate Requirements

Associate degrees and some qualifications from other Tertiary Level Institutions are also considered.

Subjects Required to Satisfy Entry Requirements

a) Approved Science CAPE/GCE A-Level subjects

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

*** The following cannot be counted together:**

i. Further Mathematics with Applied Mathematics CAPE/GCE A-Level;

ii. Mathematics (Pure and Applied) with Pure Mathematics or Applied Mathematics at CAPE/GCE A-Level.

b) Approved Science CSEC General Proficiency/GCE O-Level subjects:

- Additional Mathematics
- Biology
- Chemistry
- Computer Science
- Environmental Sciences
- Geography
- Integrated Science
- Information Technology (General)
- Physics

Faculty Awards and Prizes

The Faculty of Science and Technology hosts an Annual Awards Ceremony to honour students who have obtained scholarships and have received commendations on the basis of their academic performance in the previous academic year.

DEPARTMENTAL PRIZES

Chemistry

The L.J. Haynes Award
The Chemistry Department Prize for Introductory Chemistry
The Pavelich/Honkan Prize for Introductory Chemistry
The Wilfred Chan Award
The Bert Fraser-Reid Award
Cedric Hassall Scholarship for Level I Advanced Chemistry
The Garfield Sadler Award for Level II
The Willard Pinnock Prize

Computing

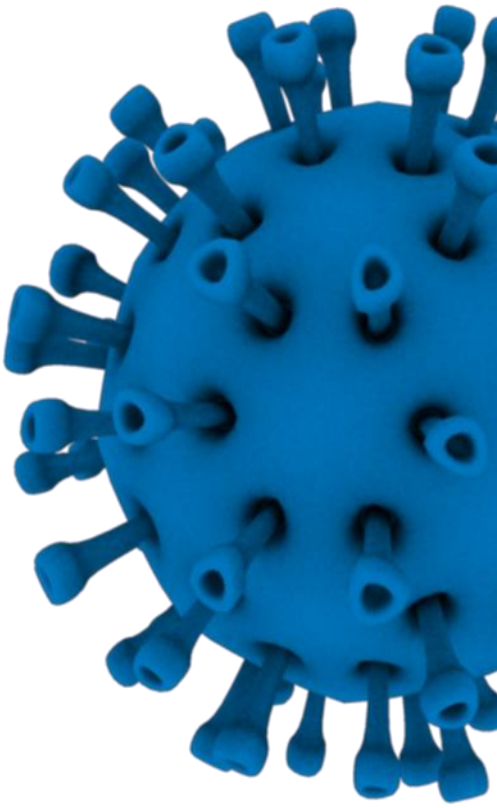
The Karl Robinson Award in Computer Science

Geology & Geography

The Barry Floyd Prize for Levels I and II

Life Sciences

The Don Skelding's Prize in Botany
The L. B. Coke Prize in Plant Physiology
The Vincent Hugh Wilson McKie Prize in Zoology
The Avinash Potluri Prize in Animal Diversity
The Charlotte Goodbody Prize in Level I Biology
The Ivan Goodbody Prize in Marine Biology
The Dr. Devi Prasad Prize in Plant Diversity
The Dr. Sasikula Potluri Prize in Plant Form



Mathematics

Caribbean Actuarial Scholarship
The Merville Campbell Prize for Levels I and II
The Harold Chan Scholarship in Pure Mathematics
The University Lodge/Leslie Robinson Prize

Physics

The John Lodenquai Prize for Introductory Physics
The Departmental Prize for Level II
The Michael Tharmanahthan Bursary
The Francis Bowen Bursary for Level II

Student Clubs and Societies

Each department has student groups which enable you to participate in extra-curricular activities with persons with similar interests.



Department of Chemistry

- Chemical Society (ChemSoc)
- Chemical Alumni Staff and Friends (CHEMSAF)

Department of Computing

- Higher Achievers Commanding Knowledge Enabling Research Sharing (HACKERS) Club
- Computing Society

Department of Geography & Geology

- UWI Geographical Society
- UWI Geological Society

Department of Life Sciences

- University Sub Aqua Club (USAC)
- Biology Students Association (BSA)

Department of Mathematics

- Actuarial Science Club

Department of Physics

- The Radio Ham Club
- The Electronics Club
- Alternative Energy Research Society

Biotechnology Centre

"Biotechnology is the integrated commercial use of techniques that use living organisms, or substances from organisms, to make or modify a product.

It includes techniques used for the improvement of the characteristics of important plants and animals and for the development of micro-organisms to act on the environment."

The Biotechnology Centre

Biotechnology Centre at UWI, Mona Campus

The Biotechnology Centre was established in 1989 through a grant obtained from the European Economic Commission. Boasting modern and sophisticated research facilities, the Centre's mission has been to develop the research capabilities of professional scientists in the area of Biotechnology – to find solutions to forensic, health, food, agricultural and environmental problems that affect the Caribbean and Latin America Region. The Centre plays a pivotal role in linking the private sector to the University through the conduct of original investigations for product research and development.

Our graduates can be found locally and internationally. Apart from here at the University of the West Indies, graduates have taken up senior positions in organizations such as J. Wray and Nephew Limited and the Scientific Research Council in Jamaica. Internationally they can be found in such institutions as the St. Judes Hospital in Tennessee, USA, the University of Cambridge, UK and the Concordia University in Canada, to name a few.

Our Main Functions
To carry out research and training programmes in Biotechnology.
To use tools and techniques of Biotechnology and Genetic Engineering for the enhancement of agro-industries in the Caribbean.
To assist the private sector to develop, transfer and commercialise new bioscience discoveries. The Centre's mandate also involves providing economic opportunities through Biotechnology.
To serve as a national and regional lead research centre in the training of the next generation of scientific/technical managers, through multidisciplinary research projects in collaboration with the private sector and related institutions and universities.

Annual Student Workshop

Each year the Centre hosts the annual workshop on “Concepts in Biotechnology and Genetic Engineering” for CAPE and A’Level biology high school students in Jamaica. The workshop includes five (5) hours of lectures and seven (7) hours of laboratory sessions conducted by the Biotechnology Centre research team.

Some of the areas covered in the workshop include methods in recombinant DNA technology, production of transgenic animals and plants, extraction of plasmid DNA, and agarose gel electrophoresis.

Facilities and Equipment

- Thermal cycler
- Plant Growth Room
- Cold Room
- HPLC
- Laminar Flows
- Phase Contrast Microscope
- Electroporator
- ELISA Plate Reader
- UV Doc Gel System
- Autoclaves
- Rotorvapors
- -70° Freezer

Ongoing Projects

Biotechnology Today

Modern Biotechnology is a multidisciplinary field that involves the integral study and manipulation of biological systems and the use of living organisms, their products or parts, in the development of technology that can effectively solve problems related to solving crime, also problems in health, food, agricultural, industrial and environmental sectors. DNA technology in particular, is today having applications in fingerprinting criminals, in human diseases such as AIDS, cancer and various viral infections, animal diseases such as mad cow disease and the viruses, fungi and bacteria affecting crops.

Research Areas

- researching the character and epidemiology of geminiviruses infecting crops and weeds in the Caribbean
- Work includes identification of new geminiviruses infecting tomato and papaya

Geminivirus Research
Dr. Marcia Roye
marcia.roye@uwimona.edu.jm

- Examination of local plants in order to harness their potential for health, wealth and reduction in the use of harmful chemicals in the environment: by developing environmentally friendly products (ex. bio-pesticides, disinfectants and shampoos) and by micropropagating medicinal plants, wicker and trees
- Neem (*Azadirachta indica*) is the flag-ship plant as well as ginger, turmeric, chainy root, sarsaparilla and pineapple, to name a few. A gene bank (*ex situ* and *in vitro*) of Jamaican medicinal plants is being expanded. Biochar and field experiments are also being explored

Medicinal Plants Research
Dr. Sylvia Mitchell
sylvia.mitchell@uwimona.edu.jm

- involves the identification of viruses affecting vegetables and fruit crops with an emphasis toward developing control strategies using biotechnology as well as natural sources of resistance from diverse germplasm including domestic and wild species
- Current research includes the characterization of strains of Papaya ringspot virus, Citrus tristeza virus and citrus viroid pathogens, and the development of virus-resistant papaya and citrus varieties

Transgenic Papaya and Citrus Research
Prof. Paula Tennant
paula.tennant@uwimona.edu.jm

- Research includes the genetic characterization, evolution and molecular biology of whitefly transmitted gemini-viruses infecting crops and weeds. The principal objective is the improvement of tomato, hot pepper (*Capsicum chinense*) and beans (*Phaseolus vulgaris*) through the use of molecular and genetic engineering tools
- Also exploring the use of bacteria as plant-growth promoting agents and as biocontrol agents to control viral, bacterial and fungal diseases in tomato and pepper

Molecular Biology and Biochemistry of Plant-microbe Interactions
Prof. Wayne McLaughlin
wayne.mclaughlin@uwimona.edu.jm

- Research includes bioengineering of yams and biochemical studies on yam extracts for their medicinal value. Research group is engaged in activities directed towards the improvement of production, quality and storage of some tropical crops using biotechnology tools
- Current focus is on roots and tuber crops of economic importance/potential. However, the research done by the UWI Yam Group is multi-disciplinary. Other research activities involve assessment of the medicinal properties of root crops, substance abuse of cocaine and marijuana as well as pharmaceutical application of yam starches to be used as excipients in tablets

Yam Biochemistry and Biotechnology
Prof. Helen Asemota
helen.asemota@uwimona.edu.jm

Completed Projects

- Identification of bacteria causing food spoilage
- Recycling agricultural waste for feed and fertilizer production (now sold commercially in Jamaica as Biorganic)
- Identification of thermotolerant bacteria isolated from processed meat
- Identification of bacteria in chicken processing plants
- Cloning and sequencing of bean golden mosaic virus
- Identification of genetic diversity of yams using RFLP (DNA fingerprinting technique)
- Biochemical characterization of Jamaican yams
- Development of an improved micropropagation system for Jamaican yams
- Identification of mychorrhizal fungi and rhizobia to enhance the production of red peas and other crops
- Identification of methods of fermentation of molasses for lactic acid and dextran production

Collaborating Institutions

The Biotechnology Centre collaborates with a number of local and international groups and organizations. Some developments from research have been successfully transferred to industry. Collaborators include:

- Jamaica Broilers Group
- Papaya Growers Association of Jamaica
- RADA
- MINIAG
- Environmental Foundation of Jamaica
- Environmental Health Foundation
- Natural Products Institute, UWI
- CIDA
- Institute of Human Virology, The University of Maryland
- Tropical Fruit Crop Research Institute, Cuba
- USAID
- Centre for Cellular and Molecular Biology, India
- College of Agriculture, Science and Education (CASE)
- Serge Island



Careers in Biotechnology



An education in biotechnology can set you up for a wide variety of careers including management, marketing, and of course, laboratory science. The career potential of a biotechnology graduate include:

- Biomedical Engineers
- Bioinformaticians
- Crime Lab Technicians
- Biotechnology / Pharmaceutical Sales
- Validation Technicians
- Clinical Research Associate
- Biotechnology Research Associate
- Medical Scientists
- Biological Technicians
- Medical and Clinical Lab Technologists & Technicians
- Biochemists and Biophysicists
- Microbiologists
- Epidemiologists
- R&D and Process Development Scientists
- Regulatory Quality Control Biomanufacturing Specialists
- Bioproduction Operators

CONTACT INFORMATION

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Fax: 876-977-3331

Department of

Chemistry

"Through chemistry, we can experience the world in a new and exciting way. We learn to appreciate the atoms and molecules of which things are made, the components of our food and the elements that combine to produce the materials that we use.

Chemistry helps us design the medicines that keep us healthy, to manufacture our food and fuel and allows us to monitor and manage changes in our environment."

Department of Chemistry

The Department of Chemistry, UWI, Mona Campus, is one of the original and largest departments in the UWI. Founded in 1948, the Department of Chemistry has over 800 undergraduates and more than 50 postgraduates pursuing M.Sc. degrees and an additional 80 who are enrolled in M.Phil and Ph.D. programmes. We have approximately 20 members of faculty who are actively involved in teaching, research, and service to industry. They also assist in developing policies and standards relevant to science and technology and provide leadership in several areas of the education sector

We often refer to chemistry as the 'The Central Science' because it helps us better understand fundamental concepts in biology, biochemistry, physics, earth sciences and many issues in medicine, agriculture and engineering. Begin your journey as a professional chemist, medical practitioner, forensic scientist, food technologist, quality manager, chemical analyst or engineer by studying chemistry with us at The UWI, Mona.

Why Pursue Undergraduate Studies in Chemistry at UWI, Mona?

- Chemistry at The UWI, Mona will take you on a journey through fundamental principles and concepts, expose you to cutting edge analytical and processing techniques and permit you to conduct world class research, solve industrial problems or give you the opportunity to tackle complex environmental issues.
- Our high level teaching staff will help you develop keen critical thinking skills, to become a confident problem solver and to communicate your science effectively, both orally and in writing.
- A UWI Mona Chemistry degree offers a solid education in chemistry, one that prepares you for work, further study or research, one that has consistently produced graduates of value to the national, regional and global scientific communities for over 60 years.

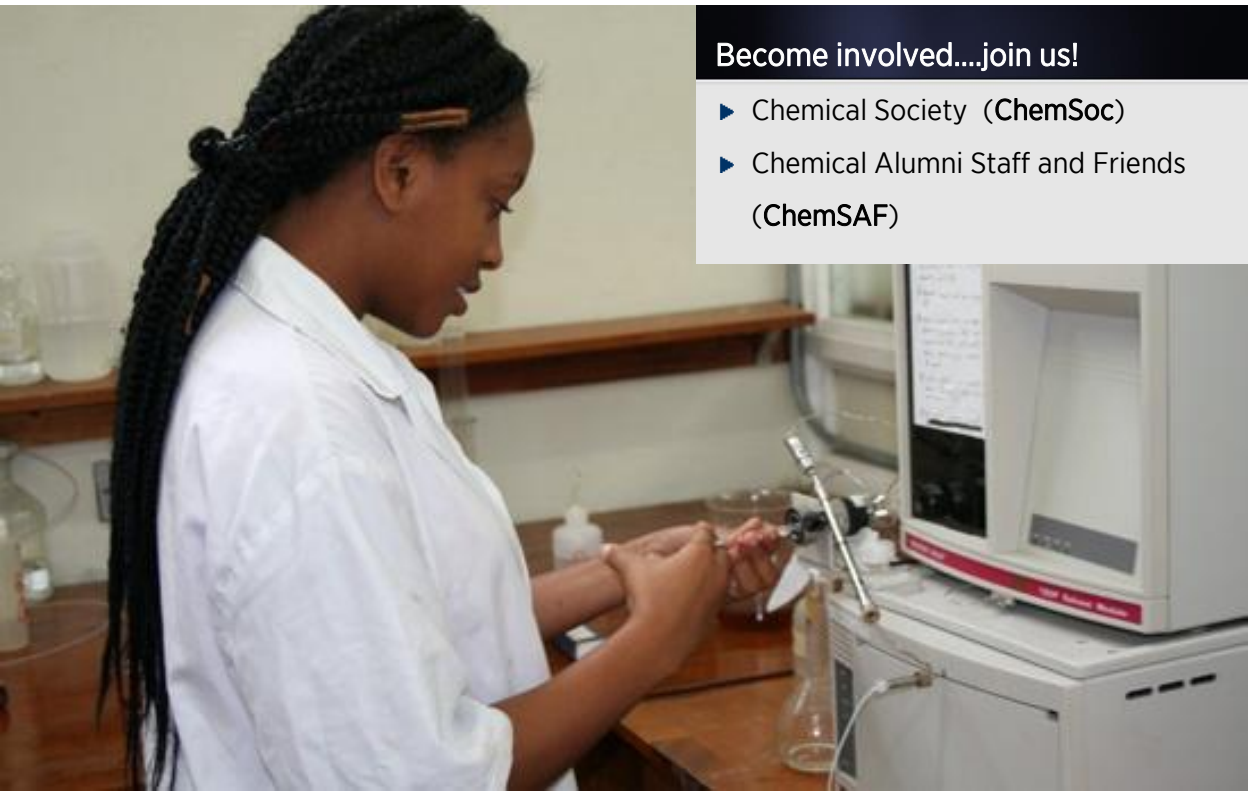
Entry Requirements

Entry to our programmes is extremely competitive and in any given year, CAPE passes at grades 4-5 may not afford direct entry to the full time 3-year B.Sc. programme. However, Chemistry permits entry to a 4-year degree programme as well.

A pass in Introductory Mathematics (6-credits) is required for entry to Advanced Chemistry courses. Passes in both units of CAPE Mathematics (or equivalent) are required for admission to the Introductory Mathematics courses, or alternatively, a pass in UWI's Preliminary Mathematics.

PRELIMINARY LEVEL*	LEVEL I**
Faculty Core requirements plus CSEC Chemistry with Grade III or better	❶ Faculty Core requirements plus CAPE Units I + II Chemistry with a Grade V or better plus 1 other CAPE subject ❷ Associate Degrees and qualifications from other Tertiary Level Institutions are also considered and may even permit exemptions from some courses
Courses pursued: Preliminary Chemistry and Preliminary Mathematics, among others.	Courses pursued: Introductory Chemistry and Introductory Mathematics, among others

*4 year (full-time)/5 year (part-time) degree programme
**3 year (full-time)/4 year (part-time) degree programme



Become involved....join us!

- Chemical Society (**ChemSoc**)
- Chemical Alumni Staff and Friends (**ChemSAF**)

Degree Programmes

The department offers Bachelor of Science programmes involving a chemistry **major**, a chemistry **minor** or a **special chemistry** degree.

Undergraduate Programme Offerings		
Majors	**Minors**	**Specials**
I. General Chemistry II. Food Chemistry III. Applied Chemistry IV. Environmental Chemistry	I. General Chemistry II. Food Chemistry III. Food processing IV. Industrial Chemistry V. Environmental Chemistry	I. Chemistry with Education II. Chemistry and Management III. Special Chemistry
▶ Requires completion of a specific set of advanced courses which expose students to sufficient content, laboratory skills and academic training to prepare them to be confident workers in industry or to gain entry to degrees in medicine, engineering or law or any other areas of interest. ▶ The number of courses in a Chemistry Major is usually 12 to 15 advanced courses (39-48 credits).	▶ Usually consists of 4-6 advanced courses that are specialized and focused towards a specific set of skills. ▶ May significantly enhance a major in other disciplines and make the holder of such a degree much more marketable, with greater technical skills and professional competences. ▶ May be pursued with a major in Life Sciences or Biochemistry, Biotechnology, Mathematics, Physics, Geology or any others.	▶ Chemistry with Education involves majors in both Chemistry and Education; specially designed for persons interested in teaching. ▶ Chemistry and Management presents majors in both Chemistry and Management; ideal for persons interested in managing a chemical or technical facility. ▶ A degree in Special Chemistry is awarded after extensive studies in Chemistry and requires **56** credits of advanced chemistry; ideal for persons interested in pursuing research or higher degrees in Chemistry.
» Prior to taking advanced chemistry courses, a student must successfully complete two Introductory 6-credit chemistry courses and two Introductory 3-credit Mathematics courses. These courses prepare students for the complex information studied in the advanced courses and require CAPE Chemistry and Mathematics respectively, for entry.		

Degree Programmes

Overview of the Majors

Applied Chemistry

COURSES: Chemical Analysis A; Physical Chemistry; Chemistry in Industry; Environmental Chemistry; Chemical Analysis B; Project Evaluation & Management for Science-based Industries; Chemical Process Principles

Environmental Chemistry

COURSES: Chemical Analysis A; Inorganic Chemistry A; Organic Chemistry A; Physical Chemistry A; Water Treatment; Chemical Analysis B; Chemistry in Industry; Marine & Freshwater Chemistry; Atmospheric Chemistry & Biogeochemical Cycles

Food Chemistry

COURSES: Chemical Analysis A; Organic Chemistry A; Physical Chemistry A; Chemical Analysis B; Water Treatment; Food Processing Principles I; Food Processing Principles II; Project Evaluation & Management for Science-based Industries; Food Chemistry I ; Food Chemistry II ; Food Safety & Quality Assurance

General Chemistry

COURSES: Chemical Analysis A; Inorganic Chemistry A + B; Organic Chemistry A; Physical Chemistry A; Chemical Analysis B; Inorganic Chemistry B; Organic Chemistry B; Physical Chemistry B
Select from: Water Treatment; Chemistry in Industry; Food Processing Principles I + II; Food Processing Laboratory; Environmental Chemistry; Bio-Inorganic Chemistry; Applications of Organic Chemistry in Medicine and Agriculture; Natural Products Chemistry; Materials Science; Structure, Dynamics and Computational Methods; Chemical Process Principles; Food Chemistry I + II; Food Chemistry Laboratory; Food Safety & Quality Assurance; Marine & Freshwater Chemistry; Atmospheric Chemistry & Biogeochemical Cycles; Marine and Freshwater Chemistry Field Course

Courses Offered

The Chemistry Department offers a wide range of very exciting courses. There are advanced courses in Physical, Organic and Inorganic Chemistry, all of which are supported by hands-on laboratory activities. The labs help to clarify the principles that are taught and illustrate how they can be applied for practical use. We also offer several Applied, Analytical, Industrial and Food Processing courses.

Chemistry Courses

Preliminary (Level 0)
- Preliminary Chemistry A
- Preliminary Chemistry B

Level I
- Introductory Chemistry A
- Introductory Chemistry B

Level II
- Food Processing Principles I
- Food Processing Principles II
- Inorganic Chemistry A
- Organic Chemistry A
- Physical Chemistry A
- Environmental Chemistry
- Chemical Analysis A
- Chemistry in Our Daily Lives
- Water Treatment

Level III
- Chemical Analysis B
- Inorganic Chemistry B
- Bio-Inorganic Chemistry
- Organic Chemistry B
- Project Evaluation and Management for Science Based Industries
- Chemistry of Materials
- Natural Products Chemistry
- Topics in Advanced Physical Chemistry
- Physical Chemistry B
- Applications of Organic Chemistry in Medicine & Agriculture
- Chemistry in Industry
- Chemical Processing Principles
- Food Safety & Quality Assurance
- Marine and Freshwater Chemistry
- Food Chemistry
- Atmospheric Chemistry & Biogeochemical Cycles
- Marine and Freshwater Chemistry Field Course
- Chemistry Research Project

Practical Components

Some of our courses are supported by field trips to industry, to high-tech analytical facilities and even to water treatment and power generation facilities.

Our industrial chemistry students learn to operate pilot-scale industrial equipment and study the chemical engineering principles on which they are based.

Similarly, our food chemistry students may learn how to make smoked chicken or a variety of canned foods, jams or preserves. Students taking our Undergraduate Research course may get to isolate new medicinal compounds or to make materials with very interesting properties.




Chemistry Awards and Prizes

The prizes and awards are presented at the appropriate Faculty Awards Ceremony in the following academic year.

To be eligible, an awardee should not be in receipt of any other Chemistry Department prize in the year of consideration.

The L.J. Haynes Award

The award named in honour of Prof. Leonard J. Haynes is presented annually to the student with the best academic performance in the Introductory Level Chemistry courses and who is proceeding to Level 2 courses.

The Chemistry Department Prize

This prize is awarded to a student who has the second best academic performance in the Introductory Level Chemistry Courses and who is proceeding to Level 2 courses..

The Pavelich/Honkan Prize

The Prize, named in honour of Prof. Michael Pavelich and Dr. Vidya Honkan, is awarded to a student who has the third best academic performance in the Introductory Level Chemistry Courses and who is proceeding to Level 2 courses.

The Wilfred Chan Award

The Award is made to a student who has the best academic performance in the advanced organic chemistry core courses and who is pursuing a major in Chemistry.

The Bert Fraser-Reid Award

The Award is given to a student with the second best academic performance in the CHEM2201 and CHEM3201 courses.

Cedric Hassall Scholarship

The Cedric Hassall Scholarship is awarded to a final year student, currently majoring in Chemistry, who has the best performance in the Examinations associated with the first year of advanced Chemistry courses. The scholarship is named in honour of Prof. Cedric Hassall, the first Professor of Chemistry at the University.

The Garfield Sadler Award

The award, which is a tribute to the life and work of Garfield Sadler, is presented to the student with the best academic performance in the inorganic chemistry core courses who is pursuing a major in chemistry.

The Willard Pinnock Prize

The Willard Pinnock Prize is awarded to a Chemistry Major who has the best academic performance in the physical chemistry core courses (CHEM2301 and CHEM3301) and who is pursuing a major in chemistry.

Careers in Chemistry

Every day, chemists across the world develop new fragrances and pharmaceuticals, create new materials and food products, make industrial products such as cement, gasoline and plastics, monitor the environment and control pollution. Our graduates stand proudly among them, synthesizing new molecules for use as drugs, creating novel catalysts and more efficient industrial processes, developing new tests for the products that you will consume tomorrow, or teaching chemistry to the next generation with clarity and inspiration.

A degree in Chemistry prepares one for work in chemical analysis, forensics, water treatment, food technology, quality management, environmental management, industrial processing, chemical or pharmaceutical manufacturing or agriculture. A chemistry degree also opens up opportunities to enter medicine, engineering, energy management, academics and a host of other fields.




Those who graduate with a Chemistry or Chemistry-related degree find jobs:

- in the food industry
- in the chemical industries (e.g. cement, bauxite, sugar/ethanol, water treatment and paint industries)
- in oil refining/petroleum
- in regulatory and other government agencies particularly as analysts and inspectors (e.g. in the Bureau of Standards, National and Environmental Planning Agency, the Government Chemist, the Government Forensic Laboratory, Rural Agriculture Development Agency)
- in academia as teachers in High Schools, as lecturers at UWI, UTech, NCU and CASE
- as Scientific Officers (e.g. at Scientific Research Council, Jamaica Bauxite Institute)

CONTACT INFORMATION

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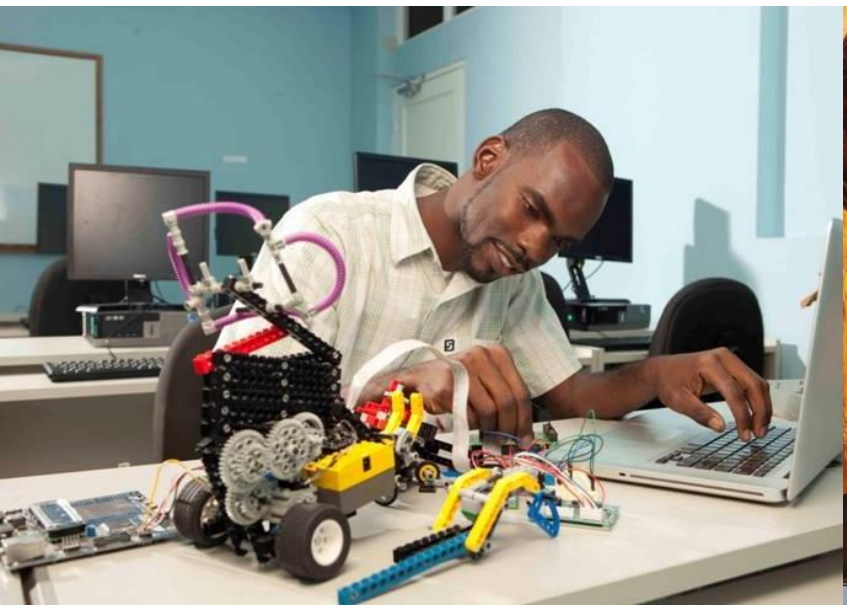
Department of

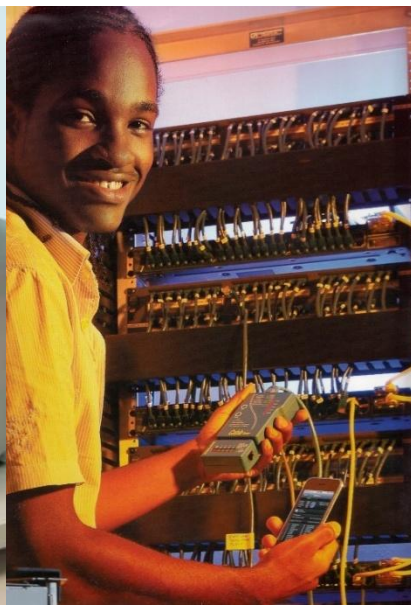
Computing

"Computer Science involves carefully analysing the problems that organisations or individuals face in order to arrive at an algorithmic solution to the problem. This solution then has to be linguistically realised, i.e., turned into a program, which can then be executed on a computer system.

Clearly, this also means that the design of computer systems to execute programs is an important sub-area of Computer Science."

Department of Computing





Computing has been taught at the University of the West Indies, Mona through the Faculty of Science and Technology since 1976. Today, the Department of Computing is home to about 139 undergraduate students and 57 postgraduate students. As of the end of 2012 the department had produced over 1000 Bachelor's degree holders and over 80 graduates with M.Sc., M.Phil., and Ph.D. degrees.

All of our students are taught by a full-time academic staff of nine. In addition to their teaching responsibilities, our academic staff have research interests ranging from amorphous computing, animation and visualization through software engineering to computer networking.

Why Pursue Undergraduate Studies in Computing at UWI, Mona?

Our computing programmes aim to

- provide students with the educational experiences that will enable them to cope with the rapidly changing world of Computing.
- provide students with up-to-date training in the discipline so as to prepare them to take on entry level positions in the local Information Technology sector, and to grow into other positions with one or two years working experience.
- provide students with a sufficiently broad range of courses to enable them to be successful in postgraduate programmes anywhere in the world.
- employ a range of assessment methods and techniques and to enable students to demonstrate the depth of their understanding and their capacity for independent thought.

Entry Requirements

Computing Programme Structure

The B.Sc. degree in Computing is a full-time programme which normally takes three (3) years. There are no part-time programmes in the department. Most classes are being offered during the regular hours of 8:00 a.m to 5:00 p.m. However, first year courses are being offered in the evenings between 5:00 p.m. and 9:00 p.m. Some labs may also be offered on Saturdays.

LEVEL I*
❶ Faculty Core requirements plus Either CAPE Mathematics Units I + II or CAPE Computer Science with CSEC Mathematics ❷ A teachers' college diploma, an associate's degree in mathematics, information technology or science or a pass in EC14C will be considered equivalent qualification for persons without CAPE passes.
Courses pursued: Introduction to Computing I and II
*Computing has no preliminary courses

Degree Programmes

The department offers degree programmes in the following areas:

Undergraduate Programme Offerings		
Majors	**Minor**	**Option**

▸ Computer Science
▸ Computer Systems Engineering*
▸ Information Technology
▸ Software Engineering
	▸ Computer Science
	  ▸ requires sixteen (16) credits from Part II Computer Science courses
		▸ Computer Studies
		  ▸ offers a mixture of courses from Computing and from the Faculty of Social Sciences

Overview of the Majors

Computer Science

A major in Computer Science requires thirty-six (36) credits from Part II Computing courses. The Department of Computing offers the following tracks for the B.Sc. in Computer Science degree:

Tracks in Computer Science

Web, Multimedia, and User Interface
- Manage interactive user interfaces
- Develop and maintain web-based programs
- Do game development
- Develop simulations

Hardware Interfacing and Embedded Systems
- Make a computer detect and respond to physical changes in its environment
- Work on automated energy management
- Work on automated process control (e.g., in greenhouses and factories)
- Write a compiler or a device driver
- Work in robotics

Software developer, IS/DB Manager, System Support Rep
- Analyse system problems and design solutions
- Work on the procurement, selection, and maintenance of appropriate system components
- Do data mining and reporting
- Implement and maintain designed solutions

Network and System Security Specialist
- Implement computer networks
- Safeguard data and infrastructure from malicious attacks
- Explore information security standards and protocols.
- Troubleshoot and maintain networked systems
- Configure network management devices

Degree Programmes

Overview of the Majors

Computer Systems Engineering

Computer Systems Engineering embodies the science and technology of design, construction, implementation, and maintenance of software and hardware components of modern computing systems and computer-controlled equipment. The programme at UWI (Mona) brings together components from the sub-disciplines of Computer Science, Electronics Engineering and Software Engineering. The practical application and testing of the concepts presented in the theoretical classes are explored in intense laboratory and project design sessions. We incorporate an internship, projects, and business courses to produce a graduate that is ready for the job market or to start a business.

The programme is designed to serve students who are desirous of pursuing a career path in computer systems design and the design of devices that rely on embedded computing. During the first year, students are exposed to foundation courses in computing, electronics and electrical engineering, ethics and professional practices. The second year courses provide the core courses required for this discipline. All students are required to complete a capstone project during the final year.

Programme Objectives

The overall objectives of this program are to produce graduates who:

- have a solid foundation in the core areas of computer systems engineering,
- will be technically competent for immediate employment in the fields of computer systems design, systems programming, networks, and embedded systems design,
- can use modern engineering techniques and tools to identify, formulate and solve computer engineering problems,

Courses in BSc CSE

LEVEL I

- Intro to Computing
- Object-Oriented Programming
- Computing and Society
- Electrical Circuits
- Engineering Science and Technology
- Intro to Electronics
- Practices in Basic Electronics
- Physics for Engineers
- Intro to Engineering
- Engineering Mathematics 1

LEVEL II

- Discrete Mathematics for Computer Science
- Analysis of Algorithms
- Systems Programming
- Software Engineering
- Web Design and Programming I
- Net-Centric Computing
- Internship in Computing
- Practices in Electronics Designs 1
- Digital Circuits and Microprocessors
- Embedded Systems
- Probability and Statistics for Engineers

LEVEL III

- Intro to Robotics
- Operating Systems
- Computer Network & Communication
- Computer & Network Security
- Embedded Systems Design
- Capstone Project
- Advanced Digital Electronics
- Engineering Management and Accounting Systems
- Signals and Systems
- Engineering Mathematics 2
- New Venture Creation and Entrepreneurship

Degree Programmes

Overview of the Majors

Information Technology

The BSc in Information Technology is a three year programme based on the ACM/IEEE recommendations. The programme aims to address the needs of the Caribbean region and produce graduates who have been exposed to experiences that will prepare them to address the information processing requirements of organisations.

Students must complete a total of 103 credits consisting of 30 Level 1 credits, an additional 18 computing credits at Level II, 28 credits at Level III, along with 18 credits from any other discipline(s). Nine (9) compulsory foundation credits must also be satisfied to complete the programme.

Courses in BSc IT

LEVEL I
- Intro to Computing I
- Intro to Computing II
- Object-oriented Programming
- Math for Computing
- Computing and Society

LEVEL II
- Mathematics and Statistics for IT
- Data Structures
- Software Engineering
- Dynamic Web Development I
- Net-Centric Computing

LEVEL III
- Computer Systems Administration
- Information Systems in Organisations
- Computer & Network Security for IT
- Database Management Systems
- Information Assurance and Security
- User Interface Design for IT
- Dynamic Web Development II

First Year Programme Structure	
3	programming courses (in Python and Java)
1	essential mathematics for computing course
1	general computing course
5	elective courses from other disciplines of your choice

Degree Programmes

Overview of the Majors

Software Engineering

The Software Engineering Major requires a minimum of 39 credits from Level II and III Computing courses. The courses that make up the Software Engineering major must include the following:

Courses in BSc Software Engineering

LEVEL I

- Intro to Computing I
- Intro to Computing II
- Object-oriented Programming
- Math for Computing
- Computing and Society

LEVEL II

- Software Engineering
- Net-Centric Computing
- Discrete Mathematics for Computer
- Science
- Analysis of Algorithms
- Object Technology

LEVEL III

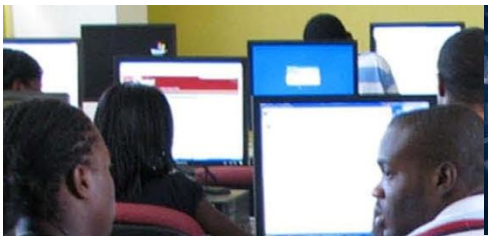
- Software Project Management
- Software Modeling
- Software Testing
- Formal Methods and Software Reliability
- Capstone Project in Software Engineering
- Internship in Computing

Computing Award

The award is presented at the appropriate Faculty Awards Ceremony in the following academic year.

The Karl Robinson Award

The award was established as a tribute to the life and work of the late Dr. Karl Robinson. It is presented annually to the final year student with the best academic performance in Levels I, II and Semester I of Level III in Computer Sciences.



Careers in Computing

Graduates of a Computing programme will be able to function as user advocates, as well as select, create, apply, integrate, and administer computing technologies in order to meet the needs of users within a societal and organisational contexts. Possible career paths include:

- Computer Analyst
- Computer System Administrator
- Computer Systems Engineer
- Network Administrator
- Web Master
- I.T. Project Manager
- Technical Writer

CONTACT INFORMATION

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http://myspot.mona.uwi.edu/compsci/

Mona School of Engineering

"The goal of the School is to offer engineering programmes of study of a high standard which are internationally comparable and competitive, as traditionally done by the Faculty of Engineering at the St. Augustine Campus.

The products of engineers are all around us, in transport, telecommunications, energy generation and transmission, the built environment and infrastructure, water supply, plastics, fuels and much more."

Mona School of Engineering

The Mona School of Engineering (MSE) is strategically located within the Faculty of Science and Technology (FST), and currently offers BSc programmes in electronics engineering (since 2009), civil engineering (started 2013) and computer systems engineering (started 2013). The goal of the UWI MSE is to offer engineering programmes of study of a high standard and which are internationally comparable and competitive, as traditionally done by the Faculty of Engineering at the St. Augustine Campus.

The international benchmark for quality engineering programmes is ascertained through the accreditation offered by reputable international bodies. The MSE therefore intends to apply for accreditation for all its engineering programmes as soon as they become eligible.

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Why Pursue Undergraduate Studies in Engineering at UWI, Mona?

Specific objectives are to:

- provide a high quality education which prepares students for further study and research in engineering, for a wide range of career opportunities in industry, commerce, and the public sector
- facilitate research and development that foster national and regional growth
- offer quality undergraduate and graduate engineering programmes that emphasize the Strategic Objectives of the University of the West Indies
- monitor, review and enhance engineering educational programmes to ensure they remain intellectually demanding, internationally competitive, and consistent with best practices in the engineering field.

Entry Requirements

Engineering at Mona is divided into a 3-year or a 4-year programme. Students who satisfy the requirements for normal matriculation are accepted into the 3 year programme; otherwise they are offered entry into the 4-year programme. The first year of the 4-year programme is a qualifying stage for entry into any of the BSc Engineering Programmes.

LEVEL	Admission Requirements
0*	▸ Applicants with the following ▸ passed both units of CAPE maths and physics with grades 4 or 5; or A'Level D or E ▸ Failed one or both units of Cape maths and physics, but have grade 1 or 2 in CSEC math and physics ▸ Passes in at least 2 other CAPE science subjects along with grades 1 or 2 for CSEC Maths and Physics ▸ GPA less than 2.5
1**	▸ Faculty Core requirements plus **Either** CAPE Mathematics and CAPE Physics, Units I + II with grade 3 or better **or** GCE Advanced Level Mathematics and Physics with grade C or better ▸ Passes in UWI Introductory Mathematics and Physics, normally with no less than a C; or equivalent qualification from a community college, CASE, UTECH or another university with minimum GPA of 2.5.
2	▸ Applicants with a Diploma in Electrical or Electronics engineering (or equivalent) and minimum GPA of 3 may matriculate into Level 2.

*4 year (full-time)/5 year (part-time) degree programme
**3 year (full-time)/4 year (part-time) degree programme

Degree Programmes

Each BSc programme is divided into levels 1, 2, and 3 and is conducted over three academic years of two semesters each.

The first year (Level 1) of the Electronics Engineering and Computer Engineering are identical and students may transfer from one programme to the other after completing the first year.

Programme Overviews

BSc Civil Engineering

Civil Engineering is primarily concerned with the design, construction and maintenance of works, such as buildings, bridges, harbours, canals, railways, airports, dams, power projects, highways, water supply systems and sewage treatment works. Transportation systems, traffic engineering, urban planning and surveying are also important areas of civil engineering. This branch of engineering is, therefore, concerned with the provision of many of the basic services required for the development of modern society.

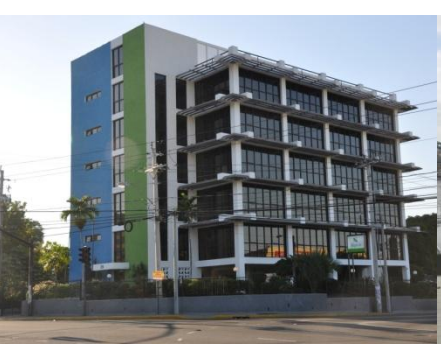
The BSc programme in Civil Engineering is the same as offered at the UWI, St. Augustine Campus in Trinidad. It provides core competency in the essential engineering sub-disciplines (highway, soils, structures, concrete and environment) and project management. There is a capstone 1-year project during the final year coupled with a special investigative project.

Programme Objectives

To meet the challenges of an evolving society, the programme intends to provide a high performance civil engineering education that fosters personal, professional and social responsibility; technical excellence and creativity; and effective communication, teamwork and leadership.

Our graduates will be professionals who:

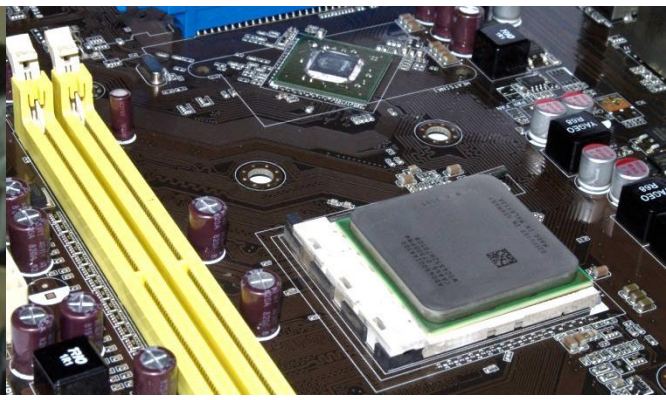
- · Demonstrate a high level of individual, professional and social responsibility
- · Apply technical and non-technical skills in both traditional and creative ways
- · Demonstrate strong communication, teamwork and leadership skills



Degree Programmes

Programme Overviews

BSc Computer Systems Engineering



Computer Systems Engineering embodies the science and technology of design, construction, implementation, and maintenance of software and hardware components of modern computing systems and computer-controlled equipment. Bringing together components from the sub-disciplines of Computer Science, Electronics Engineering and Software Engineering, the programme is designed to serve students who are desirous of pursuing a career path in computer systems design and the design of devices that rely on embedded computing.

During each semester of this 3-year program, a teaching laboratory and project design course must be taken by each student. The practical application and testing of the concepts presented in the theoretical classes for that semester will be explored in these lab sessions. Computing and Engineering students learn through a combination of design and lab work. This mix of theory and practical application allows students to think things through and then apply their ideas in a variety of real life situations. Students also learn to diagnose problems and develop a variety of solutions.

Programme Objectives

The overall objectives of this program are to produce graduates who:

- Have a solid foundation in the core areas of computer systems engineering,
- Will be technically competent for immediate employment in the fields of computer systems design, systems programming, networks, and embedded systems design,
- Can use modern engineering techniques and tools to identify, formulate and solve computer engineering problems,

CSE Programme Structure	
Year 1	Foundation courses in computing, electronics and electrical engineering, physics, engineering mathematics, ethics and professional practices
Year 2	Core courses including Systems Programming, Web Design, Electronics Designs, Embedded Systems
Year 3	Advanced courses including a Capstone Project, New Venture Creation and Entrepreneurship, Robotics, Engineering Management and Accounting Systems, Computer & Network Security

Degree Programmes

Programme Overviews

BSc Electronics Engineering

Electronics engineering is an engineering discipline where non-linear and active electrical components such as semiconductor devices, especially transistors, diodes and integrated circuits, are utilized to design electronic circuits, devices and systems, typically also including passive electrical components (resistors, capacitors and inductors) and based on printed circuit boards. The field contains important sub-fields such as analog and digital electronics, consumer electronics, embedded systems and power electronics. It deals with implementation of applications, principles and algorithms developed within many related fields, e.g. solid-state physics, radio engineering, telecommunications, control systems, signal processing, systems engineering, computer engineering, instrumentation engineering, electric power control, robotics, and many others.

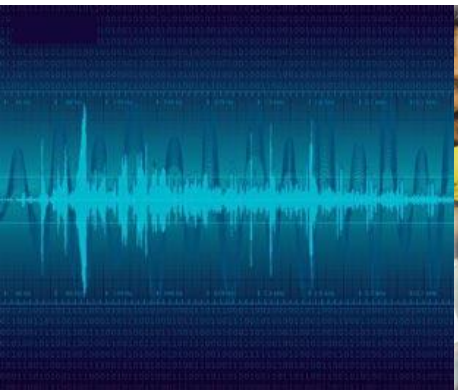
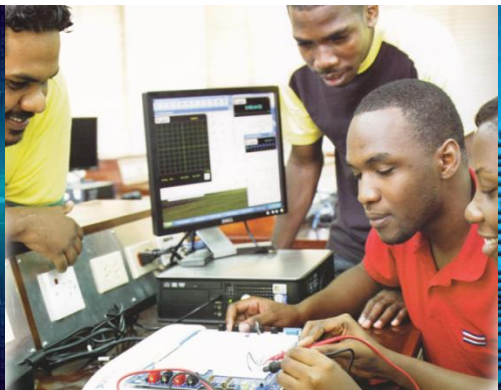
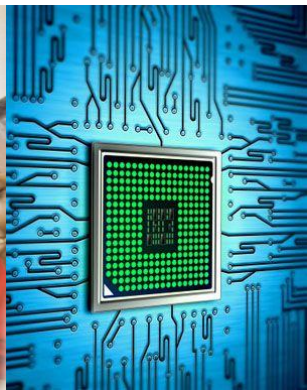
During the first year students are exposed to foundation courses in engineering physics, computer science and mathematics, along with introductory courses in electronics and electrical circuits. The second year courses provide the core electronics background for this engineering discipline, along with a more advanced engineering mathematics course. All students are required to complete a 1-year extensive project during the final year along with the introduction to engineering management and accounting systems course.

They then will take one of the two options; Telecommunications or Industrial Instrumentation, to complete their area of specialty. A course on New Venture Creation and Entrepreneurship has been added to create and foster entrepreneurship activities by our graduates.

Programme Objectives

The overall objectives of this program are to produce graduates who:

- have a solid foundation in the core areas of Electronics Engineering
- will be technically competent for immediate employment in the fields of Telecommunications or Industrial instrumentations
- who have capabilities to design, develop and test electronic equipment/instrument with high levels of professionalism.
- who can apply newly learnt theories and skills to the technological and industrial development of Jamaica and the Caribbean region.

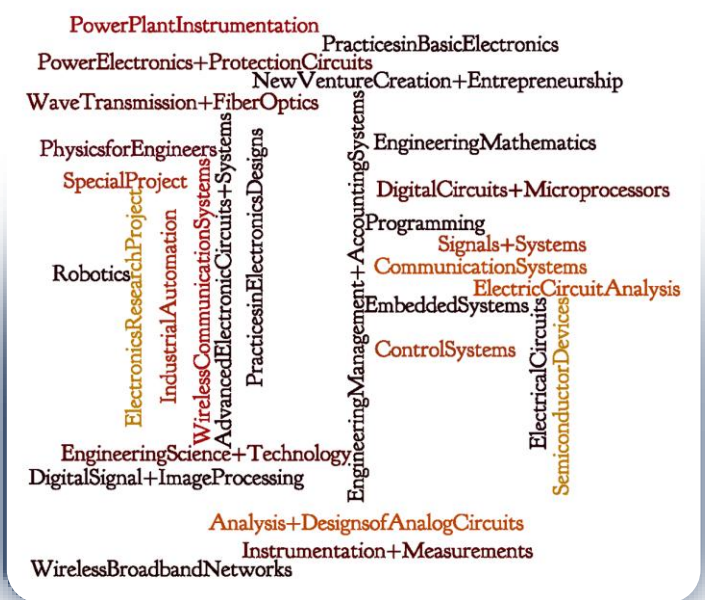




Courses Offered

Civil Engineering

Computer Systems Engineering

Electronics Engineering



Careers in Engineering

There are a number of technical specialties within the realm of Civil Engineering, these include:

- **Structural Engineering**
  Creating the structural elements of design, whether for bridges, or skyscrapers. Probably the oldest single specialty in civil engineering, going all the way back to Pharaoh's pyramids.
- **Geotechnical Engineering**
  Concerned with the rock and soil which supports the structures that other civil engineers design.
- **Environmental Engineering**
  Designing systems for the treatment of chemical, biological and thermal wastes.
- **Materials Engineering**
  These are the experts on the various materials which other civil engineers use for their projects.
- **Water Resources Engineering**
  concerned with the collection and management of water. Some of the earliest known civil engineers were the Roman engineers who created the aqueducts.
- **Earthquake Engineering**
  a specialty dealing with creating buildings and other structures which can withstand the stresses of earthquakes without failure.
- **Coastal Engineering**
  Managing the coastal areas of our country, including marshlands. Coastal engineers create defenses against flooding and erosion.

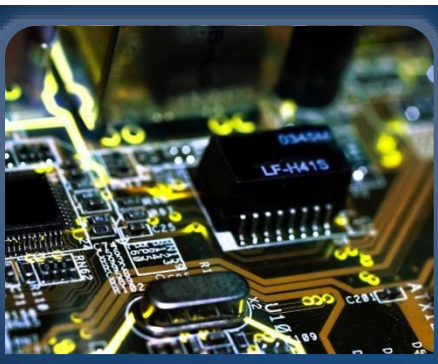
Computer Systems Engineer

Performs both the hardware and software design of a system. Technological development and application are being increasingly emphasised in diverse areas of modern life, and there is increasing demand for professionals who are not only well versed in current technology but who are also capable of quickly assimilating and applying new advances as they arise.

Electronics Engineers

Employment opportunities for are expected from the following industries:

- Telecommunications (local and international)
- Manufacturing (local and international)
- Industrial Automation and Control
- Other relevant industries and government sectors



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Department of

Geography & Geology

"Geology is the science and study of the Earth, its composition, structure, physical properties, history, and the processes that shape it. Geologists study the physical structure and processes of the Earth and work to understand the history of our planet.

Geography is the study of the earth's landscapes, peoples, places and environments. Geography is unique in bridging the gap between the social sciences (human geography) and the natural sciences (physical geography)."

Department of Geography and Geology

The University established a Geology Department in July 1961, with an intake of 26 students and the first class graduated in 1964. In 1965 the department moved to its present quarters, the De la Beche Building, named for the pioneer Jamaican geologist, Sir Henry De La Beche. He produced the first geological map of eastern Jamaica and was also the founder and first director of the British Geological Society.

Also in 1965, geography was introduced into the University's curriculum. Initially a sub-department of the Geology Department, Geography became a separate department in 1971. However, after some restructuring, in 1996, Geography and Geology were merged to form a single academic department housed in two buildings.

The department is fairly small in comparison to other academic departments at Mona. Nevertheless, it has a good reputation for its "family atmosphere" and the approachability of staff. In part, this is because of the importance we place on fieldwork which provides opportunities to get outside the classroom and get to know both staff and other students very well.

Why Pursue Undergraduate Studies in Geography or Geology at the UWI, Mona?

- Studying geography or geology at the UWI, Mona not only equips you to become employed in a wide range of industries but also provides you with transferable skills that can be applied to a range of careers in the petroleum/energy/mining industry, museums, environmental agencies and research centres.
- Many of the teaching staff maintain research programmes of direct relevance to the courses they teach, and transfer their research into teaching.
- You will have access to resources such as the Earthquake Unit, the Geology Museum, the Marine Geology Unit, the Unit For Disaster Studies, Map Library & Reading Room, and specialised laboratories including the Sedimentology & Rock Preparation Laboratories

Entry Requirements

Compulsory field work in the Department of Geography and Geology is carried out on Saturdays and/or Sundays.

Geography	Geology
❶ Bachelor of Science 2 CAPE subjects (units I & II) or 2 A'Levels in approved science subjects, and CSEC or O'Level Geography ❷ Bachelor of Arts 2 CAPE subjects (units I & II) or 2 A'Levels CSEC or O'Level Geography Communication Studies Caribbean Studies	2 CAPE subjects or 2 A'Levels in approved science subjects
Level I Courses pursued: Population, Migration & Human Settlement; Geomorphology & Soils; Economy, Agriculture & Food; Climate & the Biosphere	**Level I Courses pursued:** Earth Materials & Plate Tectonics; Minerals & Mineral Deposits; Earth Processes & Earth History; Geological Maps & Environmental Geology.

Become involved....join us!

- UWI Geographical Society
- Jamaica Geographical Society
- UWI Geological Society
- Jamaica Geological Society

Degree Programmes

The Department of Geography and Geology presently offers a major in Geography with an accompanying minor, and a major in Geology with an accompanying minor. A double major is also available in both Geography and Geology.

The department offers the BSc in Geography from the Faculty of Science and Technology or the BA in Geography from the Faculty of Humanities and Education. The difference between the BA Geography and the BSc Geography degrees lies in the choice of other subjects and courses you are able to combine with your geography programme.

Undergraduate Programme Offerings	
Majors	**Minors**

▸ Geography
  ▸ minimum 30 credits from Part II
▸ Geology
  ▸ minimum 39 credits from Part II
	▸ Geography (minimum 15 credits)
	  ▸ students reading for a Minor will be able to dovetail relevant subject areas within geography to related science, social science or humanities disciplines.
	▸ Geology (minimum 15 credits)
	  ▸ provides students with a basic understanding of geological concepts at level I, and the choice to develop areas of specialization at levels II and III.

Practical Components

All fieldwork in Geography and Geology is Mandatory. Field trips and field work are an active and integral part of the work and study of the department. They are both educational and fun! It allows students and lecturers to have experiences with the local community and relate theory taught in classes to real-life situations.

Degree Programmes

Overview of the Majors

BSc Geography

In the Department we place considerable emphasis on the linkages between developed and developing countries, and on applied geographical themes that connect people to the environment, such as natural hazards and disaster management, tourism and coastal processes, natural resource management and the environment, and urban geography and planning.

Our courses cover a wide range of material, from tropical and temperate countries, and from industrialized/developed countries and the developing world. However, the Caribbean region is our geographical tapestry, so naturally many of our courses include Caribbean examples – more so than any other university geography degree in the world. We even have a special, Level III course on the region. Thus, we want UWI geography graduates to have the broad world view of geography graduates elsewhere, but also to have a deeper understanding of the Caribbean than their counterparts from universities in North America and elsewhere in the world.

Geography Courses

LEVEL I
- Population, Migration and Human Settlement
- Geomorphology and Soils
- World Economy, Agriculture and Food
- Climate and the Biosphere

LEVEL II
- Urban Geographies
- Research Methods in Geography
- Geographies of Development
- Earth Surface Processes
- Environmental Change
- Water Resources
- Introduction to Geographical Information Systems

LEVEL III
- Disaster Management
- Climate Change in the Tropics
- Karst & Coastal Geomorphology
- Urban & Regional Planning
- Geography of the Caribbean
- Tourism Planning & Development
- Tropical Agriculture & Development
- Geography Research Project

Degree Programmes



Overview of the Majors

BSc Geology

The Caribbean region is dependent on finding natural resources to meet the needs of its growing population and to drive its economic development, but is also particularly prone to natural disasters and the effects of climate change. The geology major seeks to train graduate students with theoretical knowledge, practical experience, and the specific and transferrable skills and have the necessary abilities to assess, analyse and solve the current and future geological needs of the Caribbean region.

The programme will equip graduates with the necessary cognitive skills to become employed in the geosciences or to enter into a higher degree programme to develop more advanced skills.

Geology Courses

LEVEL I
- Earth Materials and Plate Tectonics
- Earth Processes and Earth History
- Minerals and Mineral Deposits
- Geological Maps & Environmental Geology

LEVEL II
- **Field Methods for Geology**
- Palaeontology
- Sedimentary Geology
- Igneous and Metamorphic Petrology
- Plate Tectonics and the Caribbean
- Water Resources
- Introduction to Geographical Information Systems

LEVEL III
- **Research Project in Field Geology**
- **Caribbean Geology**
- Advanced Hydrogeology
- Sedimentology and Facies Analysis
- Petroleum Geology
- Engineering Geology
- Geophysics and Seismicity
- Disaster Management
- Karst & Coastal Geomorphology
- Climate Change in the Tropics

Prizes in Geography and Geology

The prizes are awarded at the appropriate Faculty Awards Ceremony in the following academic year.

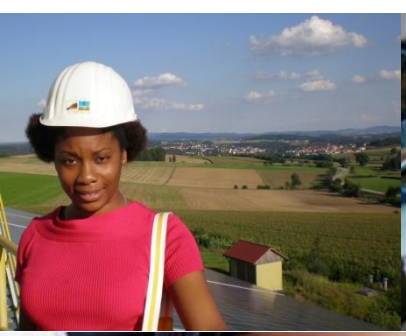
Barry Floyd Prizes in Geography

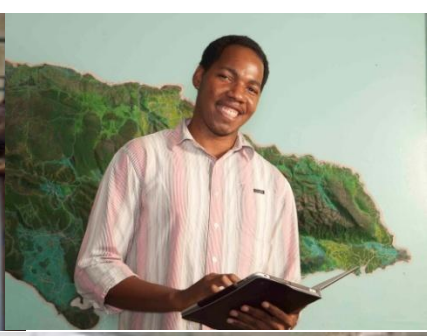
The Barry Floyd Prizes in Geography are named after the first Head of Geography at UWI, Dr Barry Floyd. There are two small cash prizes awarded to the best first year and the best second year Geography students each year.

Careers in Geography and Geology

Those who graduate with a Geography or Geology degree find jobs in:

- Industry – Petroleum/Energy/Mining
- Environmental Agencies
- Entrepreneurs/Consultants
- Government Ministries/Agencies
- Research Centres
- Specialized Laboratories
- Museums
- Universities/Colleges/Schools






Careers in Geography and Geology

Careers in Geography

A degree in Geography provides students with a very wide range of transferable skills which are valuable for jobs in research, environmental consultancy, marketing, government, teaching, and more.

- Urban/Population Geography
- Urban and Regional Planning
- Disaster Management
- Economic Geography
- Environmental Consultants
- Teacher/Lecturer/Researcher
- Climatology
- Hydrology
- Geomorphology
- GIS Analyst
- Cultural Geography
- Biogeography

Careers in Geology

The increasing world population means that more energy, food, water and minerals are required from the Earth. Geologists play a vital role in finding and developing these resources, as well as protecting the environment as resources are extracted. Geologists also play critical roles in protecting the communities we live in by predicting and monitoring hazards such as volcanic eruptions, earthquakes, landslides and subsidence.

- Palaeontology
- Geomorphology
- Volcanology
- Seismology
- Hydrology/Hydrogeology
- Mineralogy
- Museum Curators
- Petroleum/Exploration Geology
- Teacher/Lecturer/Researcher
- Planetary Geology
- Marine Geology
- Disaster Management
- Sedimentology
- Environmental Consultants

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http://www.mona.uwi.edu/geoggeol/

Department of

Life Sciences

"The life sciences comprise the fields of science that involve the scientific study of living organisms – such as microorganisms, plants, animals, and human beings – as well as related considerations like bioethics.

The life sciences are helpful in improving the quality and standard of life. They have applications in health, agriculture, medicine, and the pharmaceutical and food science industries."

Department of Life Sciences

The Department of Life Sciences is one of the largest departments in the Faculty of Science and Technology with approximately 1000 undergraduates, 57 graduate students, 14 full time academic staff and 30 support (technical and ancillary) staff.

The Department is housed within several buildings, divided into 7 blocks, with each contributing to the varying resources used for both teaching and research. These resources include 23 laboratories, insect collections, a zoology museum, coral skeleton collection, a Herbarium with over 30,000 plant specimens and a botanical garden of over 2.5 acres and 3 experimental greenhouses. In addition, we also have access to two marine labs, at Port Royal on the south coast and Discovery Bay on the north coast.

Why Pursue Undergraduate Studies in Life Sciences at UWI, Mona?

Our programmes aim to

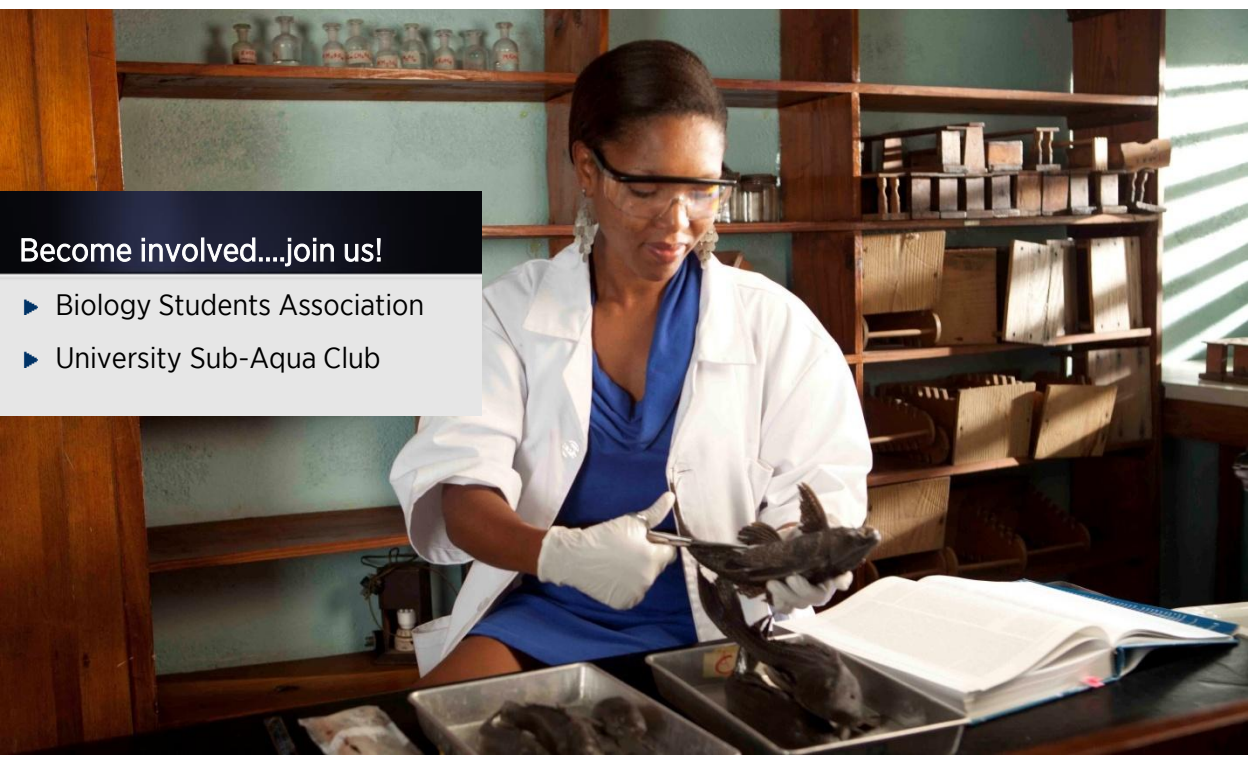
- equip students with advanced knowledge and training in one or more areas of the life sciences, with more specific subject-related skills in at least one of these areas
- guide students in developing significant information gathering and analytical skills
- train students to take a critical approach to any biological/environmental problems which they may encounter.
- provide a solid foundation in the morphology, physiology and ecology of organisms in the six Kingdoms of life and the Environments in which they live through the courses taught
- provide a sound base for further academic or professional advancement

Entry Requirements

Entry to our programmes is extremely competitive and in any given year, CAPE passes at grades 4-5 may not afford direct entry to the full time 3-year B.Sc. programme. However, Life Sciences permits entry to a 4-year degree programme as well.

PRELIMINARY LEVEL*	LEVEL I**
Faculty Core requirements plus CSEC Biology or equivalent with Grade III or better	❶ Faculty Core requirements plus CAPE Biology Units I + II or A'Level Biology or equivalent plus 1 other CAPE subject ❷ Associate Degrees and qualifications from other Tertiary Level Institutions are also considered and may even permit exemptions from some courses
Courses pursued: Preliminary Biology I + II, among others.	Courses pursued: Cell Biology , Molecular Biology and Genetics, Living Organisms I + II, among others

*4 year (full-time)/5 year (part-time) degree programme
**3 year (full-time)/4 year (part-time) degree programme



Become involved....join us!

- Biology Students Association
- University Sub-Aqua Club

Degree Programmes

The department offers two BSc programmes, five single majors and three minors. Additionally, the Biology with Education option is offered in conjunction with the Faculty of Humanities and Education.

Undergraduate Programme Offerings			
Specials	**Majors**	**Minors**	**Option**

▸ BSc Environmental Biology*
▸ BSc Experimental Biology*
*cannot be taken with any other major or minor because of the number of credits required
	▸ Animal Biology
	▸ Applied Plant Sciences
	▸ Horticulture
	▸ Marine Biology
	▸ Terrestrial and Freshwater Biology
		▸ Conservation Biology
		▸ Human Biology
		▸ Plant Sciences
		  ▸ requires fifteen (15) credits from Part II (advanced) Life Sciences courses
			▸ Biology with Education
			  ▸ aimed at students lacking in Biology but who have exposure to requisite teaching skills

Overview of the Programme

Practical Components

Some of our courses are supported by field trips to coastal habitats (mangroves, seagrass, coral reefs), facilities supporting the fisheries industry and even to traditional medicine practitioners. There are camping trips to the Blue Mountains and Hellshire Hills, and day-visits to examine various river systems around the island.

Degree Programmes

Overview of the Specials

BSc Environmental Biology

COURSES: Issues in Conservation Biology; Freshwater Biology; Oceanography; Coastal Ecosystems; Caribbean Coral Reefs; Plant Eco-physiology; Tropical Forest Ecology; Entomology; Sustainable use of Marine Fishable Resources; Aquaculture; Internship; Biology Project

The BSc in Environmental Biology is designed to provide a detailed understanding of the concepts, strategies and practices available to scientifically investigate and analyse species, communities and ecosystems towards the successful monitoring, management and development of strategies for sustainable use of these systems.

BSc Experimental Biology

COURSES: Biology of Soil; Virology; Pest Ecology & Management; Plant Biotechnology; Plant Breeding; Fundamentals of Horticulture; Economic Botany; Plant Eco-physiology; Entomology; Parasitology; Vertebrate Biology; Immunology; Human Biology; Biology Project; Internship

The BSc in Experimental Biology is designed to expose students to a wide range of laboratory-based courses which reflect the variety of specializations available within the subject of biology. These include areas as diverse as Parasitology, Plant Biotechnology and Vertebrate Biology. The programme is intended to appeal to those students seeking a degree which emphasizes a laboratory-based experimental approach to Biology with concomitant expertise in a wide range of laboratory techniques. The design of the programme encourages students to combine courses from the three main areas of Biology: Animal Biology, Plant Biology and the Biology of Microbes.

Degree Programmes

Overview of the Majors

Animal Biology

COURSES: Human Biology; Parasitology; Immunology; Entomology; Advanced Topics in Animal Sciences

Animal Biology is the study of the huge variety of animal life on Earth. With a central focus on the biotic environment, this major presents a theoretical and practical approach to the biology of animals, how animals integrate into the environment, and how environmental change may affect animal populations in the future. It examines the evolutionary origins of the various groups of animals, their structure, physiology, behaviour, interspecific associations, defense mechanisms, ecology and conservation.

Applied Plant Sciences

COURSES: Economic Botany; Tropical Forest Ecology, Plant Biotechnology; Plant Breeding; Plant-Pest Interactions

Plant Sciences is the scientific study of plant life and development. The Applied Plant Sciences major examines selected aspects of plant sciences through practical and theoretical studies to foster the desire for continued exploratory investigations into biological solutions to real-world problems.

Horticulture

COURSES: Management of Soil; Post-Harvest Technology Fruit Crop Production; Economic Botany; Plant Biotechnology; Plant Breeding; Plant-Pest Interactions;

The Horticulture Major is designed to provide students with a background in general horticultural science with special emphasis on the production of tropical and subtropical crops. The selection of courses in the programme provides the student with both the theoretical and the hands-on approach to learning the subject matter. In addition to the specialized courses offered, the programme is based on a solid core of traditional plant sciences courses.

Degree Programmes

Overview of the Majors

Marine Biology

COURSES: Oceanography; Caribbean Coral Reefs; Coastal Ecosystems; Sustainable use of Fishable Resources; Diving for Scientists; Aquaculture

The Major in Marine Biology is designed to give students hands-on exposure to the study of the marine environment and its organisms. It enables students to gain detailed knowledge of the marine ecosystem so as to provide understanding of the concepts, strategies and practices available to scientifically investigate, analyse and manage marine species and communities.

Terrestrial and Freshwater Ecology

COURSES: Freshwater Ecology; Tropical Forest Ecology; Conservation Biology; Entomology

The Major in Terrestrial and Freshwater Ecology is designed to give students hands-on exposure to the study of terrestrial environments as well as lotic and lentic fresh water systems and associated organisms. It enables students to gain detailed knowledge of terrestrial animal communities so as to provide understanding of the concepts, strategies and practices available to scientifically investigate, analyse and manage terrestrial and freshwater species and communities.

Courses Offered

Our programmes and courses expose students to the theoretical underpinnings of the subject, while still requiring them to be able to apply that knowledge in practical and tangible ways that solve real problems.

Life Sciences Courses

Preliminary (Level 0)
- Preliminary Biology I
- Preliminary Biology II

Level I
- Cell Biology
- Molecular Biology and Genetics
- Living Organisms I
- Living Organisms II

Level II
- Principles of Ecology
- Eukaryotic Microbiology
- Research skills and practices in Biology
- Biological Evolution
- Diving for Scientists (Summer)
- Fundamentals of Biometry
- Coordination and Control in Animals
- Molecular and Population Genetics
- Maintenance Systems in Animals
- Plant Form and Systematics
- Physiology of Plants

Level III
- Soil and Water Management
- Agriculture Internship
- Landscape and Turf grass production
- Fruit and Crop Production
- Post-Harvest Technology
- Conservation Biology
- Biology of the Fungi
- Biology of Soil
- Virology
- Pest Ecology and Management
- Advanced Topics in Animal Science
- Freshwater Biology
- Oceanography
- Coastal Ecosystems
- Caribbean Coral Reefs
- Plant Biotechnology
- Plant Breeding
- Horticulture
- Economic Botany
- Plant Eco-Physiology
- Internship
- Entomology
- Aquaculture
- Tropical Forest Ecology
- Parasitology
- Immunology
- Human Biology
- Sustainable Use of Fishable Resources





Life Sciences Awards and Prizes

The Faculty of Science and Technology annually awards prizes and scholarships for outstanding performance to students in the B.Sc. programme. At this ceremony, the Department of Life Sciences also formally recognises its students by awarding subject prizes for quality academic performance.

The Don Skelding's Prize in Botany

Professor Arthur Donald Skelding was the second Professor of Botany of the University of the West Indies, Mona from 1955 to 1973. This annual prize is presented to the student with the best examination grades in the Preliminary Biology courses.

The L. B. Coke Prize in Plant Physiology

This prize is in honour of Dr. L.B. Coke, former Senior Lecturer and Head of the Department of Botany who taught Plant Physiology for fifteen years. It is awarded every year to the student who obtains the highest mark in the Plant Physiology course.

The Vincent Hugh Wilson McKie Prize in Zoology

This award is based on the results of the examinations taken at the end of Level II of the degree programme and is given to a student with high grades in Level II Zoology courses. The award is based not only on academic excellence, but also takes into account participation in extra-curricular activities.

The Avinash Potluri Prize in Animal Diversity

This prize named in honour of Avinash Potluri (son of Dr. Devi Prasad and Dr. Sasikula Potluri) is presented to the student with the best performance in the Level I Animal Diversity course.

The Charlotte Goodbody Prize in Level I Biology

This award named in honour of Mrs. Charlotte Goodbody is a book grant presented to the student with the best performance in the Semester I examinations of Level I.

The Ivan Goodbody Prize in Marine Biology

This award named in honour of Prof. Ivan Goodbody is presented to the student with the best performance in the second year of the Marine Biology major.

The Dr. Devi Prasad Prize in Plant Diversity

This award named in Dr. Prasad's honour is presented annually to the student with the best performance in the Level I Plant Diversity course.

The Dr. Sasikula Potluri Prize in Plant Form

This award named in honour of Dr. Sasikula Potluri is presented annually to the student with the best performance in the Level II Botany course, Plant Form.

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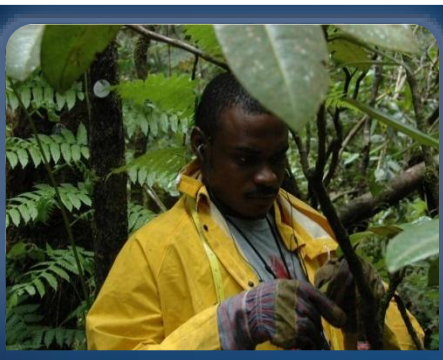
Careers in Life Sciences

The Department of Sciences degree programme is designed to prepare students for careers in several very broad areas. Possible career paths include:

- Marine Biologist
- Teacher/Lecturer
- Entrepreneur/Private Farmer
- Tissue culture specialist
- Fishery Biologist
- Plant Pathologist
- Fruit Specialist
- Conservation Biologist
- Forest Ecologist
- Freshwater Biologist
- Landscaper
- Soil Scientist
- Entomologist
- Parasitologist
- Agronomist
- Medicinal Botantist
- Animal Geneticist
- Animal/ Plant Breeder
- Forester
- Policy Planner
- Marketing specialist
- Environmental Law
- Agribusiness Manager
- Weed Scientist
- Coastal Manager
- Veterinarian
- Food Technologist
- Forensic Botantist/Entomologist
- Plant Protection Officer
- Post-harvest Technologist
- Agricultural Banker
- Environmental Consultant
- Ornamental Horticulturalist
- Extension Officer
- Nematologist
- Agro-Environmentalist
- Human Ecologist
- Museum Curator
- Medical Entomologist
- Farm Manager
- Taxonomist
- Paleobotanist
- Paleozoologist
- Public Health Officer
- Biomedical Molecular Biologist
- Veterinary Parasitologist
- Medical Parasitologist
- Forensic Molecular Biologist
- Animal Nutritionist
- Commercial Crop Researcher
- Biological Research



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Department of

Mathematics

"The study of mathematics is not only exciting, but important: mathematicians have an opportunity to make a lasting contribution to society by helping to solve problems in such diverse fields as medicine, management, economics, government, computer science, physics, psychology, engineering and social science."

Department of Mathematics

Teaching in the Faculty of Science and Technology began in 1949 and the Department of Mathematics has been there since the inception. It serves the University by offering teaching at all levels, from CAPE through to the doctorial level with a staff complement of thirteen (13).

The Department has graduated an average of 60 BSc. students per year with a major or minor in mathematics, completing the Actuarial Science Option or completing the Mathematics with Education Option.

There were three well developed areas of research in the department: Stochastic Analysis, Physiological Fluid Dynamics and Mathematical Physics. In addition, some work has been done in Linear Algebra, Statistics and Actuarial Science.

Why Pursue Undergraduate Studies in Mathematics at UWI, Mona?

- The department offers the Mathematics Bridging Programme to prepare students for the rigors of university study by reinforcing their basic mathematical skills. Places are limited so incoming first-year students who have not studied mathematics successfully to CAPE level receive priority. Students work intensively in groups of no more than six with the support and guidance of highly-qualified tutors on various topics.
- Our courses are taught within a friendly and supportive environment which is relaxed but academically rigorous.
- The degree programmes offer a wide range of experience in mathematics, statistics and actuarial science, and produce graduates with excellent career prospects as well as provide a sound base for further academic or professional advancement

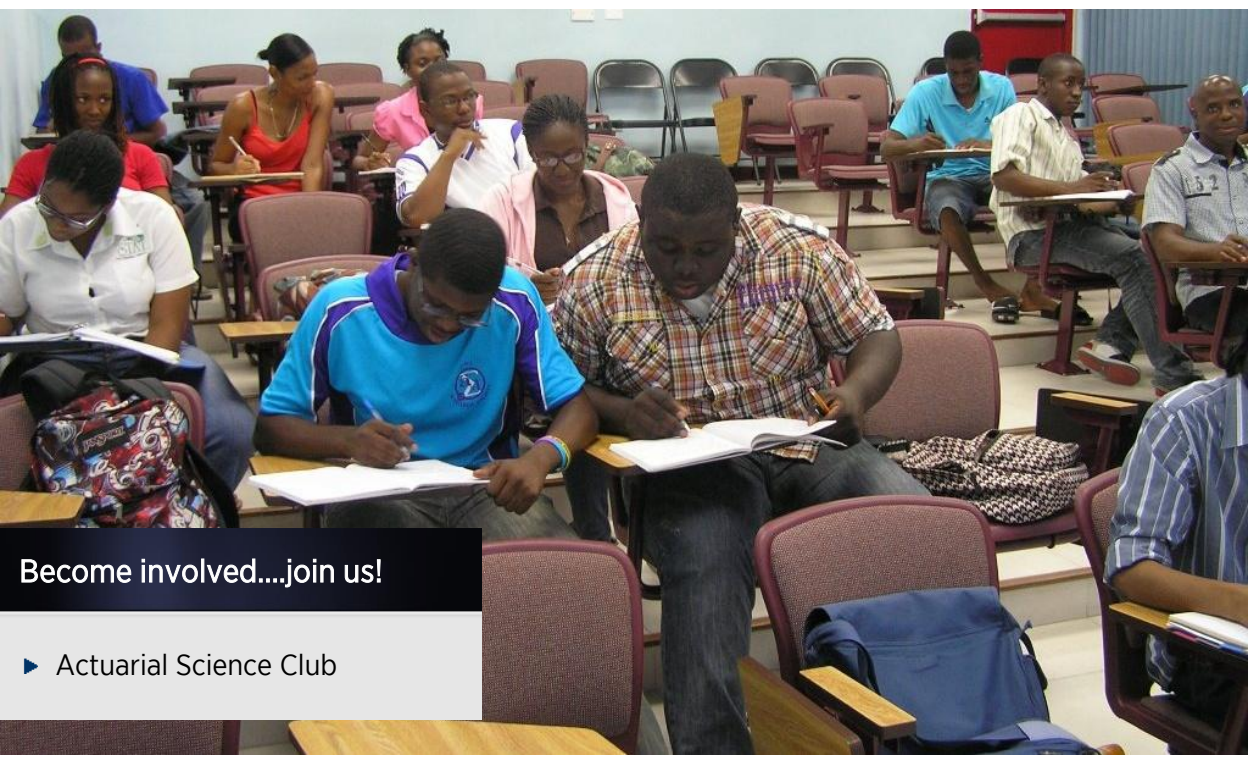
Entry Requirements

A mathematics-related BSc degree at UWI, Mona can be completed in three years. However, a 4-year degree programme is also available for candidates for are not fully matriculated.

In order to gain entry into the mathematics degree programme, candidates must satisfy the requirements for entrance to the Faculty of Science and Technology and obtain qualifications as set out below.

PRELIMINARY LEVEL*	LEVEL I**
Faculty Core requirements plus CSEC Mathematics with Grade III or better	Faculty Core requirements plus CAPE Mathematics Units I + II or GCE A'Level Mathematics plus 1 other CAPE subject (preferably science)
Courses pursued: Pre-Calculus, Calculus and Analytical Geometry	Courses pursued: Introductory Linear Algebra and Analytic Geometry; Calculus I + II; Introduction To Formal Mathematics

*4 year (full-time)/5 year (part-time) degree programme
**3 year (full-time)/4 year (part-time) degree programme



Become involved....join us!

- Actuarial Science Club

Degree Programmes

The Department of Mathematics currently offers B.Sc. in: “Actuarial Sciences”, “Mathematics” (Major or Minor), “Mathematics & Modelling Processes”, “Statistical Science” and “Mathematics with Education Studies”. .

Undergraduate Programme Offerings		
Majors	**Minor**	**Options**

▸ Mathematics
▸ Mathematics & Modelling Processes
▸ Statistical Science
 	
A *double major* in Mathematics requires passes in sixty-four (64) credits at Levels II and III. These should contain the core courses together with a minimum of 32 credits at Level III
	▸ Mathematics
	  ▸ requires eight (8) credits in any Level II and eight (8) credits in any Level III Mathematics courses.
		▸ Actuarial Science
		▸ Mathematics with Education
		  ▸ courses in the programme cover central ideas and developments of pure and applied mathematics; offers opportunities to engage in field-work in schools
		  ▸ offers an ideal start for anyone wanting to pursue a mathematics teaching career by consolidating and extending ones mathematical skills

Overview of the Programmes

BSc Actuarial Science

This programme deals with the analysis of the consequences of risk. Actuaries are highly trained professionals, versed in mathematical, statistical and economic techniques for the evaluation of the risk of uncertain future events. The BSc Actuarial Science programme is designed to expose students to a wide range of courses which prepares candidates for the professional examinations offered by the Casualty Actuarial Society, Faculty and Institute of Actuaries and the Society of Actuaries.

The application of the concepts presented within the programme to problems encountered in actuarial science is emphasized. These include areas such as Probability, Applied Statistics, Financial Mathematics, Actuarial Mathematics, and Asset-Liability Management. The programme will prepare the students for a career in traditional as well as non-traditional actuarial areas. The new design of the programme extends training in the fields of Pensions, Life and General Insurance, and in the high demand application areas of Finance and Investments.

Degree Programmes

Overview of the Programmes

BSc Mathematics

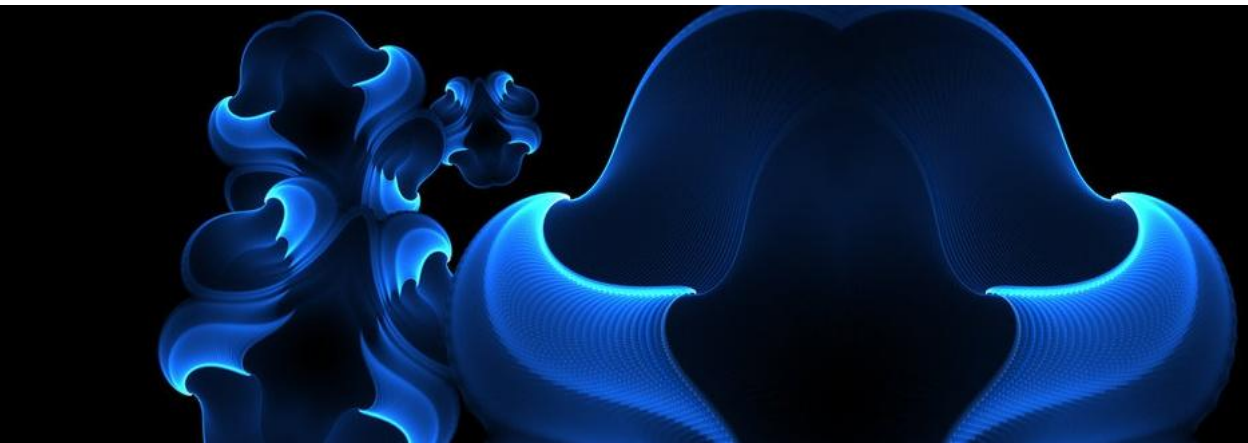
The programme is focused on equipping students with knowledge and technical skills in mathematics. They will also be exposed to some courses in statistics and higher level mathematical reasoning involving the rigors of mathematical proofs. The mixture of high level analytic and quantitative skills developed by graduates of the programme will prepare them for high level positions in the commercial sector, including banking and the broader financial services industry, and the public sector, including education.

BSc Mathematics & Modelling Processes

This programme is designed to provide a strong background in analysis and to develop highly technical abilities in the applications of mathematics to real world problems. Throughout the programme, there is an emphasis on laboratory- based work and problem-based learning via mathematical modelling, computer programming and case studies. This programme will equip students for careers in teaching, industry, financial services, information technology, management and consultancy, government, and industrial research and development.

BSc Statistical Science

Research and Development is often considered as one of the driving forces behind growth and job creation. The primary objective of this programme is to effectively enable science students who are conducting research to make informed decisions based on the possibilities of the outcomes through correct analysis and interpretation. Additionally, the programme aims to further develop critical and analytic thinking skills and will aid in interpreting data, normally published in today's scientific journals.



Courses Offered

Our programmes and courses expose students to the theoretical underpinnings of the subject, while still requiring them to be able to apply that knowledge in practical and tangible ways that solve real problems.

Mathematics Courses

Preliminary (Level 0)

- Pre-Calculus
- Calculus and Analytical Geometry

Level I

- Linear Algebra and Analytic Geometry
- Calculus for Scientists and Engineers
- Introduction to Formal Mathematics
- Engineering Mathematics I
- Statistics for Scientists
- Calculus I
- Calculus II

Level II

- Introduction to Probability Theory
- Elements of Mathematical Analysis
- Stochastic Modelling
- A First Course in Linear Algebra
- Multivariable Calculus
- Introduction to Abstract Algebra
- Ordinary Differential Equations
- Fourier Series and Integral Transforms
- Linear Optimization
- Non-Linear Optimization
- Financial Mathematics I
- Actuarial Mathematics I
- Inferential Statistics

Level III

- Complex Variables
- Introduction to the Theory of Integration
- A Course on Metric Spaces and Topology
- Some Topics in Functional Analysis
- Introduction to Differential Geometry with Computer software
- Advanced Abstract Algebra
- Advanced Linear Algebra
- Selected Topics in Operations Research
- Partial Differential Equations
- Numerical Methods
- Time Series
- Mathematical Modelling
- Regression Analysis
- Research Project in Mathematics
- Financial Mathematics II
- Evaluation Actuarial Models
- Models for Financial Economics
- Actuarial Mathematics II
- Mathematics of Pension Funds
- Topics in General Insurance

Mathematics Awards and Prizes

The Faculty of Science and Technology annually awards prizes and scholarships for outstanding performance to students in the B.Sc. programme. At this ceremony, the Department of Mathematics also formally recognises its students by awarding subject prizes for quality academic performance.

The Caribbean Actuarial Scholarship

The award was established in 2008 in memory of Basil L. and Monica G. Virtue by their son-in-law, S. Michael McLaughlin, an actuary who graduated from UWI. This is an annual award for actuarial student(s) who demonstrate a strong record of accomplishment, leadership qualities and commitment to becoming an actuary.

The Harold Chan Scholarship

This award, in honour of Dr. Dr. Harold Chan, a graduate of this Faculty and a member of the Department of Pathology, Faculty of Medical Sciences, is presented annually to the best second-year student in Pure Mathematics.

The Merville Campbell Prize

The prize was established by the department in memory of Merville Campbell who had served the Department of Mathematics for several years. It is given to the student with the best performance in Level I mathematics and the student with the best performance in Level II Mathematics.

The University Lodge/Euclid King/Leslie Robinson Prize

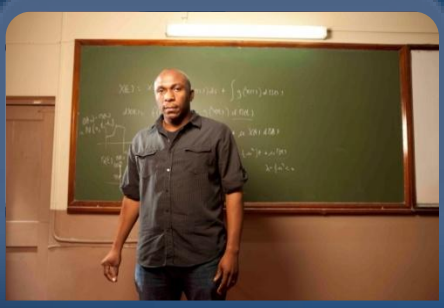
This prize was established by the University Lodge of the West Indies and is named in honour of two of its members, Euclid King and Prof. Leslie Robinson. The award is presented annually to the best first year (Level I) student.

Careers in Mathematics

A Mathematics degree is versatile and very marketable. Some of our students go on to further study, while others follow a wide variety of careers. The demand for our mathematicians is high in business, commerce and industry, as well as the academic world. A strong background in mathematics is also necessary for research in many areas of Computer Science, Social Sciences and Engineering.

A bachelor's degree in mathematics will prepare you for fascinating jobs in

- Statistics
- Actuarial Sciences
- Mathematical Modelling
- Banking
- Industrial Research and Development
- Economics
- Accounting
- Cryptography
- Teaching



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Department of

Physics

"Physics forms a foundation for all other sciences. The training and knowledge gained in physics are also vital in several non-science related disciplines.

Physics is the basis of many high technology industries; it helps us understand how everyday devices like radios, TVs, CD players, fans, computers and cars work."

Department of Physics

The Department of Physics was founded in 1948, and the first set of graduates made their appearance in 1953, one of whom eventually became head of the department. Today the department occupies a large group of buildings in the Faculty of Science and Technology. Most of the space is occupied by teaching, research and computer laboratories; lecture rooms and offices. We also have a small library and facilities housing a 22″ optical telescope and an Electron Microscope.

Undergraduates can select to study Electronics, Energy and Environmental Physics, General Physics, Materials Science and Medical Physics. The department also offers courses leading to the award of higher degrees in MPhil, MSc and PhD programmes.

We offer CAPE and CSEC Workshops, both at the Mona and the Western Jamaica Campuses and usually accommodate approximately 1000 students over 2 days.

Why Pursue Undergraduate Studies in Physics at UWI, Mona?

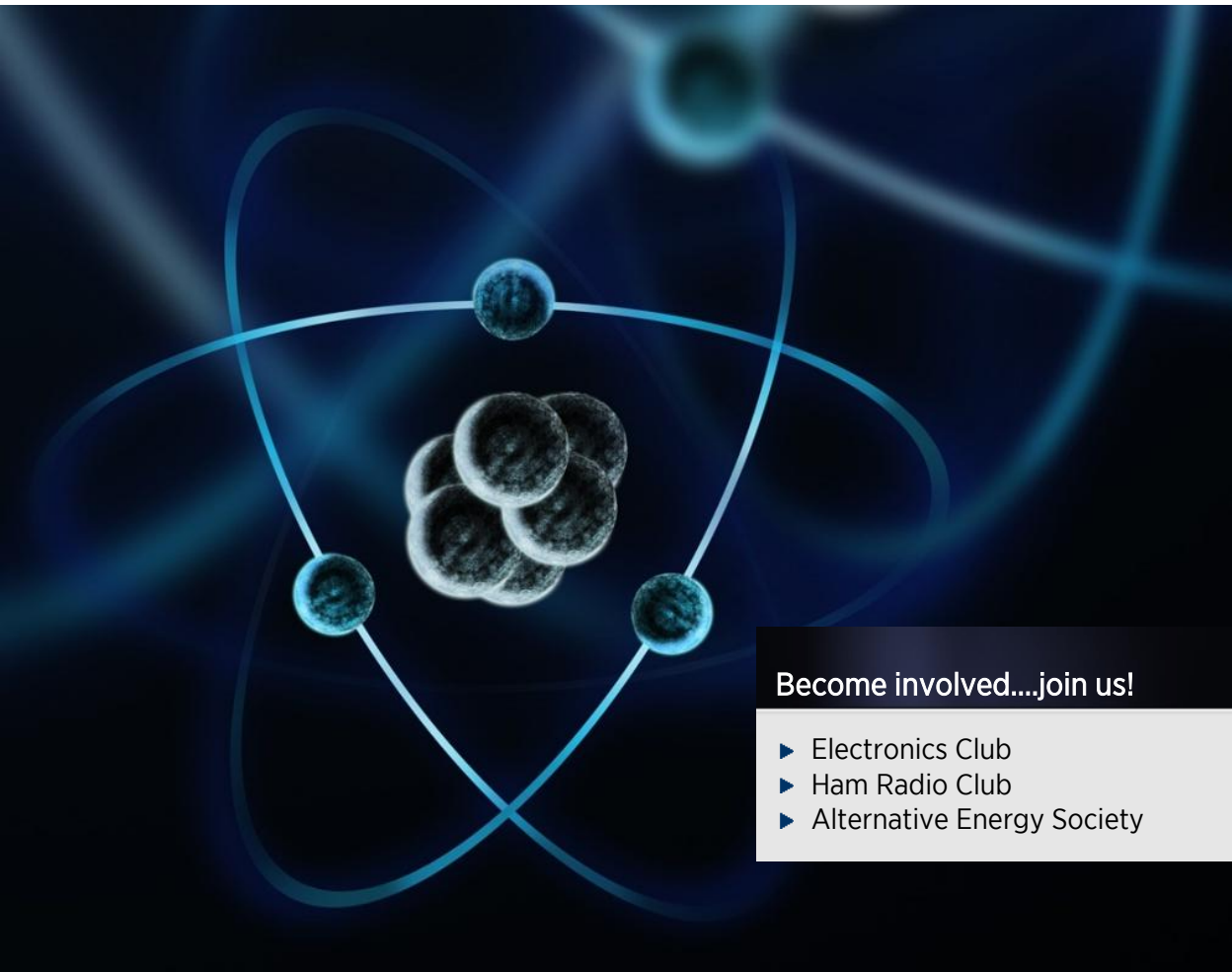
- We provide a high quality education which prepares you for further study and research in physics and equips you to become employed in a wide range of industries. It also provides you with transferable skills that can be applied to a range of careers
- Many of the teaching staff maintain research programmes of direct relevance to the courses they teach, and transfer their research into teaching.
- We facilitate research and development that foster national and regional growth though our Research Groups which consist of academic staff, graduate students and academically advanced undergraduate students
- We have several undergraduate laboratories, a Virtual Lab for simulation physics and teaching, a hybrid wind turbine–solar system which powers an undergraduate lab, a weather station and telescope

Entry Requirements

Candidates can pursue 3-year or a 4-year degree programme in Physics. Students who satisfy the requirements for normal matriculation are accepted into the 3 year programme; otherwise they are offered entry into the 4-year programme.

PRELIMINARY LEVEL*	LEVEL I**
Faculty Core requirements plus CSEC Physics or GCE O-Level Physics	❶ Faculty Core requirements plus CAPE Physics Units I + II or GCE A-Level Physics ❷ Faculty Core requirements plus CAPE Maths Units I + II or GCE A-Level Maths with CSEC or GCE O-Level Physics
Courses pursued: Intro to Mechanics, Intro to Oscillations & Heat, Intro to Nuclear Physics & Optics, Intro to Electricity & Magnetism among others.	Courses pursued: Mechanics, Electricity & Magnetism, Waves, Optics & Thermodynamics, Modern Physics, Intro to Electronics, Practices in Basic Electronics, among others

*4 year (full-time)/5 year (part-time) degree programme
**3 year (full-time)/4 year (part-time) degree programme



Become involved....join us!

- Electronics Club
- Ham Radio Club
- Alternative Energy Society

Degree Programmes

The Department of Physics presently offers five majors with corresponding minors. A double major within the department is possible only if the Electronics major is a part of the double major e.g. a major in Electronics and a major in General Physics. Also a major and a minor within the department is possible only if Electronics satisfies the major or the minor e.g. a major in Medical Physics with a minor in Electronics. Alternatively double majors may be done with any Physics major and a major from another department e.g. major in Material Science with a major in Chemistry.

Undergraduate Programme Offerings	
Majors	**Minors**
Electronics Energy and Environmental Physics General Physics Materials Science Medical Physics	Electronics Energy and Environmental Physics General Physics Materials Science Medical Physics
To satisfy a major, a minimum 36 credits from Part II are needed	To satisfy a minor in the department 18 credits are needed from Part II

Programme Overviews

To graduate with any Physics Major, the student must complete the following:

- Introduction to Electronics
- Mechanics
- Waves and Optics
- Electricity and Magnetism
- Modern Physics
- Mathematics for Scientists and Engineers
- Introduction to Linear Algebra and Analytic Geometry



Degree Programmes

Overview of the Majors




Electronics

COURSES: Electronics Designs; Digital Circuits and Microprocessors; Digital Signal Processing; Embedded Systems; Electric Circuit Analysis; Communication Systems; Robotics; Satellite Communication and Navigational Systems; Wireless Communication Systems; Wireless transmission and Fiber Optics

Plant Sciences is the scientific study of plant life and development. The Applied Plant Sciences major examines selected aspects of plant sciences through practical and theoretical studies to foster the desire for continued exploratory investigations into biological solutions to real-world problems.

Energy & Environmental Physics

COURSES: Atmosphere & Climate; Quantum Mechanics and Nuclear Physics; Electricity and Magnetism and Optics; Computer Applications in Physics; Solar Power; Fluid Dynamics; Wind & Hydro Power; Integrating Alternative Energy

A major in Energy & Environmental Physics will provide a student with knowledge of "the physical laws governing the environment" (Physics of the Environment, A W Brinkman). This includes observations of the interactions among the environmental variables (atmospheric and fluid), and practical use of this information particularly as it relates to alternative energy sources. This major will propel students into the burgeoning field of renewable energy, while giving them a solid base of theoretical Physics.

General Physics

COURSES: Modern Physics; Electricity and Magnetism and Optics; Engineering Math; Computer Applications in Physics; Electromagnetism; General Physics Lab; Solid State Devices;

The General Physics major contains all the theory of the other majors and provides students with the foundations of Physics. Students with this major will be expected to learn a little about each major in the Department, as well as other more theoretical subjects, like Astronomy and Cosmology.

This major leaves students with an appreciation of the Physics of everything and gives them a knowledge of theoretical Physics, which tends to be more math-based, and also gives students a foothold into the world of Research.

Degree Programmes

Overview of the Majors

Materials Science

COURSES: Modern Physics; General Physics Lab; Fluid Dynamics; Non-Crystalline and Amorphous Materials; Computer Applications in Physics; Thermodynamics and Kinetics of Materials; Electricity and Magnetism and Optics; Materials Science

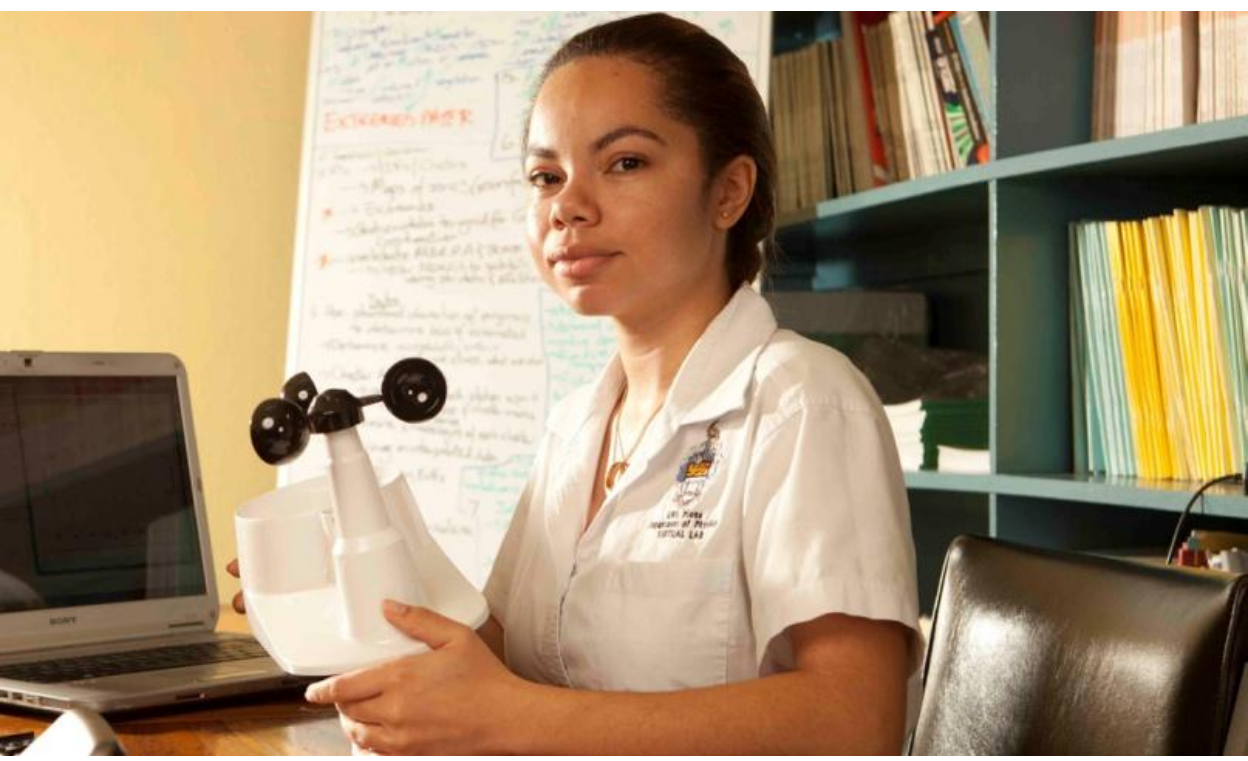
The Major in Marine Biology is designed to give students hands-on exposure to the study of the marine environment and its organisms. It enables students to gain detailed knowledge of the marine ecosystem so as to provide understanding of the concepts, strategies and practices available to scientifically investigate, analyse and manage marine species and communities.

Medical Physics

COURSES: Quantum Mechanics and Nuclear Physics; Practices in Medical Physics; Electricity and Magnetism and Optics; General Physics Lab; Physics of the Human Body; Fluid Dynamics; Biomedical Optics and Biomechanics; Computer Applications in Physics; Medical Radiation Physics and Imaging

A major in Medical Physics will have a student learning all about the application of Physics in Medicine. The student will become proficient in the Physics of the human body and techniques used for therapy and imaging.

It also involves the familiarization with several machines used in healthcare. This major will allow students to further their interest in medicine and Physics while doing practical work which encourages good health practices.



Courses Offered

Our programmes and courses expose students to the theoretical underpinnings of the subject, while still requiring them to be able to apply that knowledge in practical and tangible ways that solve real problems.

Physics Courses

Preliminary (Level 0)

- Intro to Mechanics
- Intro to Oscillations & Heat
- Intro to Nuclear Physics & Optics
- Intro to Electricity & Magnetism

Level I

- Waves, Optics & Thermodynamics
- Practices in Basic Electronics
- Electricity & Magnetism
- Intro to Electronics
- Modern Physics
- Mechanics

Level II

- Practices in Electronics Design
- Modern Communications
- Material Science Lab
- Material Science I
- Digital Circuits & Microprocessors
- Embedded Systems
- Signals & Systems
- Electric Circuit Analysis
- Practices in Medical Physics 1
- Physics of the Human Body
- General Physics Lab I
- Quantum Mechanics and Nuclear Physics
- Electricity, Magnetism & Optics
- Computer Applications in Physics
- Fluid Dynamics

Level III

- Practices in Electronics I
- Instrumentation
- Digital Signal Processing
- Wireless Communication Systems
- Further Medical Physics and Bioengineering
- Material Science Lab II
- Material Science II & III
- Solar Power
- Wind & Hydro Power
- Digital Communications
- Microprocessors
- Integrating Alternative Energy
- Introduction to Robotics
- Satellite Communication & Global
- EM Transmission & Propagation
- Astronomy & Cosmology
- Microcontroller Applications
- Modern Physics II
- Electromagnetism
- Medical Radiation Physics & Imaging
- Energy & Environment Lab
- Physics of the Atmosphere & Climate




Physics Awards and Prizes

The Faculty of Science and Technology annually awards prizes and scholarships for outstanding performance to students in the B.Sc. programme. At this ceremony, the Department of Physics also formally recognises its students by awarding subject prizes for quality academic performance.

The John Lodenquai Prize for Introductory Physics

Established by the family of the late Prof. John Lodenquai, a former Professor in Astro-Physics and a graduate of the University of the West Indies, it is presented to the student with the best performance in Level I Physics.

The Departmental Prize for Level II

The award is presented to students who do well in the Level II examinations and go on to Level III. The purpose is to reward and encourage, and so only those students who go on to Level III Physics qualify. No prize is awarded if no student gains a B+ and better. The two students with the highest marks are awarded prizes.

The Michael Tharmanahthan Bursary

Dr. Ponnambalam, a Senior Lecturer in the Department of Physics, made a donation to the department in memory of his late father, Michael Tharmanahthan, to provide bursaries for students reading Physics at the Mona Campus. The Bursary is intended to ensure that financial need does not stand in the way of academic achievement.

The Francis Bowen Bursary for Level II

The bursary was established in memory of the late Francis Bowen who was the first Head of the Department of Physics. The award is presented to students in the Faculty of Science and Technology who are committed to the study of Physics on the basis of performance in the Level II Physics examinations.

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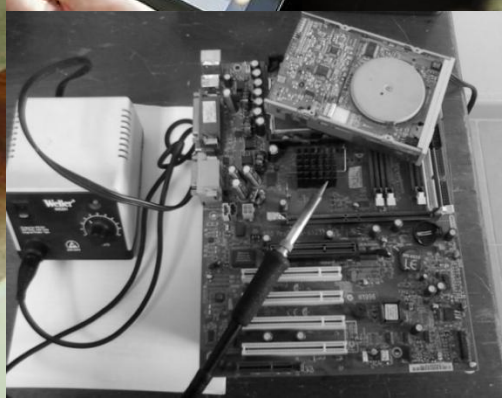
Careers in Physics



Persons who graduate from the Physics Department may obtain employment a number of areas, including:

- Telecommunications (local and international)
- Media
- Information Technology
- Education
- Manufacturing (local and international)
- Industrial Automation and Control
- Material Science
- Computer Games Design
- Robotics
- Cosmology
- Other relevant industries and Government sectors

CONTACT INFORMATION

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