

FACULTY OF PURE AND APPLIED SCIENCES

MONA

Year ending July 31, 2010



Professor Ishenkumba Kahwa, BSc, MSc *Dar*, PhD *Louisiana State*
– Dean

Overview

Preparation of the Distinctive UWI Graduate – Initiatives, Notable Achievements

The Faculty continued to expand access to the wide range of its programme offerings for 2009-10. Each Department, except Physics, registered an increase in the number of students.

Innovations in dealing with increased enrollment

The intense outreach campaign implemented in previous years continued to impact positively on demand for courses in the Faculty. The pressures that accompanied last year's large increase in student registration also continued, especially at Level I. Department heads, especially those in small understaffed ones such as Geography and Geology, had to exercise creativity with respect to use of laboratory and teaching space, equipment and staff deployment. Temporary staff, weekend laboratories and other measures were taken to ensure that all demands for courses in our Faculty were met.

Initiatives for enhancing the learning experience for 2009-10 included:

New Programmes:

Agriculture: Development of new agriculture programmes of study at both the graduate and undergraduate levels were developed. A new MSc programme being offered jointly with the Faculty of Social Sciences, 'Entrepreneurship in Agriculture' was developed and approved; the first intake is expected to be admitted in August 2010 and will be hosted by the Department of Life Sciences. The programme on 'Agro-processing

continued to be discussed and its development is expected to be completed in 2011. Students signed-up for Level I courses related to the Tropical Horticulture programme but the exact number of students who will eventually take the programme will be known when they show up for Level II courses.

Engineering: A new Electronics Engineering programme – the first UWI Engineering programme to be offered outside of the St. Augustine campus admitted a cohort of 17 students in 2009/10. The Faculty is grateful to the Electronics Unit and the Faculty of Engineering at St. Augustine which in collaboration with the Department of Physics worked together to successfully to roll out the programme in the 2009/10 academic year.

Chemistry:

Peer-Led Learning Project: The programme which started in 2008/9 continued this year with about 20% of the Level I students participating; analysis of the student performance on examinations revealed a 10% improvement for participants in the Peer-Led Learning Project.

Book Loan Programme: The Department started a book loan programme to facilitate availability of adequate and state of the art learning materials for students, especially those who have challenges with affording the expensive but necessary books. The programme cost J\$1.5M and was well received, especially at the introductory and preliminary levels.

International Student exchange: These continued with the University of Gothenburg, Sweden; two chemistry graduate students were exchanged in each direction this year.

The Occupational and Environmental Safety and Health Programme continued to be valued as it attracted 41 students, its largest cohort ever, and had to set up a class in Montego Bay while the St. Augustine Campus started the programme with about 50 students.

Computing: The Department has completed revision and restructuring of the MSc Computing; the new programme will be ready to take in students in the 2010/11 academic year.

Life Sciences: A revised and restructured M.Sc. programme in Marine and Terrestrial Ecosystems (MaTE): Assessment and Monitoring was run for the first time with 10 students.

Mathematics: The Department implemented a new Programme, MSc in Mathematics and Modeling. The 'Mathematics Bridging programme' was continued and assessment of learning outcomes indicated a 37% improvement for those accessing the programme.

Physics: Level II courses in electronics and revamped materials science, alternative energy and medical physics majors came on stream.

Student professional societies: New student societies such as the Physics Honour Society, Physics Alumni Association were established while others like the Chemical Society and the Geographical Society were strengthened. A contingent of 13 geography graduate students and their supervisors presented papers at the prestigious Annual Meeting of the Association of American Geographers held in Washington, D.C. in April 2010.

Improvements in Graduate Studies; notable accomplishments of graduates

There were infrastructural improvements which enhanced the quality of graduate education in the Faculty. The renovation of the Department of Mathematics building was completed thereby providing excellent facilities and surroundings for teaching, learning and research. A new Biodiversity Centre funded by the Environmental Foundation of Jamaica was opened at the Port Royal Marine Laboratory thereby opening new opportunities for graduate research and outreach activities. Life Science's computer facilities, microscope services and student transportation were also vastly improved. The Department of Physics opened a new Graduate Student Research Centre, with individual work stations, common areas for discussion and relaxation, and a kitchenette. The roof laboratory for Environmental Physics and Alternative Energy was also refurbished and reopened.

Improving research/ innovation output, notable achievements, distinctive research output

The faculty continued its advancement in research.

Research/Innovation Output

Department/Centre/ Institute/Unit	Number of Items				
	Refereed Articles/ Chapters	Patients	Non- Refereed Materials	Conference Presenta- tions	Books and Edited Works
Biotechnology	9			6	
Chemistry	22		3		1
Computing	19			8	2
Electron Microscopy	2		5		
Geography/Geology	17		1	18	4
Life Sciences	20	1	8	9	2
Mathematics	15			4	2
Physics	6			9	
Total	110	1	17	54	11

Notable Research Achievements

Guest editorships and review of articles for international journals:

There is growing recognition of the good quality research capacity in the Faculty as evidenced by 7 guest editorships of journals/conference proceedings. Staff members continue to serve the international scholarly community through refereeing services in many fields covered by the Faculty's disciplines.

Support for Governments and the Regions:

The Climate change research group in the Physics Department and emerging such effort in the Department of Life Sciences have been called upon to help the region monitor and prepare for adverse weather changes

and improve the regional argumentation at the Copenhagen 2009 conference on Global Climate Change.

Invasive Species and Forest Conservation:

The Department of Life Sciences has been called upon to help the country deal with invasive species, especially the Lion Fish. The conservation work being done in the Department has attracted large sums of renewed and new funding as its global significance continues to be recognized and highly valued. There were also several collaborative visits from the USA to the Department in this regard.

Cardiac Surgery Simulator: This UWI innovation has continued to improve and generate impressive interest and orders for units from a consortium of major cardiac surgery schools in the USA (such as University of North Carolina (Chapel Hill), Rochester University, Massachusetts General Hospital (Harvard Medical School), Mayo Clinic, Vanderbilt University, and University of Washington. Three (3) more will be built and delivered to Johns Hopkins University, University of Southern California, and Stanford University.

Service to the wider community, including the Open Campus community; notable achievements

A number of Departments are involved in consultancy work and outreach activities that promote and enhance UWI's impact. Computing Department has spearheaded better reporting of Science and its potential by running a workshop for journalists. All Departments run workshops to enhance the competitiveness of sixth formers for entry into University programmes.

The Department of Mathematics organized a very successful Mathematics Olympiad competition that saw Jamaica send a team to the regional competition for the first time. This year the focus is on improving performance at such tournaments.

Transformation of the administrative culture and processes to better respond to all our stakeholders

The Department of Mathematics and Computer Science was split in 2008/9 into the Department of Mathematics and the Department of Computing; the new Departments are growing very well as shown above.

Addressing the funding constraints.

Resources continues to be a major issue for the Faculty but departments, centres, units and institutes have been moderately successful in attracting funding. Over all, about US\$1.5million, Euro 450,000 and J\$90 million were raised from various sources by Faculty members to support their teaching and research work. I want to single out the Department of Life Sciences which attracted the most external funds this year comprising of several large grants as shown below. There are several large grants in the pipeline and our efforts will be increased this year as we build on this moderate success. The notable incomes (**those over J\$3M**) are:

Notable External Grants

Dr. Dayne Buddo and Dr. Karl Aiken secured funding to make CMS the Lead Agency for the 4-year National Lionfish project valued at **US\$431,000.**

Dr. Byron Wilson co-PI with Dr. Kurt McLaren, **MacArthur Foundation, US\$340,000.**

Dr. Byron Wilson co-PI with Dr. Kurt McLaren **Environmental Foundation of Jamaica, J\$3,349,300.**

Dr. Byron Wilson co-PI with Dr. Kurt McLaren **Forest Conservation Fund, J\$12,372,000.**

Dr. Byron Wilson co-PI with Dr. Kurt McLaren, Global Environmental Foundation, **US\$178,245-** project implemented through UNEP, CABI, and NEPA.

Prof. Dale Webber, Caribbean Community Centre for Climate Change grant to initiate an International Coral Observatory Network Station at the Discovery Bay Marine Laboratory. Value **US\$105,000**.

Prof. Dale Webber, Discovery Bay Marine Laboratory has secured **US\$135,000** to replace the Crews (environmental monitoring) station with an ICON station.

Dr. Daniel Coore, Computing – Cardiac Simulator- **US\$81,000**.

Department of Computing (contact: Dr. Daniel Coore)- UNESCO, **US\$39,000** - various programmes enhancing reporting of science.

Prof. I. A. Kahwa on behalf of UWI in a consortium of seven Universities, **Euro450,000** from the DAAD, Germany, to form an International Network for Energy and Environmental Sustainability (INEES) and support its work addressing MDG #7.

The Occupational and Environmental Safety and Health programme recorded income of **J\$27 million**.