FACULTY OF SCIENCE & TECHNOLOGY
Mona

Year ending July 31, 2017

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DEAN

– *Dean's Overview* –

WORK OF THE FACULTY

The work of the Faculty entailed contributing to the national and regional development in areas related to conducting work in underserved communities, providing expert services and contribution to educational development. A synopsis of these work included:

Science in the Home: The Faculty's Guild Representative, Mr. Ramone R. Jackson, and his team launched the "Max Potential Programme" at the Maxfield Park Children's Home in October 2016 – a programme to assist students with GSAT and CSEC preparation. Sponsorship was provided by Chancellor Hall, Lucozade, and the Jamaica National Bank.

Primary School Visits: Students from the Norman Gardens Primary School visited the Chemistry Department in October. They were informed on the use of spectroscopy in research and had an opportunity to conduct an analytical experiment on a plant extract.

Science in the Gardens Expo: In February the Faculty participated in 'Science in the Gardens' expo at Hope Gardens, which was organized by the Scientific Research Council. The event was well supported by students from primary and high schools across the island. The level of engagement and interest was extremely high, and students were allowed to actively participate in science experiments.

The Eastern FST Fair: The Eastern Fair was held in April at the Port Antonio High School with participation from schools from the area.

Teaching sessions at the CSEC and CAPE levels were conducted in Mathematics, Chemistry, Physics and Biology. Displays were exhibited by the Computing, Chemistry, Life Sciences, Mathematics and Physics Departments.

Girls in ICT Day: The Department of Computing participated in "Girls in ICT Day" that was held at the Pegasus and Courtleigh Hotels in April.

School Visits: The Faculty's undergraduate and graduate programmes were promoted during visits to twenty schools.

Workshops and Laboratory Sessions: The Departments of Chemistry, Life Sciences, Mathematics and Physics hosted approximately 2,000 students from 50 schools at CAPE workshops aimed at assisting them to grasp fundamental science concepts. The Biotechnology Centre also hosted 400 students from eight schools at a Genetic Engineering workshop. The Department of Physics provided laboratory sessions to 149 students from five high schools.

Relay for Life: In July the Faculty participated in Relay for Life 2017, the main fundraising activity of the Jamaica Cancer Society. The focus was **stomach cancer** in memory of Mr. Jimmy Hessing, who succumbed to the disease earlier in the year. Team FST won the Best Booth Competition for the third consecutive year, as well as copping the Spirit Award for Outstanding Team Vibes for the first time. The Faculty's contribution was $169,462.

CB UWI 5K Run/Walk: TEAM FST was represented by over 37 members on the track in November.

The Art and Science of Data Visualization Workshop: The Department of Computing, through Dr. Gunjan Mansingh, conducted The Art and Science of Data Visualization workshop for the National Commercial Bank from December 12–16, 2016.

Hyperbaric Chamber Workshops: Mr. Camilo Trench and staff from the Discovery Bay Marine Laboratory conducted the first in a series of Hyperbaric Chamber use and awareness workshops to 30 physicians and nurses for the North East Regional Health Authority. The aim was to

streamline hyperbaric medical treatment logistics and improve the appreciation for hyperbaric medicine in the main public hospitals receiving such patients.

Plant Identification: Mr Patrick Lewis, Curator of the Botany Herbarium, assisted the Jamaica Bauxite Institute with plant identification during a field trip to Maggoty, St. Elizabeth. The purpose was to access the status of abandoned bauxite ponds. A one-day Dendrology Workshop on common morphological characters used in plant identification was held for 25 Rangers of the Forestry Department in December.

Port Royal Marine Lab (PRML) Visits: The PRML accommodated 2,645 local and international (Stony Brook, Macmaster and Edinburgh Universities) visitors. Activities included conferences, research on marine ecosystems, teaching activities, eco-camps and educational tours.

Discovery Bay Marine Lab (DMRL) Visits: The DMRL accommodated approximately 4,000 local and foreign guests. The events incorporated symposia, research on marine ecosystems, teaching and laboratory activities, eco-camps and educational tours and presentations, lodging, and Hyperbaric Chamber Services.

CloudCAST Project Workshop: In February Dr. Andre Coy organized a workshop in Montego Bay for the CloudCAST Project. The project brought together speech technology experts and practitioners from the UK, Jamaica, Canada and Italy. The first of its kind, this project provided a way in which rapid developments in machine learning and speech technology could be placed in the hands of professionals who deal with speech problems and learning difficulties. This will be done by creating a free-of-charge, remotely-located, internet-based resources 'in the cloud'.

Tour of Biotechnology Centre: The Biotechnology Centre partnered with the Scientific Research Council to accommodate 85 students from primary to tertiary institutions across Jamaica.

National Environment and Planning Agency Visible Emission Training: In January the Department of Chemistry facilitated the staging of the Biannual Visible Emissions Observer (VEO) Certification Training offered by NEPA.

Mobile data collection using the Open Data Kit app Workshop: Dr. Arpita Mandal organized two workshops on mobile data collection to train disaster coordinators and parish representatives on using the app to collect disaster data and upload these on an open source platform for use by stakeholders in planning and policy making.

Tropical Storm and Hydrologic and Hydraulic models Workshops: Dr. Mandal also conducted training workshops on capacity building for CARICOM countries in St Kitts & Nevis, St Lucia, and Barbados. This was funded by USAID and Caribbean Community Climate Change Centre.

Mathematics Competitions: Dr. Raymond McEachin and colleagues from the Department of Mathematics organized two national mathematics competitions, sponsored by the Office of the Principal. The first competition was the Jamaican Mathematical Olympiad which accommodated a total of 1658 high school students. From this number three students were selected to represent Jamaica in the Central American and Caribbean Mathematical Olympiad, held in June in San Ignacio, El Salvador. Each student earned an Honourable Mention. The other contest was the Junior Mathematical Olympiad for 5,904 students between Grades 4 and 6 from 156 schools. At the end national champions were named and Honourable Mentions and Merit Awards were bestowed on the top 10% of the competing students.

Coral Lifeline Workshop: The Centre for Marine Sciences conducted the Coral Lifeline Workshop, a part of the IDB's Coral Reef Restoration Programme – the first of its kind in Jamaica. It brought together scientists and stakeholders from public and private sector entities that had a vested interest in the coastal and marine environment.

Centre Internationale de Mathematique Pure et Applique Research School: In January the Department of Mathematics hosted a research school entitled "Representation Theory and Applications to Differential Equations" for research students from Latin America and the Caribbean.

United Nations University – Biotechnology Programme for Latin America and the Caribbean (BIOLAC) Symposium and Workshop: The Biotechnology Centre received a special grant from the United Nations University Biotechnology Programme to stage the International Biotechnology Symposium on Agro-biotechnology for the Caribbean and Latin American Region in August. The symposium included a training workshop entitled "DNA Fingerprinting of Plants: Approaches, Applications and relevance to the Agricultural sector in the Caribbean and Latin America". One hundred and twenty one individuals participated.

Pacific-Caribbean Exchange Scientists Biotechnology Training: The Biotechnology Centre collaborated with the Caribbean Agricultural Research and Development Institute, Northern Caribbean University, Scientific Research Council, and the Bodles Agricultural Research Centre to host the Pacific-Caribbean Exchange Scientists Training Programme in October. The programme exposed the ten Pacific visiting scientists to crop improvement and biodiversity of Jamaican Yams, Dasheen (taro), and Cocoyam (Xanthosoma sp.) as well as Sweet potato.

Enrolment and access to Faculty programmes

- **Undergraduate Student Enrolment and Access to Faculty Programmes:** The number of undergraduate students enrolled in the Faculty has grown steadily between 2012/2013 and 2016/2017. This increase can be attributed to the variety of course offerings that are being offered, coupled with academic counselling, availability of information, and the general assistance offered to incoming students (and parents/guardians) by academic and administrative staff members. (See Figure 1).
- **Undergraduate Students – Awarding of degrees:** There were fluctuations in the number of degrees awarded between the 2012 and 2017. Most noticeably, 2017 saw the highest number of First Class and the lowest number of Pass degrees being awarded. In an effort to optimize the performance of each student while managing large class sizes, each Department continues to be innovative and flexible by increasing the number of laboratory and tutorial streams and consultation hours. (See Figure 2).

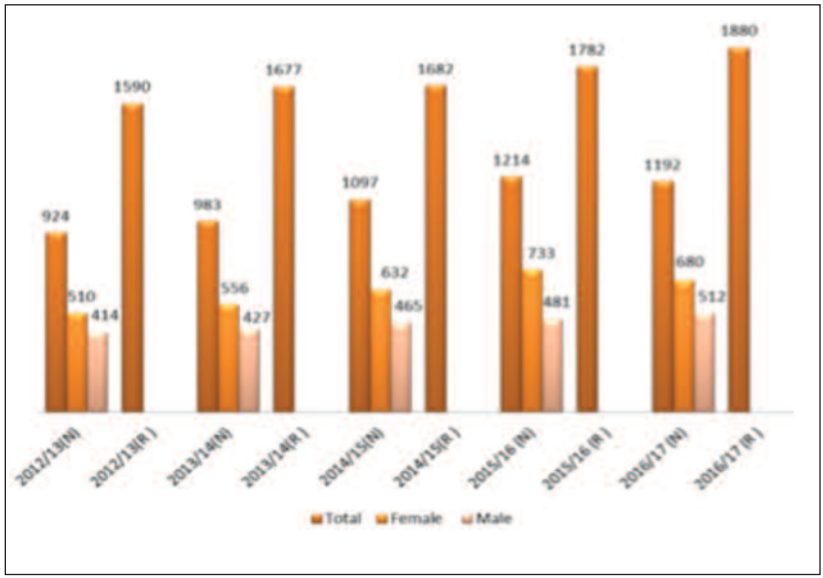

Figure1: Number of Registered Undergraduate Students, 2012–2017

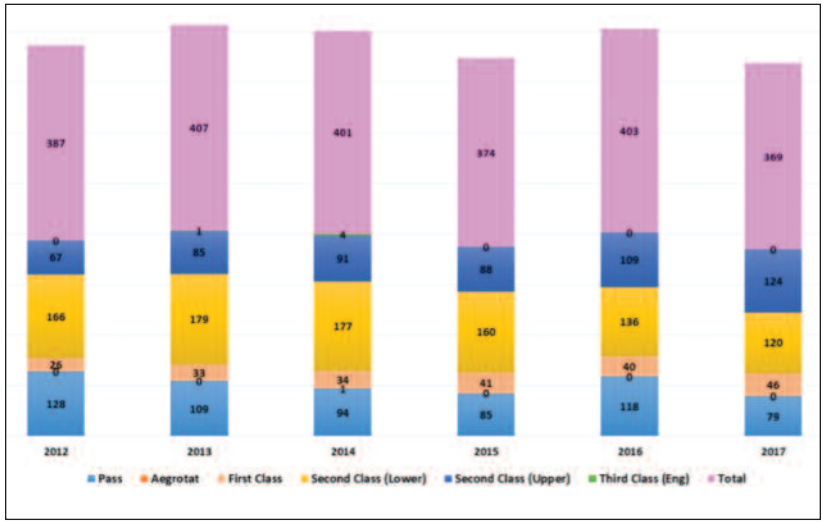

Figure 2: Number of Undergraduate Degrees Awarded, 2012–2017

- **Graduate Studies and Research Enrolment and Access to Faculty Programmes:** The total number of graduate students registered for 2016/2017 was 309. This also represented the lowest student intake between 2012/2013 and 2016/2017. Most noticeably, for the first time in five years, the MPhil programme had more students enrolled than the taught MSc programmes. To increase graduate enrollment, the Faculty is improving its marketing strategies while revamping and implementing programmes that cater to societal needs, while meeting international standards. (See Figure 3).

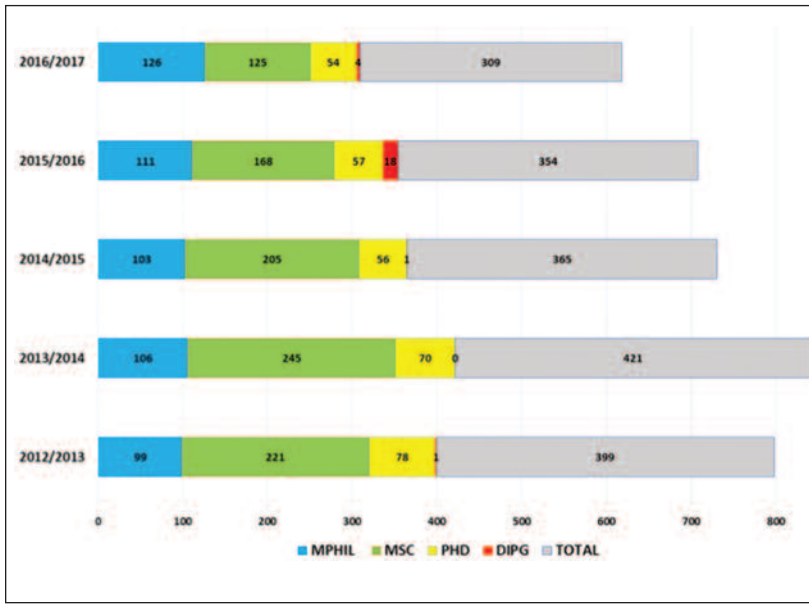

Figure 3: Number of Registered Graduate Students, 2012–2017

- **Graduate Students – Awarding of degrees:** As illustrated above, there were fluctuations in the number of degrees awarded between the 2012 and 2017. Most noticeably, 2017 saw the lowest number of Degrees being awarded. (See Figure 4).

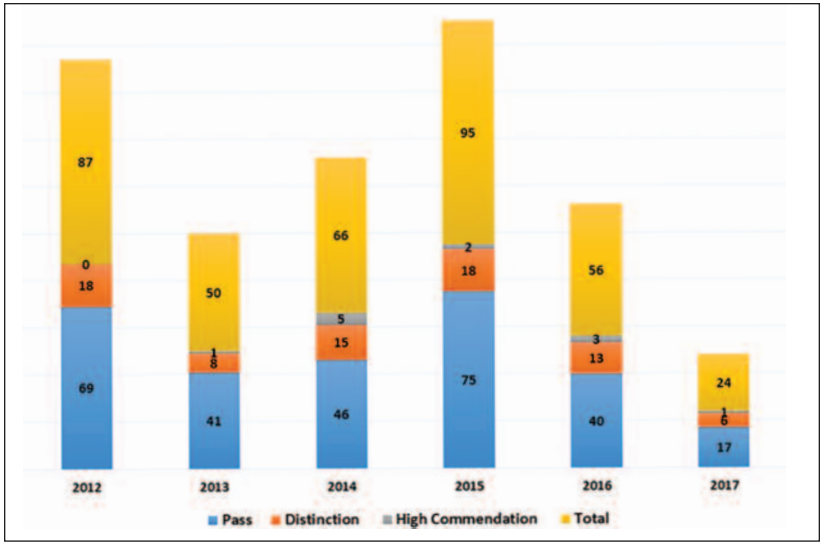

Figure 4: Number of Graduate Degrees Awarded, 2012–2017

PUBLICATIONS/ PAPERS PRESENTED

Table 1: Departmental Research Output with Graduate Students, 2016/2017

Department	No. of Registered MPhil and PhD Candidates 2016/2017	No. of Publication with Graduate Students 2016/2017	No. of Conference Presentation with Graduate Students 2016/2017
Biotechnology	20	3	4
Chemistry	42	12	2
Computing	16	13	8
Geography and Geology	18	–	5
Life Sciences	43	5	2
Mathematics	10	3	2
Physics	34	10	5
Total	**183**	**46**	**28**

Table 2: Overall Research output, 2016/2017

Publications	**Department/Centre/Unit/School/Institute**									
	Biotech	**Chem**	**Comp**	**Geo/Geol**	**PHYS**	**LS**	**Math**	**Eng**	**NPI**	**Total**
Book/Book Chapters	2	–	2	1	2	4	–	–	–	11
Books Edited	–	–	-–	–	–	–	–	–	2	2
Conference Presentations/ Papers Presented	10	8	-	17	–	7	–	3	7	52
Conference Proceedings	–	–	13	-	3	–	–	–	–	16
Invited Talks	–	–	2	–	–	–	9	–	–	11
Journal Articles	–	-	6	1	25	–	7	–	–	39
Monographs	–	–	1	–	-	1	–	–	–	2
News Media Report	1	–	–	–	–	–	–	–	–	1
Refereed Book Chapters/Journal Articles	8	15	-	16	–	12	–	–	10	61
Refereed Conference Proceedings	–	–	–	–	–	–	1	–	–	1
Technical Papers	5	–	–	1	-–	–	–	–	–	6
Total	**26**	**23**	**24**	**36**	**30**	**24**	**17**	**3**	**19**	**202**

BIOTECH = Biotechnology Centre; CHEM = Chemistry; COMP = Computing; GEO/GEOL = Geography and Geology; PHYS = Physics; LS = Life Sciences; MATH = Mathematics; NPI = Natural Products Institute.

INCOME GENERATION

Departments continue to generate income through self-financing programmes and fundraising activities. It has become increasingly difficult to attract research funding from Public and Private entities. Nevertheless, the Faculty has acquired funds amounting to approximately JA$222,572,230.

PUBLIC SERVICE

- Dr. Peter Nelson was chosen to serve on the Technical Committee for soaps and detergents at the Bureau of Standards Jamaica. This committee is charged with regulating/adjusting and deciding on appropriate standards for locally manufactured and imported soaps and detergents.
- Professor Mona Webber was selected as a Director of the National Conservation Trust Fund Board and to the Science Advisory Committee of the Jamaica National Commission for UNESCO. She has also been invited to serve on NEPA's Technical Review Committee.
- Professor Mona Webber and Dr. Karl Aiken were reappointed to the Scientific Authority of CITES.
- Dr. Dwayne Buddo was named to the Scientific Authority of the Convention on International Trade in Endangered Species as well as a member of NEPA's Marine Park Advisory Board.
- Dr. Kurt McLaren was invited to sit as a member of Project Evaluation Committee of the Council for Earth and Life Sciences, Netherlands Organization for Scientific Research.

STUDENT ACHIEVEMENTS

- **Annual Faculty Awards Ceremony:** At the Annual Faculty Awards Ceremony the accomplishments of 259 undergraduate and graduate students and 21 staff members were celebrated.
- **Mona School of Engineering Students' Participation in IEEE Southeastern Conference:** Members of the Institute of Electrical and Electronics Engineers (IEEE) UWI Student Branch made UWI

and Jamaica proud in the IEEE Southeastern Conference 2017 hosted in Charlotte, North Carolina from March 31 to April 2. Jason Brown placed first in the Technical Paper Competition (a first for a Jamaican university) and the Robotics Team placed 13th out of 41 universities in the hardware contest.

STAFF ACHIEVEMENTS

- The UWI Annual Principal Research Day Awards Ceremony was held on February 3, 2017. Recipients of awards included:
  - Professor Mohammed Bakir and Dr. Peter Nelson – Best Research Publication
  - Drs. Rupika Delgoda, Chukwuemeka Nwokocha and Sheena Francis – Best Research Publication
  - Professor Michael Taylor and Drs. Dale Rankine, Andre Coy and Jane Cohen – Best Research Publication
  - Professor Mohammed Bakir – Most Outstanding Researcher;
  - Dr. Conall Kelly – Most Outstanding Researcher
  - Dr. Venkateswara Rao Penugonda – Most Outstanding Researcher;
  - Professor Michael Taylor – Research Project attracting the Most Research Funds;
- Drs. Rupika Delgoda and David Picking – Research Project with Greatest Development Impact.
- Dr. Nagarani Ponakala received TWAS-CAS Young Scientist Award for 2016 jointly conferred by The World Academy of Sciences (TWAS) and Caribbean Academy of Sciences (CAS).
- Dr. Venkateswara Penugonda was recognized by the International Institute of Education and Management in New Delhi, India for his teaching accomplishments.

DISTINGUISHED VISITORS

Professor Sir Kenneth Hall, former Governor-General of Jamaica and former Principal of UWI Mona, paid a courtesy call on the Biotechnology

Centre on April 5. Sir Kenneth was welcomed by the Director, staff members, and students of the Centre. Professor Asemota's postgraduate students gave Professor Hall a tour of the Centre's facilities and briefed him on their research work. The former Governor General admired the enthusiasm of the students and their sustained interest in research.