

# FACULTY OF SCIENCE & TECHNOLOGY

## Mona

Year ending July 31, 2019



**PROFESSOR MICHAEL A. TAYLOR**  
**BSc, MPhil, UWI, PhD, *University of Maryland, College Park***  
**DEAN**

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# Dean's Overview

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The 2018/2019 academic year saw a change in both the leadership and leadership structure within the Faculty. Professor Michael Taylor took over as Dean from Professor Paul Reese whose steady guidance of the Faculty over the past four years was noted with appreciation. Professor Mona Webber was appointed Deputy Dean with portfolio responsibilities for Staff Engagement, Ethics and Quality Assurance. The position of Deputy Dean with oversight for Engineering was eliminated with the creation of the Faculty of Engineering. Dr. Winklet Gallimore took up the newly created post of Associate Dean with responsibility for the Student Experience; and three other Associate Deans were appointed: Dr. Eric Hyslop (Undergraduate Matters), Prof. Marcia Roye (Postgraduate Matters) and Dr. Sherene James-Williamson (Associate Dean, Student Experience). The new management structure is intended to support the four pillars of the revised 2017–2022 Faculty strategic plan, namely increased staff and student engagement; increased research output; revamped structures and processes; and enhanced national through global impact and presence.

The Faculty office was also reorganized to operationalize the revised strategic vision and to both streamline and centralize some activities as the Faculty aims for **Agility** and **Alignment** in its operations. Changes to the structure included the appointment of a Visibility and Engagement Officer, Facilities Manager, Customer Service Manager, and three Coordinators with respective responsibilities for Undergraduate, Postgraduate and Resource Mobilization. The positions were approved at F&GPC and will become permanent in 2019/20.

The tables on page 277 below summarize some of the key metrics of the Faculty. Additional details highlighting some notable achievements are thereafter provided below.

## **TEACHING, LEARNING, STUDENT DEVELOPMENT AND STAFF ENGAGEMENT**

The Faculty hosted Orientation sessions for undergraduate and postgraduate students at the beginning of the academic year. For the first time the Faculty also hosted a second semester Orientation Day which was very well supported.

An *FST Experience* programme was launched targeting initially first year students.

**2018/2019 – Undergraduate and Graduate Degrees Awarded**

<b>Faculty of Science and Technology Degree Awarded 2018/2019</b>	<b># of Awards</b>
<b>Graduate Students</b>	<b>40</b>
Distinction	11
High Commendation	1
Pass	28
<b>Undergraduate Students</b>	<b>404</b>
First Class Honours	33
Second Class Honours (Upper Division)	140
Second Class Honours (Lower Division)	146
Pass	85
<b>Grand Total</b>	<b>444</b>

**2018/2019 – Undergraduate Admission/Enrollment Data for the Faculty of Science and Technology**

<b>Academic Year</b>	<b>Total Applications</b>	<b>Total Applicants</b>	<b>Total Offers</b>	<b>Total Registered</b>
2018/2019	5,584	3,371	1,419	1,019

**2018/2019 – Graduate Enrollment Data for the Faculty of Science and Technology**

<b>Academic Year</b>	<b>Taught Masters</b>	<b>Research Degrees</b>	<b>Total</b>
2018/2019	44	19	63

Students who volunteered for the programme received notifications about non-academic activities and events in which they could participate or for which they could apply. They also had the opportunity to be part of a Wholistic Development pilot with weekly sessions.

Two Study Skills Workshops were hosted during the academic year. These were designed to assist students who were on 'academic warning'. The sessions were attended by approximately 200 students.

New undergraduate courses in Renewable Energy, a new minor in Renewable Energy Management as well as a new postgraduate MSc and Certificate in Applied Data Science were approved. The new postgraduate programmes will be offered in 2019/20.

The first cohort of the BSc Software Engineering – UWI-CIIT programme left for China on September 4, 2018, accompanied by Drs. Curtis Busby-Earle and Ezra Mugisa from the Department of Computing.

The Faculty Office made financial contributions worth approximately J\$1,451,062.13 to assist students with offsetting expenses associated with attending conferences, competitions and other science-related activities.

The Faculty hosted a number of events to enhance student development. These included the Department of Mathematics 6th Career Fair on November 16, 2018; a Faculty Entrepreneurship Day hosted in conjunction with the Guild of Students on November 1, 2018; and a Goldman Sachs recruitment Fair on October 11, 2018.

The Department of Computing and the Mona School of Business and Management took in a second cohort in the Digital Talent Laboratory Internship, sponsored by the National Commercial Bank (NCB).

The Faculty hosted *Meet a Nobel Laureate Day* on October 8, 2018 as it hosted Prof. Klaus von Klitzing who was the 1985 Nobel Laureate for Physics. He is also the Director of the Max Planck Institute for Solid State Research. Activities for the day included a meet and greet with Faculty academics; a special student session hosted by the Guild of students; a public lecture jointly cohosted with UTECH and a joint Chemistry, Physics and Engineering Honours Society breakfast at which Professor von Klitzing was the speaker. Professor von Klitzing is one of only two living scientists with a physical constant that carries his name (von Klitzing constant, RK).

The Faculty hosted for the first time *Technical and Service Staff Day* on November 22, 2018. Staff were treated to lunch and gifted with faculty shirts. The intention is to make it an annual celebration. Administrative and Professional Staff were also recognized and treated to lunch on April 24, 2019.

## **NATIONAL ENGAGEMENT AND OUTREACH**

CAPE workshops were held during the period of January 7–11, 2019 and January 14–18, 2019 for the following subject areas: Biology, Chemistry, Computer Science, Geography, Mathematics and Physics. Workshops were held both at the Mona and western Jamaica campuses.

The Faculty launched the Science for Today Public Lecture Series. Seven lectures were held during the course of the year. The topics were: Plastics – the Science Behind the Ban; Minimizing Mosquito Mayhem; AI and Automation: Risk is Opportunity; Earthquakes; The Science of Fire; Geoengineering and 1.5 degrees. The lectures were free and featured presentations and discourse on each topic from Faculty members and external collaborators.

The Faculty launched the *FST Endowment Fund*. The fund it is hoped will become a sustainable way to fund scholarship, equipment, and activities in the Faculty, and provide a vehicle for alumni and other potential donors to give to the Faculty. The fund is management by the UWI Development and Endowment Fund (UWIDEF).

A revamped webpage was launched to capture current happenings in the Faculty <https://www.mona.uwi.edu/fst/>. Two volumens of the Faculty newsletter *Faculty Focus* were also produced and circulated.

The Department of Mathematics staged the Jamaica Mathematics Olympiad (Junior and Senior Competitions) after a one year break. A total of 5,184 students participated across the two competitions. The top schools were presented with awards on June 19, 2019. A team of four students were selected and represented Jamaica at the regional Olympiad competition in Santo Domingo in June 2019.

A Memorandum of Understanding was signed with the Bureau of Standards Jamaica (BSJ) and the Alternative Energy Research Group (AERG) (Department of Physics). Under the MOU the AERG will assist the BSJ in the development and execution of a plan to reduce energy consumption at BSJ locations in Kingston, Montego Bay, Mandeville, Ocho Rios and Savanna-la-Mar.

Memorandum of Understandings were signed between the Centre for Marine Sciences, and the National Environment and Planning Agency for the UWI-CMS/DBML to assess the current status of the Winn's Morass mangrove stand in Trelawny and its potential for rehabilitation; as well as with the Ministry of Industry, Commerce, Agriculture and Fisheries'- Fisheries Division to facilitate the completion of the 2018 Queen Conch Abundance Surveys.

In July 2019, the Biotechnology Centre hosted a Biotechnology Lab-Skills Training Summer Workshop for teachers and laboratory technicians. The workshop was held in conjunction with the School of Education (Faculty of Humanities and Education) and was staged in three parts - Foundational Basic Biotechnology Laboratory skills (week 1); Basic Biotechnology laboratory skills (week 2); Basic Application Skills in Biotechnology (week 3).

The Meteorological Service of Jamaica in partnership with the Faculty of Science and Technology hosted its third 'Weather, Climate, and Climate Change Quiz' on June 14, 2019. Grades 5 and 6 students from 12 preparatory and primary schools participated in the competition, which offered an opportunity for them to gain greater understanding of the subject while testing their existing knowledge. The Quiz was sponsored by the Pilot Programme for Climate Resilience (PPCR) implemented by the Planning Institute of Jamaica (PIOJ), the GEF Small Grants Programme (SGP) implemented by UWI, National Water Commission (NWC), MegaMart, and Power106. Other partners included Heart Trust NTA, Forestry Department, Environmental Solutions, NEPA, WRA, CCD, and NWC.

The MSc Food and Agro Processing Technology (FAPT) programme conducted a workshop in Food Packaging (June 2019). It also held two stagings of the Food Safety Preventive Controls Training Sessions (May and August 2019).

## RESEARCH AND INNOVATION

Total publication of faculty members during the 2018/2019 academic year amounted to 110.

The Faculty was able to raise J\$55,441,083 in grants and contributions through initiatives of the Resource Mobilization Unit and the Departments.

In June 2019 a Dendrochronology Laboratory was established in the Department of Geography and Geology to enhance capacity in Palaeoclimatology. The lab was established in collaboration with researchers in Amsterdam and at the University of Nevada, Reno and funded by a National Geographic Grant.

New interdisciplinary research groups focused on Cannabis and Sargassum were formed in the faculty. The Caribbean Environments Research Group (CERG) was also established to facilitate and market interdisciplinary research on the broad theme of Environmental Change.

The UWI library was awarded an EBSCO solar grant of US\$100,000 to implement a solar photovoltaic system on the roofs of the Science and Engineering Library and the Department of Physics. The UWI library is the first winner of the EBSCO solar grant outside the US. The Department of Physics and Solar Buzz Jamaica are partners. It is estimated that the 40kW system once fully installed will save The UWI almost \$2m annually. The system will also support teaching in the undergraduate renewable energy major.

## REGIONAL AND INTERNATIONAL COLLABORATION

The partnership with Huawei continued and saw a new cohort of five UWI students journeying to China for a two week study tour in October 2018 under their *Seeds for the Future* programme. This was organized by the Resource Mobilization Unit, Mona School of Engineering, and the Departments of Computing and Physics.

The Caribbean Partners for Amphibian and Reptile Conservation (Carib-PARC) in partnership with the Department of Life Sciences, UWI Mona, hosted its fourth conference in January 2019. The theme of the conference was “Forging proactive partnerships to conserve amphibians, reptiles, and the places they live.”

Ten faculty members from different departments participated in the Frontiers of Science meeting between **The Royal Society** and **The University of the West Indies** held from March 19–21, 2019 at Chicheley Hall, UK. It was the inaugural meeting in a three year programme for the advancement of science in the Caribbean and the use of science to solve big problems affecting the Region. The programme was crafted through 2 years of consultations between UWI Solutions for Developing Countries (UWI SODECO) and The Royal Society. Meeting leads from the UWI

were Prof. Terrence Forrester (UWI SODECO) and Prof Michael Taylor (Faculty of Science and Technology, Mona). From the UK they were Professor Tim Palmer (Oxford) and Professor Mark Hanson (U Southampton).

The Climate Studies Group Mona (CSGM) from the Department of Physics hosted a two-day workshop in St. Lucia from May 2–3, 2019. The aim of the workshop was to introduce participants from the Eastern Caribbean to the State of the Caribbean Climate 2017: Information for Resilience Building report. The report was produced by the CSGM with input from the Caribbean Institute for Meteorology and Hydrology (CIMH) and provides critical analysis and discussion on Caribbean climate, including, observed variability and trends, recent extreme events, projections for key variables, observed and potential impacts for climate sensitive sectors as well as an overview of climate information and services within the region. Over 30 participants from 11 countries representing the water, infrastructure, health and agriculture sectors participated.

From June 3–7, 2019, the Faculty hosted the 15th International Conference on Intelligent Tutoring Systems under the theme “*Challenges in Artificial Intelligence – Pushing the Boundaries of ITS*”. The Faculty’s participation was spearheaded by the Departments of Physics and Computing. About 100 international attendees along with local participants benefitted from the talks, tutorials and special workshops.

The Faculty co-hosted with ICENS and the Faculty of Medical Sciences a regional IAEA workshop on radiation protection in medical imaging from July 15–19, 2019. The theme of the workshop was “Strengthening Human Capacities of Caribbean Countries in Radiation Medicine”. The Faculty’s participation was spearheaded by The Department of Physics.

From July 15–19, 2019, the Faculty co-hosted with Green Solutions International PV Associate Training and System Inspectors Course. The training course had regional and local participants and was hosted at the UWI Western Jamaica campus. Participants were also able to sit the North American Board of Certified Energy Professionals (NABCEP) Associate Exam that was offered at the same location on Monday 21st July 2019.

The Climate Studies Group Mona (CSGM), through the Investment Plan for the Caribbean Regional Track of the Pilot Programme for Climate Resilience (PPCR), hosted the Caribbean Climate Modelling Consortium Meeting on August 7–8, 2019. Participants were from across the Caribbean region and other organisations with a vested interest in Climate Change Research. The representatives were from Cuba, Haiti, Guyana, Trinidad and Tobago, Barbados, Belize, St Lucia, Suriname, Germany, California and Jamaica. A multidisciplinary collection of researchers were featured, which investigated the multifactorial implication both past and present of Climate Change.

**STUDENT ACHIEVEMENT**

- Michael Calloo, Department of Computing final year student, was selected to intern with Goldman Sachs in Hong Kong in August 2018. He has since been offered full time employment with them and will start in January 2020.
- Toni-Ann Willis (Computer Science) and Gisellé Hall (Physics and Geology minor) were part of a five member Jamaican team that placed second behind the USA in The Organization of American States (OAS)/Inter-American Committee against Terrorism (CICTE) Diplohack Student Challenge 2019. The competition was held in Washington DC from February 20–22, 2019. Other members of the team were Sayeed Bernard (Law), Chavel Ford (Social Sciences), and Kyle Glegg (Medicine).
- Vijay Gregory and Sharmoy Findley (Physics Undergrads) participated in a student exchange program to Sophia University, Japan in January 2019. Their visit was facilitated by Japan's Association for Promotion of International Cooperation (APIC) in collaboration with The UWI.
- Melissa Curtis (Geography & Geology) was one of the Esri Young Scholars Awardees for 2019. Melissa was invited to present a poster at the ESRI GIS conference in San Diego in July 2019, where she also received her award from the Head of ESRI.
- Dominic Mills-Howell (MPhil Mathematics) attended the 69th Lindau Nobel Laureate Meeting in Lindau, Germany from June 30 to July 5, 2019. He was one of 580 young scientists from 89 countries chosen out a pool of more than 20,000 candidates from all over the world. He was the only Jamaican representative. The Lindau Nobel Laureate Meetings foster exchange among scientists of different generations, cultures, and disciplines. Annually, around 30–40 Nobel Laureates convene in Lindau to meet the next generation of leading scientists, including undergraduates, PhD students, and post-doc researchers from around the world.
- Dr. Kurt Prospere was one of the two Most Outstanding Thesis Award (MOTA) for the academic years 2016/17 and for 2017/18. Dr. Prospere's PhD was awarded with High Commendation. He investigated the *Quantification of Ecosystems Services in the Black River Lower Morass: Technology Choices and Management Options*. Dr. Prospere's research was supervised by Dr. Kurt McLaren and Prof. Byron Wilson (both from the Department Life Sciences).
- The UWI Mona Robotics Team placed third in the Student Hardware Open category section of the 2019 Institute of Electrical and Electronics Engineers (IEEE), Southeast Conference Competition. The team was coached by Yekini Wallen-Bryan from the Department of Physics and comprised members from both the Faculty of Science and Technology and the Faculty of Engineering.



- Jordon Freeman, an MPhil Biotechnology student, received the 2018 Innovation Youth Award for his reduced-calorie “Healthy Sugar”; and the 2019 Total StartUpper of the Year award for the production of degradable plastics through his organization, Jamaica Bio-Plastics. He also received the 2019 Governor General’s Achievement Award. *Along with Samantha Williams they also won the National Business Model Competition 2019 for their business venture, Ja-Bio-Plastics.*
- Ms Tanice Brown, final year student from the Department of Mathematics was among seven UWI students participating in a joint project between the University of the West Indies (UWI) and the State University of New York (SUNY) to rebuild a preschool in hurricane ravaged Dominica. The project was spearheaded by the SUNY UWI Centre for Leadership and Sustainable Development. Fourteen students, seven from the UWI and seven from SUNY – New Paltz and a faculty member from each institution rebuilt the Morne Prosper Pre-School and restored the attached primary school from January 7–19 2019.
- Chevano Baker, Department of Mathematics graduate, was named the 2019 Jamaica Rhodes Scholar. Chevano holds a BSc. in Actuarial Science from UWI, as well as a Master of Science degree in Financial Economics from the University of Birmingham.
- Graduate student, Mr. Marc Collins (Department of Chemistry) was awarded first prize for the best graduate student oral presentation at the Biennial Regional Chemistry Conference and Expo, held at the St. Augustine Campus, UWI in Trinidad in May 2019. His attendance was facilitated by receipt of the Professor Wilfred Chan International Conference Travel Award (1000 USD) awarded by the family of the late Professor Chan.
- The Annual Faculty Awards Ceremony was held on March 16, 2019 at the Mona Visitors’ Lodge and Conference Centre. There were over 200 awardees. **Nikhil Asnani, FSA FRM** who is an Actuarial Science graduate and current Assistant Vice President (Actuarial) at Guardian Life Limited was the keynote speaker.

### Notable Mentions

- Professor Mona Webber, Deputy Dean and Director of the Centre for Marine Sciences, was one of three panelists at the annual Grace Kennedy Foundation (GKF) Lecture held on Wednesday April 3, 2019. The lecture explored exploring whether a Clean Kingston Harbour was a Pipe Dream or Pot of Gold.
- Professor Michael Taylor received The Anthony N Sabga Caribbean Awards for Excellence in Science and Technology on Saturday March 30, 2019.
- Dr. Kimberly Stephenson (Department of Life Sciences) was chosen to represent the University at a Workshop on Science, Technology and Innovations (STI) for

SDGs held at the United Nations Conference Centre (UNCC) of The United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP) in Bangkok, Thailand from February 27–March 1, 2019. The workshop was co-organized by The United Nations Department of Economic and Social Affairs (UN DESA), ESCAP, and The United Nations Conference on Trade and Development (UNCTAD).

- Phylcia Ricketts, Lecturer in the Department of Physics was awarded the 2018 Prime Minister's Youth Award for innovation in science and technology.
- The Climate Studies Group Mona (CSGM) from the Department of Physics celebrated 25 years of Caribbean Climate Science Initiatives in July 2019. The group was established by Emeritus Professor Anthony Chen in 1994.
- The Climate Studies Group Mona (CSGM) from the Department of Physics was the recipient of the 2017/2018 Vice Chancellor's Awards for Excellence in International Collaboration: Globalisation Award for the Regional Science Initiative Project. The award ceremony was held on Monday, October 29, 2018 at the Mona's Visitor's Lodge, UWI. The CSGM also participated in the Global to Local Caribbean Socio-Economic Climate Change (Adaption and Mitigation Scenarios) (GoLoCarse) Project that was awarded the Multi-campus Research Collaboration: One UWI Award.
- In celebration of UWI's 70th Anniversary, the Institute for Gender and Development Studies Regional Coordinating Office (IGDSRCO) recognized the invaluable contributions of 70+ Outstanding UWI Women including Prof. Mona Webber (1993), Prof. Marcia Roye (1996) and Dr. Sylvia Mitchell (2001).
- Mona Geoinformatics Institute (MGI) was the recipient of the 2019 RJRGleaner Honour Award in the category of Science and Technology.
- Dr. Venkateswara Rao Penugonda from the Department of Physics was the runner up for the UWI/Guardian Life Premium Teaching Award for 2018.
- Dr. Nickeisha Stephenson (Chemistry) received the Canada-CARICOM Faculty Leadership Scholarship tenable at the University of Toronto and CAMH (The Centre for Addiction and Mental Health) in Toronto Canada.
- Dr Mike Burn (Geography and Geology) received the Mary Sears Award from Woods Hole Oceanographic Institution in August 2018 which allowed him and his graduate student, Romario Anderson, to visit the Coastal Geosystems Group in the University of Massachusetts at Amherst to develop collaborative links, exchange ideas about long term records of environmental change, and to develop research capacity within the Department.
- The UWI Annual Research Day Awards Ceremony was held on February 9, 2018. Recipients of awards included:

- Researcher: **Dr. Michael Coley**  
Department of Chemistry
- Award: Best Research Publication – Article
- Research Title: “The dissolution of Phosphorous from Jamaica bauxites under low temperature Bayer Conditions”
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- Researcher: **Dr. Andrea Goldson-Barnaby**  
Department of Chemistry
- Award: Best Research Publication – Article
- Research Title: “In Silico Prediction, Phylogenetic and Bioinformatic Analysis of SoPCS gene, Survey of its Protein Characterization and Gene Expression in Response to Cadmium in Saccharum Officinarum”
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- Researcher(s): **Dr. Leonardo Clarke, Professor Michael Taylor, Dr. Tannecia Stephenson, Jayaka Campbell**  
Department of Physics
- Award: Best Research Publication – Article
- Research Title: “Future Caribbean Climates in a World of Rising Temperatures: The 1.5 vs. 2.0 Dilemma”
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- Researcher: **Professor Noureddine Benkeblia**  
Department of Life Sciences
- Award(s): MOST OUTSTANDING RESEARCHER  
for 2 articles, 1 book and 5 book chapters
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- Researcher: **Dr. Andrea Goldson-Barnaby**  
Department of Chemistry
- Award(s): MOST OUTSTANDING RESEARCHER  
for 3 articles
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- Researcher: **Dr. Marhoun Ferhat**  
Department of Physics
- Award(s): MOST OUTSTANDING RESEARCHER  
for 5 articles

Researcher(s): **Dr. Arpita Mandal, Professor Simon Mitchell, Dr. David Miller and Dr. Donovan Blissett**

Department of Geography and Geology

Award: Research Project Attracting the Most Research Funds

Research Title: “Sediment Budget Monitoring Sites for Upper Rio Minho Watershed”.

Researcher(s): **Mona Climate Studies Group**

Award(s): Research Project with the Greatest Business /Economic/ Development Impact

Research Title: Caribbean 1.5 Project

Researcher: **Dr. Karl Aiken**

Department of Life Sciences

Award: Principal’s Awards for Public Policy

Research Title: For research contributing to the Fish sanctuaries & Fishing Industry.

Researcher(s): **Prof. Mohammed Bakir, Prof. Helen Asemota, Dr. Peter Nelson, Dr. Marhoun Ferhat, Dr. Chukwuemeka Nwokocha**

Department of Chemistry, Department of Physics, Department of Basic Medical Sciences, Biotechnology Centre

Award(s): Research Project with the Greatest Multidisciplinary/Cross Faculty Collaboration

Research Title: Chemical and Biological application of Heteroaromatic Ketone Hydrazonic Compounds: Molecular Sensing, Catalytic, Anti-cancer, Anti-Hypertensive and Others.