

DEPARTMENT OF PHYSICS

Donald Walwyn, BSc, PhD *UWI* – Head of Department

WORK OF THE DEPARTMENT



The Department offered a smaller number of undergraduate courses in order to comply with policies regarding small class sizes. Student assessment of the Departments undergraduate courses and lecturers remained at a satisfactory level. The average lecturer student evaluation for undergraduate courses was 4.05 (SD 0.68) for lecturers and 3.95 (SD 0.56) for courses. The average response was 56%. The Department continued to offer the self financed MSc in Digital Technology, which experienced an improvement in the number and quality of applicants. Additionally, a new Certificate course in Alternative Energy was taught for the first time during the Summer.

Ten (10) full time academic staff members were employed to the Department during the academic year – producing 0.6 publications per capita.

The research activity of the Department continued to be:

- Global Positioning System (GPS) applications – with special emphasis on the Jamaican transportation sector.
- Climate studies and modeling.
- The effects of climate change on crops and health.
- Photovoltaic applications.
- Communication coding studies.
- Lightning studies

During the 2005 / 2006 academic year the Department plans to implement the following:

- Start a material science research group.
- Introduce an undergraduate major in Applied Physics in the area of Alternative Energy.

PAPERS PRESENTED

- **Amarakoon, Dharmaratne**, Roxann Stennett, Anthony Chen, Samuel Rawlins, David Chadee “Climate Variability Impacts on Dengue and Vulnerability in the Caribbean”. Second AIACC Regional Workshop for Latin America and the Caribbean; Buenos Aires, Argentina, August 2004. Condensed version (2 pages) published in the Proceedings/Report of the Workshop
- Charmaine Heslop-Thomas, Amarakoon, Dharmaratne, **Wilma Bailey, Anthony Chen**, Samuel Rawlins, David Chadee, Rainaldo Crosbourne, Albert Owino, Karen Polson, Cassandra Rhoden, Roxanne Stennett, Michael Taylor. “Vulnerability to Dengue Fever in Jamaica”. AIACC Workshop on Synthesis of Vulnerability to Climate Change in the Developing World; Bellagio, Italy, March 2005.
- **Amarakoon, Dharmaratne, Anthony Chen, Michael Taylor**, Roxann Stennett, Wilma Bailey, Charmaine Heslop-Thomas, Samuel Rawlins, Dave Chadee “Climate and Dengue in

the Caribbean”. Climate Change, Dengue Fever and Prevention Workshop; Kingston, Jamaica, April 25, 2005, 41 pages/slides.

. • **Roxanne K. Stennett, Amarakoon, Dharmaratne, Anthony Chen** “Association of Dengue Fever with Climate in the Caribbean”. The Seventh Conference of the Faculty of Pure and Applied Sciences, UW I, Kingston, May 17 -19, 2005

. • **Jody Ann Minott, Amarakoon, A.M.D.**, “Climate Impacts on Sugar Cane and Modeling of Cane Yields at Worthy Park Sugar Estate” The Seventh Conference of the Faculty of Pure and Applied Sciences, UWI, Kingston, May 17 -19, 2005. 14 Slides (Poster).

. • **Amarakoon, Dharmaratne**, “An Overview of Windpower”. Gormann Corporation Seminar on Solar Energy – The Energy of the Future. Kingston, June 8, 2005. 26 pp.

. • **Stennett, Roxann, A.M.D. Amarakoon and A. Anthony Chen**, Association of “Dengue Fever with Climate in the Caribbean”. 7th Bi-annual Conference of the Faculty of Pure and Applied Sciences UWI, Mona, May 17 -19, 2005.

. • **Chen, A. Anthony, A. Amarakoon**, Samuel Rawlins, **Michael Taylor**, Dave Chadee, Sherine Huntley, Cassandra Rhoden and Roxann Stennett. “Climate Change, Dengue and Prevention”. Inter-American Institute for Global Research (IAI) Science Symposium in Montreal, Canada, May 4, 2005

. • **Rhoden, Cassandra, A. Anthony Chen and Michael Taylor**, “Scenario Generation of Precipitation and Temperature for the Caribbean” (Conference Poster). Seventh Biannual Conference of the Faculty of Pure and Applied Sciences, UWI, Mona, May 17 -19, 2005

. • Ngalamou, Lucien and **Leary Myers**, “A Multi-target Ladder Logic Diagram Tool” IEEE Conference on Electrical and Computer Engineering, Saskatoon, Canada May1-4, 2005.

. • Lucien Ngalamou and **Leary Myers**, “A Powerline Digital Services System”. Proceedings of the IEEE Conference on Electrical and Computer Engineering, Saskatoon, Canada, May1-4, 2005.

. • Ngalamou, Lucien, **Leary Myers** and Victor Watt. “CIHPJAM: An Application Specific Processor for Programmable Logic Controllers Design”. Annual Conference of The Society of Instrument and Control Engineers, August4-6, 2004, Sapporo, Japan.

. • Ngalamou, Lucien, Alejandro Gutierrez, **Leary Myers**, and Victor Watt. A Powerline Integrated Digital Telephone Design. Global Signal Processing Expo and Conference, GSPx 2004, September 27 -30, Santa Clara, CA., USA.

. • Ngalamou, Lucien, **Leary Myers**, and Victor Watt. An Application Specific Processor for Programmable Logic Controllers Design. Global Signal Processing Expo and Conference, GSPx 2004, September 27 -30, Santa Clara, CA, USA

. • Ngalamou, Lucien, Charlette Donalds, **Leary Myers**, and Victor Watt. “A Remote Asset Monitoring and Control Information Appliance (RAMCIA). Global Signal Processing Expo and Conference GSPx 2004, September 27 -20, Santa Clara, CA, USA.

. • **Taylor, M.A., A.A. Chen**, S. Rawlins, C. Heslop-Thomas, A. Amarakoon, W. Bailey, D. Chadee, S. Huntley. “Climate, Dengue and Prevention: Observations from the Caribbean. Invited paper. Science Forum, Inter-American Institute for Climate Change. Montreal, Canada, May 2005. Oral (Abstract in proceedings)

. • Lucien Ngalamou, Leotis, Buchanan and **Myers, Leary**, “Architecture of a Ladder diagram based Co-design Tool”. Annual Conference of The Society of Instrument and Control Engineers, August4-6, 2004, pp. 2516 -2519, Sapporo, Japan

PUBLICATIONS

□.* **Chen, A.A.**, T. Falloon and **M. Taylor**, “Agricultural Drought Monitoring in the West Indies” Chapter 11, in Monitoring and Predicting Agricultural Droughts: A Global Study”, edited by

V.K. Boken et al Oxford University Press, 2005

□.* S.A. Ashby, **M.A. Taylor** and **A.A. Chen**, “Statistical Models for Predicting rainfall in the Caribbean”. Theor. Appl. Climatol. (2005, DOI 10.1007/s00704-004-0118-8

□.* **Taylor, M.A.**, and E.J. Alfaro “Climate of Central America and the Caribbean, in Encyclopedia of World Climatology. Edited by J.E. Oliver, Springer, 2005

INCOME GENERATION

Amarakoon, A.

- A research grant of J\$1,040,750.00 was received by Dr. Amarakoon in June from the Environmental Foundation of Jamaica to do a feasibility study on **Wind Hybrid Energy Systems** during the 2005/2006 year.

Chen, A.A.

✕– Certificate Course in Alternate Energy, June 20th to July th, administered by MIAS, coordinated with A. Amarakoon. Amount generated not known.

□.– The BEd. Summer School Programme generated an income of \$787,504.99 A total expenditure of \$334,240 was made for lecturer and technician remuneration, administrative charges and prize payments. The surplus for the period amounted to \$453,264.99

□.– The total income generated by the MSc in Digital technology Programme amounted to \$3,974,000.00. Expenditure of \$2,818,715.14 was made for lecturer remuneration and the purchase of text books and laboratory equipment. The surplus for the period was \$1,155,284.86

□.– Consultation Fund 2700 and other miscellaneous income also generated \$445,840.17 for the period. From this there was a total expenditure of \$237,399.65 in staff costs, advertising, hospitality, courier service and miscellaneous expenses. The surplus for the period is \$208,440.52.

□.– Other income arrived through rental etc. generated a total of \$432,000.00. The total expenditure was \$99,517.00, resulting in a surplus of \$332,483.00

PUBLIC SERVICE

Amarakoon, A.

- External Examiner for the JBTE Teachers’ Colleges, Years 2 and 3

Chen, A.A.

- Author, for Intergovernmental Panel on Climate Change (IPCC) 4th Assessment, Working Group 1

Myers, Leary

- .– Member, Board of Directors, Jamaica Urban Transit Corporation
- .– Member, Board of Directors and Deputy Chairman Scientific Research Council
- .– Member, Board of Directors Spectrum Management Authority

Walwyn, Donald

- .– Member, Board of Directors, Spectrum Management Authority
- .– Advisor on Telecommunications to Jamaica’s Delegation to World Trade Organisation special session dealing with Trade in Services, held in Geneva, Switzerland June 27 – July 1, 2005.

Skobla, J.

– Consultant, Bureau of Standards, Jamaica, GPS Time Dissemination.

CATEGORIES OF STUDENTS

Undergraduate

The Department offered a total of 26 undergraduate courses, with enrollment ranging from a high of 163 to a low of 3. Four (4) students graduated with a major in Physics and twenty-two (22) students graduated with a major in Electronics. Four students graduated with First Class Honours. They are:

Michael Forbes
Clayon Harrison
Andrew Lyle
Dale Ross

Postgraduate

The Department offered a total of 9 postgraduate courses, with enrollment ranging from a high of 22 to a low of 4. Average enrollment was 12. Fourteen (14) students graduated from the MSc in Digital Technology Programme.

There were thirteen (13) MPhil and two (2) PhD students enrolled in the Department. One student was awarded a PhD degree and another an MPhil degree during the course of the year.

Prizes Awarded

Taylor, Michael START International Young Scientist Award (2004)

Mitchell, Meshach Charles received the Professor John Lodenquai Prize for Introductory Physics – P100 level

Lyle, Andrew Christopher and **Dale Vivian Ross** received the same at the P200 level

Lyle, Andrew Christopher also received the Francis Hadden Bowen Bursary

Bromley, Damian received the Michael Tharmanahtan Memorial Bursary