

# FACULTY OF SCIENCE & TECHNOLOGY

## Mona

Year ending July 31, 2015



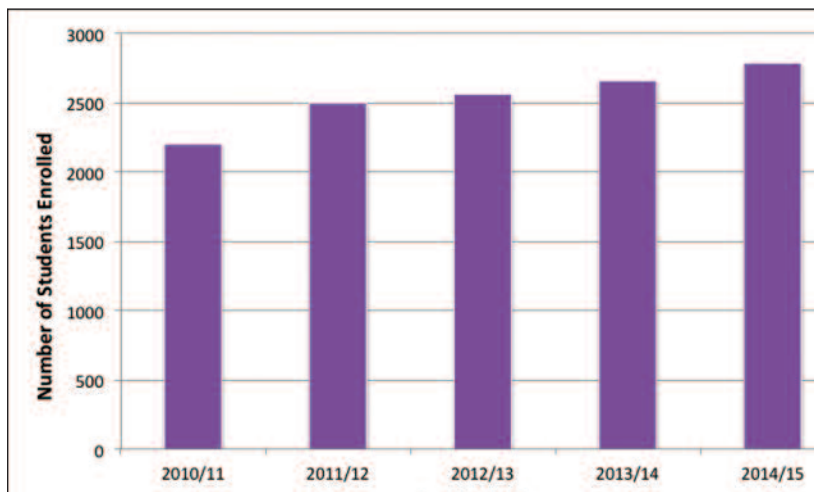
PROFESSOR PAUL REESE  
BSc (Hons), UWI, DPhil, *Sussex*, CChem, FRSC  
DEAN

# – *Dean’s Overview* –

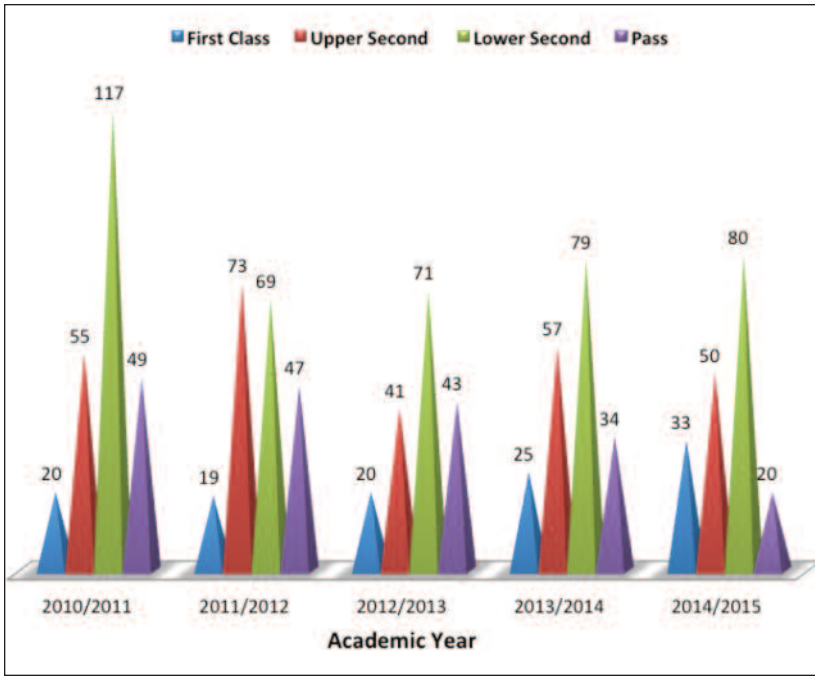
## TEACHING, LEARNING AND STUDENT DEVELOPMENT

### 1. Student Enrolment and Access to Faculty Programmes

The number of undergraduate students enrolled in our Faculty has grown steadily over the period 2010–2015 as illustrated below. The increase in recent years is largely due to the diverse course offerings by each Department and the monitoring of new incoming students by Faculty Office staff.



**Figure 1:** Number of registered students in the faculty



**Figure 2:** Number of Degrees awarded 2010–2015

Graduation data show an increasing number of students earning honours degrees with proportionately less receiving pass degrees.

Each Department of our Faculty continues to be innovative and flexible in dealing with the large student numbers by adding extra class and laboratory streams, including weekend and evening classes, additional consultation hours by Lecturers and adding equipment to improve throughput in laboratory sessions.

#### **i. Student Development Workshops**

The Mona School of Engineering led an initiative to prepare Undergraduate students for the world of work. The school hosted a Career 101 Workshop for final year students in the Electronics Engineering Programme in April, 2015. Topics addressed included: “Effective Public Speaking”,

“Dress for Success”, “Interviewing Techniques” and “Qualities of a Successful Leader”.

## **ii) Graduate Studies**

Student Registration: Total graduate student enrolment for the University in 2014–5 was 3253 including 513 (15%) in research degrees. In the same year there were 400 (8.6% decrease) graduate students (50% female) registered in the Faculty of Science and Technology (FST) of which 169 (42%) were pursuing research degrees. Approximately 33% of MPhil/PhD candidates on the Mona Campus are in FST.

Graduate Initiatives: The office of the Associate Dean Graduate Studies and Research hosted the “How to the get published” workshop in October 2014. In semester two staff from the International Student Office led a discussion with research students on study abroad opportunities.

## **iii) New Programmes and Courses**

The Faculty launched new courses in 2014–15 which expanded the selection of Programmes and Majors at both the graduate and undergraduate levels.

A new undergraduate major in Geosciences and a new minor in Human Geography were offered for the first time in 2014–15 by the Department of Geography and Geology.

Recognizing a growing demand for executives and other professionals with a specialization in the area of sustainable energy systems, the Department of Physics launched the Masters of Science in Renewable Energy Management and the Masters of Science in Renewable Energy Technology. The programmes target Natural Scientists, Engineers and Technical-related professionals, as well as those from the Social Sciences including Administrators, Policy Makers or Lawyers.

The Master’s and Postgraduate Diploma Programme in Biotechnology at the UWI-Mona Campus facilitates the UWI and the Caribbean region’s involvement in an area which is promising and the fastest-

growing technology of the present era. The field of Biotechnology is recognized for its potential to offer solutions to global problems ranging from food security and health to clean energy and environmental sustainability. Biotechnology is one of the priority areas of focus in the current UWI Strategic Plan.

The MPhil/PhD in Applied Physics facilitates study in any of several areas that deal either with the application of Physics to a technical discipline or with the interface between Physics and another area of Science. The Applied Physics Research Degree offers the flexibility of interdisciplinary research opportunities for Graduate students with a strong undergraduate background in Physics.

## RESEARCH AND INNOVATION

### 1. Research output

FST Graduate research output:

The number of research students and their participation in publications and conferences for the 2014–2015 academic year.

Department	# of registered MPhil and PhD Candidates 2014/15	No. of Publications with Graduate Students 2014/2015	No. of Conference Presentations with Graduate Students 2014/2015
Mathematics	5	1	3
Chemistry	34	4	21
Life Sciences	38	10	13
Physics	23	7	12
Mona School of Engineering	2	0	3
Computing	17	11	8
Geography and Geology	17	4	27
Biotechnology	12	2	5

## **2. Notable achievements**

### **i) Map Launch – The Geology of the Parish of St. Catherine**

In February 2015 the Department of Geography and Geology unveiled the first in a new series of 1:50,000 scale geological maps of Jamaica entitled “The Geology of the Parish of St. Catherine”. When completed, the series of maps will number 13 in total, with each map featuring a parish of Jamaica. The maps are the result of geological investigations carried out by the Department over the last 19 years.

### **ii) Dr. Karl Aiken awarded Silver Musgrave Medal**

Dr. Karl Aiken, Senior Lecturer, Department of Life Sciences was awarded the Silver Musgrave Medal for Science, 2014 for his work in Agriculture. Dr. Aiken has worked on fish and fisheries matters since 1971 when he completed his Masters’ Degree. He has conducted fisheries research on spiny lobsters and on island and offshore resources. He has taught fisheries and fish biology to undergraduate students, managed several research projects and worked on reef fisheries management.

### **iii) Dr. Tannecia Stephenson awarded Bronze Musgrave Medal**

Dr. Tannecia Stephenson, Lecturer, Department of Physics was awarded the Bronze Musgrave Medal for Science, 2014 for her work in the area of Physics. Her research interests are Caribbean climate variability, climate extremes, seasonal prediction using statistical models and statistical downscaling. She has been affiliated with a number of climate variability and change projects and has published a number of journal articles, technical reports and a short monograph with collaborators.

### **iv) Professor Simon Mitchell receives two prestigious awards**

Professor Simon Mitchell received the 2014 Vice Chancellor’s Award for Excellence in the areas of Research and Public Service for his work on geology in the Caribbean Region. In January 2015 he also received the Chubb Award for Excellence from the Geological Society of Jamaica for 20 years of contribution to the field of Geology and outstanding contribution to Jamaica’s environment. Professor Mitchell’s research is

concentrated on the geology of Jamaica. He has produced a series of geological maps which have been used for major geological developments in many parts of the island.

**v) Dr. Mona Webber recognized**

Dr. Webber was among nine women awarded the Women's Leadership Initiative 2015 International Women's Day Award. The ceremony 'Paying it forward' was held in March 2015.

**NATIONAL ENGAGEMENT AND OUTREACH**

The Faculty's Outreach Team visited a number of high schools across the island, including schools in Kingston, Portland and St. James.

1. The Departments of Physics and Chemistry and the Mona School of Engineering hosted CAPE workshops aimed at assisting high school students in grasping important science concepts. The opportunity was also used to sensitize the students about university life and the competitiveness of getting into Science programmes at the UWI.
2. The FST participated in the January 2015 outreach to the Western Jamaica Campus (WJC). Departments within the FST provided students with information regarding programmes on offer. There were also interactive displays by the Biotechnology Centre, the Departments of Chemistry, Computer Studies, Geography & Geology, Life Sciences through the Discovery Bay Marine Lab personnel, Physics and the Mona School of Engineering.
3. The FST participated in Science in the Park in November 2014 which was coordinated by the Scientific Research Council. The FST team provided information on the offerings of the Department and interacted with students of all levels. Brochures covering the offerings of the Faculty including the Master's programmes were available.
4. In June 2015, the Faculty participated in the annual "Relay for Life" for the third time. The annual event supports the work of the Jamaica Cancer Society and its efforts to raise funds to eliminate cancer as a major health problem in Jamaica. The focus of the FST

team was on Lung Cancer. The FST booth highlighted the work of Departments involved in cancer research. FST's participation was the result of a collaborative effort from personnel from all FST Departments who raised funds, manned the booth and did the relay. The FST received two awards: "Best Tent" and "Silver winner for most Team Donation".

## **REGIONAL AND INTERNATIONAL COLLABORATION**

During the Calendar year 2014/2015, the Faculty of Science of Technology indicated intent to partner with the following entities:

### **An MOU between Wallenford Coffee Company and the Department of Life Sciences.**

This MOU sets out the terms by which the Wallenford Coffee Company and the Department of Life Sciences will collaborate on an Agricultural Entrepreneurship and Agriculture Internship Programme for staff and students of the Faculty of Science and Technology including the Department of Life Sciences. The signing parties will pursue a mutually beneficial relationship to enhance production, protection and the value chain of coffee, as well as other training opportunities.

### **Partnership Agreement between the Jamaica Public (JPS) Foundation and the Mona School of Engineering.**

The Principal, Prof. Archibald McDonald and other members of the UWI Community witnessed the official signing of the Partnership Agreement between the Jamaica Public (JPS) Foundation and the Mona School of Engineering on Tuesday, May 12, 2015 in the Council Room. The Agreement symbolically signalled the start of the new Electrical Power Engineering Programme to be offered by the School of Engineering in collaboration with JPS in September 2015.



## **STEM CONFERENCE, 2015**

The Faculty Conference was held from June 9–11 2015 under the theme “Science Technology Engineering Mathematics (STEM): the engine of growth”. The Conference presented an opportunity for researchers from a broad range of disciplines across the faculty to showcase their work and the associated relevance to Jamaica’s future development. The Faculty sought to connect the dots between Science, Technology and Research and Jamaica’s Public and Private Sectors. The proceedings were governed under the subthemes:

Conceptualizing/Designing the STEM engine: Theoretical and Design research, Developing/Constructing the STEM engine: Laboratory and fieldwork based research and Deploying/Implementing the STEM engine: Applying STEM research to industry.

The conference featured oral and poster presentations of original work, plenary speakers from industrial and academic backgrounds and internationally recognised keynote and plenary speakers. The conference also provided networking and collaboration opportunities for FST researchers, and allowed graduate students to forge affiliations from which they could secure future research fellowships and job opportunities. Undergraduate students also presented their outstanding projects as part of the proceedings.

This year’s conference added to the Faculty’s history of successfully hosting such events whilst providing insight into the significance of STEM as the engine of growth for Jamaica and the wider Caribbean.

## **Tsunami Modelling and Hazard Assessment Workshops**

The Department of Geography and Geology in collaboration with CDEMA and ODPEM conducted two workshops on Tsunami Modelling and Hazard Assessment, phase I and II from Environmental Hydraulics Institute IH Cantabria as a part of a collaborative project between AECID (A Spanish Corporation Agency), Caribbean Disaster and Emergency Management Agency, the UWI Earthquake Unit, and the

Office of Disaster Preparedness and Emergency Management, Jamaica. The workshops were hosted by the Department in September 2014 and January, 2015 with funding from AECID and Chilespana.

## **DISTINGUISHED VISITOR TO THE FACULTY**

### **Courtesy call to introduce new JICA volunteer to be assigned to Mona Geoinformatics Institute**

The Faculty of Science and Technology (FST) welcomed Dr Kioshi Mishiro to the UWI in October, 2014, during a courtesy call with the Dean, Professor Paul Reese. Also in attendance were Dr Ava Maxam (Deputy Director, Mona Geoinformatics Institute – MGI), Dr Paul Aiken (Deputy Dean and Head of the Mona School of Engineering), Mr Makoto Manabe (Resident Representative at the Japan International Cooperation Agency -JICA) and Ms Denease Tomblinson (GIS Research Assistant, MGI). Dr Mishiro will be conducting research on the coastal dynamics of shoreline areas, contributing to studies by the University on the effects of hazardous contaminants, invasive species and man-made changes to our shorelines. Dr Mishiro, a Japanese national, was assigned his 2-year residency with the MGI through JICA, and is supervised by Dr Maxam. His areas of expertise are in numerical analysis, ocean simulation, and aeronautical engineering, which he will also apply during guest lectures at the Mona School of Engineering in 2015.

## **ADDRESSING THE FUNDING CONSTRAINT**

Fund raising activities across the Faculty continued as shown by grants acquired amounting to over J\$207.5 million. Departments continue to generate income mainly via self-financing programmes.

Resource Mobilization Unit – The IDB has approved funding for the implementation of the Investment Plan for the Caribbean Regional Track of the Pilot Program for Climate Resilience (PPCR). It will help the Caribbean region improve regional processes of climate relevant data acquisition, storage, analysis, access, transfer and dissemination, and

pilot and scale up innovative climate resilient initiatives directly in PPCR countries. The RMU will continue to provide the necessary support to the project's implementation over the next five years.

The RMU is exploring several linkages and projects that are in their incubatory stages. These include with Governments Ministries, Departments & Agencies and overseas partners who have expressed an interest in working with the Ministry. The Unit continues to provide support in the areas of grant identification, support proposal development and follow-up.

The Coordinator of the FST Resource Mobilization Unit went on a study visit to McGill University and observed the processes in the various areas of Sponsored Research. These included Business Engagement, Grants Administration and Awards, Invention Development and Entrepreneurship Assistance, and sponsored research at the level of the Faculty. Based on the visit, a number of strategies have been developed to improve the grant intakes of the Faculty and these are being implemented.

## **STUDENT ACHIEVEMENT**

### **Annual Faculty Awards Ceremony**

The Faculty celebrated outstanding achievers on Thursday, March 19, 2015 at the Annual Faculty Awards Ceremony under the theme "Celebrating Excellence". A total of 212 students who exhibited excellence in academics were awarded.

### **Computer Sciences Students Win Agrihack Regional Competition**

In September, 2014 the Department of Computing entered the Agrihack coding competition organized and sponsored by the Dutch Technical Centre for Agricultural and Rural Cooperation (CTA) as a part of the Caribbean Week of Agriculture (CWA). The competition sought to facilitate the development of ICT applications for agriculture, and encourage youth involvement in the agriculture sector. Of the 8 teams

making it to the finals, Node420, from the Dept. of Computing, emerged winners. Their entry focused on challenges surrounding the collection of climate data, and their product aimed to provide both low-cost data collection devices and in-depth analysis to support farmers and other agricultural authorities.

**Student of the Department of Computer Sciences implements Google Transit App for the JUTC**

Information Technology consultant and third-year Computer Science student, Oswald Smith conceived the idea of implementing a Google Transit application for the JUTC. The idea was born out of his personal experiences with the JUTC bus system. The app allows commuters access to the JUTC's bus schedules and some of its routes on their computers, tablets and smartphones using Google Transit. In conjunction with the bus company, the app has been launched and is currently being used by the public. Jamaica is the first Caribbean country to provide ground transportation information to the public using Google Transit.

Shaneica Lester, Research student in the Department of Geography and Geology received the Summer University program of the Central European University (CEU) SUN Scholarship to attend the following courses: "Bridging ICTs – Making Information Talk and Technologies Work for Water Security: Remote Sensing" and the course "Bridging ICTs – Innovations in Disaster Risk Management" in Budapest Hungary in July 2015. The courses were a joint initiative between the UNDP, UNEP and the In Service ICT Training for Environmental Professionals (ISEPEI) project.

Phylicia Ricketts, MPhil candidate in Medical Physics, received a first place award at the "Women in Nuclear" 22nd Annual Global Conference held in Sydney, Australia in October, 2014. The work presented is part of a paper recently accepted for publication in the *West Indian Medical Journal*.