

Paul R. Aiken

Department of Physics and Engineering | Washington and Lee University | Lexington, VA 24450
(540) 458 8887 | paiken@wlu.edu

EDUCATION & GRANTING INSTITUTION

PHD ELECTRICAL ENGINEERING, COLUMBIA UNIVERSITY, NY, USA March 2004
Thesis: "A Microwave Phased Array with Variable and Controllable Magnitudes and Phases"; Advisors: Prof Paul Diament and Prof Yannis Tsvividis. Took additional 30 credits (beyond the MSc) of advanced graduate courses in electrical engineering and applied physics, including advanced design project courses. GPA 3.6

MSc. ELECTRICAL ENG AND APPLIED PHYSICS, COLUMBIA UNIVERSITY May 2000
30 credits of graduate courses (part time) in electrical engineering (circuit design) and applied physics, including courses in quantum mechanics, laser interaction with matter, electromagnetism, semiconductor devices, integrated circuit fabrication techniques and intellectual and business property rights. GPA 3.4

MPHIL PHYSICS, THE UNIVERSITY OF THE WEST INDIES, JAMAICA June 1993
Thesis: "A wireless electronic security device for communities"

BSc. PHYSICS, THE UNIVERSITY OF THE WEST INDIES, JAMAICA June 1989
Completed courses in electronics, solid state physics, fluid mechanics, general physics, chemistry and mathematics. GPA: 3.0

SUMMARY OF EMPLOYMENT ACITIVITIES

- July 2024 – Present Visiting Assistant Professor, W&L University, VA
- Sept 2019 – June 2024 CEO, Mona-Tech Engineering Services Ltd.
- Sept 2019 – June 2024 Senior Lecturer, Faculty of Engineering, UWI Mona
- Aug 2018- Aug 2019 Founding Dean, Faculty of Engineering, UWI Mona
- Aug 2017 – June 2024 Vice-Chairman, Board of Mona-Tech Engineering Services Ltd.
- Aug 2013 – Jul 2018 Founding Director, Mona School of Engineering, FST, UWI Mona
- Aug 2012 – Jul 2018 Deputy Dean, Faculty of Science and Technology, UWI Mona
- Nov 2014 - Jul 2017 Managing Director, Mona-Tech Engineering Services Ltd.
- Aug 2011 – Jul 2012 Associate Dean, Outreach, FPAS, UWI Mona

- Aug 2006 – Jul 2013 Senior Engineer, Head, Electronics Unit, UWI Mona
- 2007 – Jul 2013 Senior Lecturer, Physics Dept. UWI Mona
- 2007 – 2010 Adjunct Associate Professor of Engineering, UTECH
- 2004 - 2006 Senior R&D Test Engineer, Intel Corporation, AZ, USA
- 1997 – 2004 NMR/Electronics Engineer, Columbia University, NY, USA
- 1993 – 1997 NMR Engineer, Chemistry Dept., UWI Mona
- 1990 – 1991 Senior Technologist, Electronics Unit, UWI Mona
- 1989-90 & 1991- 93 Scientific Officer, Physics Dept., UWI Mona
- 1985 – 86 Laboratory Technologist, JAMALCO Bauxite Company

WORK IN ACADEMIA

Washington and Lee University, Lexington, VA

July 2024 - Present

Visiting Assistant Professor of Engineering, Dept of Physics and Engineering

- Fall Semester: Teach Electrical Circuits with Labs (ENGN/PHYS 207)
- Winter Semester: Expected to teach Introduction to Engineering (ENGN 178) and alternate years of ENGN 295e (Analog Circuits and Applications) and Electronics (ENGN/PHYS 208)

The University of the West Indies (UWI), Mona, Kingston, Jamaica

Aug. 2006 – June 2024

Senior Lecturer, Faculty of Engineering

Sept 2019 – June 2024

- Taught the following courses (which I had developed):
 - ESCE1102 engineering circuit analysis and devices
 - ECSE1104 Digital circuits and systems
 - ECSE2202 Analog circuits and instrumentation
 - ECSE 3042 RF Circuits and systems
 - ELNG3030 Power electronics and protection circuits
- Supervise graduate students' research in electronics, electrical and biomedical engineering.
- Provide consultation to the Dean and other faculty members, as needed.

Founding Dean, Faculty of Engineering

Aug. 2018 to Aug. 2019

- Provided leadership to the faculty
- Managed all academic (undergraduate and graduate), financial and administrative matters

- Represented the Faculty on all relevant University Boards and Committees, and externally in dealings with other public and private institutions, the media, and the General public
- Proactively participated in the recruitment, development and management of the human resources
- Canvassed the Government to secure J\$1.0 million loan (per student) at 6.0% (reduced from 9.5%) interest rate to our engineering students via Student Loan Bureau.
- Secured 25 full Government scholarships available annually to UWI Mona engineering students
- Managed all other matters essential to the operational efficiency and well-being of the faculty.

Founding Director, Mona School of Engineering (MSE) Aug. 2013 to July 2018

- Conceptualized, proposed and got approvals for the creation of a Faculty of Engineering at the UWI Mona Campus with commencement date August 1, 2018.
- Managed the daily operation of the school
- Created and managed Mona-Tech Engineering Services Ltd, commercial arm of the MSE
- Led the ABET accreditation for the BSc. Electronics Engineering in October 2017
- Prepared all other engineering programs for ABET international accreditations
- Managed the department budget and allocated J\$28 million to assist other departments
- Collaborated with Bursary to source J\$96 million loan to purchase laboratory equipment
- Developed and implemented new engineering programs
- Actively pursued partnerships with international industry and academia
- Aggressively recruited high caliber academic and technical staff
- Promoted UWI engineering to the region and world
- Represented the UWI at international meetings, conferences, workshops, etc.
- Screened and advised all incoming engineering students
- Worked closely with architect and project manager to restructure the buildings of the Basic Medical Science Dept to support the MSE
- Constantly liaised with government, industry and military for support and collaboration in developing and offering our engineering programs and relevant student internships

Deputy Dean, Faculty of Science and Technology

Aug. 2012 to July 2018

- Conceptualized and created the Mona School of Engineering with commencement date Sept 2013.
- Assisted the Dean with the daily operations of the Faculty of Science and Technology
- Assisted Associate dean, Student matters, with the processing of all new students to the faculty
- Constantly liaised with SAS/SRU on student matters
- Created list of laboratory materials and equipment for all engineering programs and coordinate all procurements for Sept 2013.
- Worked closely with the Faculty of Engineering (UWI Trinidad) and key industry stakeholders to offer Civil Engineering since Sept. 2013
- Implemented and participated in effective outreach programs to inform and motivate top performing high school students to pursue careers in engineering. The caliber of our engineering graduates is demonstrated to industry to increase expectations and foster eager employment.
- Marketed the MSE to showcase its high-quality programs and relevance the nation building
- Collaborated with the Engineering Regiment of the Jamaica Defense Force (JDF) in providing engineering training for the Officers (approx 10 -15 per year)

SENIOR LECTURER & Head, Electronics Unit; Sci & Tech Fac Aug. 2006 - July 2013

- Managed the daily operation of the Unit to offer the following services: maintenance to biomedical,
- Appointed Deputy Dean for Engineering on August 1, 2012
- Wrote proposal for the formation of the Mona School of Engineering (MSE). This was accepted by UWI Council with commencement in Sept 2013.
- Coordinated the development and successful implementation of a BSc. program in electronics engineering. The program commenced in September 2009. Six students from the first cohort graduated June 2012.
- Taught several courses in physics and electronics
- Negotiated relevant internship activities in industry
- Recruited and recommended part time teaching staff
- Ensured that all labs and projects are facilitated
- Coordinated final year engineering projects so that they are aligned to solving local industry problems and encourage entrepreneurial activities

- Coordinated the ordering and delivery of electronics components and equipment for all engineering labs and projects.
- Encouraged participation of second year engineering students in the IEEE International Robotics Competition
- Directed all activities related to the engineering program
- Improved income generation activities from four core areas (maintenance, printing, training, and design and fabrication)
- Developed and implemented self-financing modular courses and summer workshops in Industrial Electronics for all industry and laboratory technicians.
- Since 2006, represented the faculty in several outreach programs
- Designed and fabricated the LabPro - a lab equipment for the electronics experiments required for CXC (CSEC and CAPE) High School Physics.

PUBLICATION

Published refereed Papers:

1. Latchman, H.; **Aiken**, P.; Anderson, S.; Bernard, R.; Gordon, R.; (2021); "A hybrid asynchronous-synchronous learning network (HASLN) flipped-classroom approach in engineering education." 12th International Multi-Conference on Complexity, Informatics and Cybernetics, IMCIC 2021.
2. Sanderson, D, Alli, K. & **Aiken**, P.; "An Integrated Cadmium Extraction System (ICES) effective reduction of cadmium in the soil for bench-scale and field study application"; Case Studies in Chemical and Environmental Engineering; Volume 4, December 2020, No. 100107.
3. **Aiken**, P. and West, D. (2007); "Demand & supply for science and technology teachers at the secondary and tertiary levels within Jamaica and wider CARICOM region"; Proceedings on IEEE Education Conference, Munich, Germany.
4. **Aiken**, P., Peterson, P., McSweeney, G., Gerbus, D., Albertson, T., Coggin, D., Chu, W., and Peil, B.; (2005); "Standard Test Hook Interface for high volume CPU testing"; Intel Design and Test Journal (DTTJ).
5. **Aiken**, P. and Albertson, T. and Bensalem, B.; (2005); "Test socket influence on high-speed differential signals and channel performance"; DesignCon Publication.
6. **Aiken**, P. and Albertson, T. (2004); "Differential signals in high-speed data channels"; Intel ATT Journal.
7. **Aiken**, P. and Diamant, P; (2004); "Design of a phased array driver with controllable phases and magnitudes"; IEEE Transaction on Microwave Theory and Techniques, Volume: 52, Issue: 5, Pages: 1558-1564, May 2004.

Articles:

1. Aiken, P. and Amarakoon, D; "An Exploration of Renewable Energy as a Viable Solution to the Energy Crisis" CaribXplorer Magazine, Jan 2010
2. Andrade, C. and Aiken, P., "The Era of digital technology"; CaribXplorer Magazine, Oct. 2010
3. Aiken, P., McNamara, C. and Dunkley A; "Harnessing the Energy of the Sun (Part 1)"; CaribXplorer Magazine, Oct. 2010

DISTINCTIONS, HONOURS, SCHOLARSHIPS AND AWARDS

1. Distinction Award for Service to the University of the West Indies and Jamaica; The University of the West Indies, November 2023
2. Elevation to IEEE Senior member; 2011
3. Outstanding Achievement in Teaching, Faculty of Science and Technology; UWI. 2008-09
4. Outstanding contributions for successful integration and Development of Intel's Microprocessor Validation Units; Intel Corporation, AZ, USA, 2006
5. Who's who in Engineering; American Historical Society, 2001
6. Flour Mill Scholarship, 1988

PAPERS PRESENTED**Papers Presented at Academic Conferences and Workshops**

1. Aiken, P. "Energy Generation and Efficiency on the UWI Mona Campus"; International Energy Sustainability and Conference 2021. Virtual. March 2021
2. Aiken, P.; "Developing Caribbean Talent"; Outsourcing to the Caribbean, BPO conference. Dec. 13, 2017.
3. Aiken, P.; "LNG Applications to Reduce Energy Cost at the Mona Campus of The University of the West Indies"; Jamaica's first LNG Conference; Oct. 5, 2017.
4. Aiken, P.; "Building a Trained Workforce for the Construction Industry"; MSBM Forum - Construction as a driver for economic growth; July 2017.
5. Aiken, P.; "The role that Engineering plays in designing and developing sustainability in production"; MSBM Forum- Public Private Partnerships: A development tool for Jamaica. June 2017.
6. Aiken, P.; "Building Capacity in Science and Engineering at UWI Mona"; 1st meeting of Science Officials of the Latin America and Caribbean Countries; Foz Do Iquacu, Brazil, Oct. 2013.

7. Aiken, P.; "UWI Support for Science, Technology, Engineering and Mathematics (STEM)"; School of Education STEM Forum, Feb. 6, 2013.
8. Pitter, E., Lyle, E. and Aiken, P.; "Microcontroller based fully automated hydroponic greenhouse"; Jamaica Institution of Engineers Conference, Sept. 2012. This was the final year electronics engineering project.
9. Pitter, E., Lyle, E. and Aiken, P.; "PLC based fully automated hydroponic greenhouse"; FOSS 2nd International Science Conference, June 2012
10. Aiken, P.; "Establishing the Foundation for an Engineering Program"; UWI/UNESCO Caribbean Conference on TVET, Hilton Resorts, Jamaica, March 2012
11. Aiken, P., "Working in the USA and Europe"; Physics Alumni Career Day, March 2012
12. Aiken, P., "Signal and Power integrity in high-speed digital Circuits"; Electrical Engineering Seminar, Columbia University, New York, May 2011
13. Aiken, P.; "The ABET Accreditation Process"; Physics Dept Seminar, Feb, 2011
14. Aiken, P.; "Interconnects: the bottleneck of high-speed data transfers" IEEE-Jamaica Section, Monthly Seminar Series, Nov. 2008.
15. P. Aiken, "The Application of Physics in the Semiconductor Industry" Physics Homecoming Conference, UWI Mona, July 2008.
16. P. Aiken, "Demand & Supply for Science and Technology Teachers" Physics Homecoming Conference, July 2008.
17. P. Aiken; "Improving Science and Technology in the Caribbean" Physics Thursday Seminar Series, Feb. 2008
18. P. Aiken; "Finding your career path"; Computer Science Special Seminar to Level 2 students, Semester 2, 2008.
19. P. Aiken; "Demand & Supply for Science and Technology Teachers at the Secondary and Tertiary Level within Jamaica and wider CARICOM Region"; IEEE Education Conference, Munich, Germany, Nov. 2007
20. P. Aiken; "Career goals: The purpose of all these classes"; Computer Science Special Seminar to Level 2 students, Semester 2, 2007.
21. P. Aiken; "The state of Science Education in our High Schools"; IEEE-Jamaica Section Monthly Seminar Series, Oct. 2006
22. P. Aiken; "Interconnects: The bottleneck of high-speed data transfers"; Computer Science Department Seminar Series, Semester 1 2006
23. P. Aiken; "Interconnects: The bottleneck of high-speed data transfers"; Physics Department Seminar Series, Semester 1 2006

24. P. Aiken, P. Peterson, G. McSweeney, D. Gerbus, T. Albertson, D. Coggin, W. Chu, and B. Peil; "Standard Test Hook Interface for High Volume CPU Testing"; Intel Design and Test Conference, August 2005.
25. P. Aiken and B. Bensalem "Test socket influence on high-speed differential signals and channel performance"; DesignCon Conference, Santa Clara, Feb. 2005
26. P. Aiken; "Methodologies for measuring Noise in Electronics Circuits"; Columbia Engineering Seminar Series, Semester 1, 2003.
27. P. Aiken; "A Device for Neighborhood Watch"; Chemistry organized seminar for launching of device, summer 2000.
28. P. Aiken; "A novel community security device"; Pure and Applied Science Symposium, University of West Indies, Mona, June 1996

Papers Presented at Workshops and Training Sessions

1. Discussant to Prof. Gordon Shirley's Presentation on the Port Authority's role in the development of the Logistic Hub, The 1st Logistic Hub Symposium, UWI Regional Headquarters, Nov. 9, 2013
2. Overview of Renewable Energy Systems; Multiple presentations to Visiting Venezuelan Engineers and Scientists; Office of the Vice Chancellor, 2010-13
3. Preparing for the BSc and a career; Chemistry Dept. Student Seminar; April 2011
4. Preparing for the BSc and a career; Computing Dept. Student Seminar, 2009 and 2010
5. High School Outreach for development of Science education, Department of Physics, U.W.I. Jan. 2007, 2008, 2009 and 2010
6. Multiple presentations to Sort Test Technology Development (STTD) workgroups on Desktop, Server and Class Test Simulations. 2004 – 06
7. Sources of Noise in Nuclear Magnetic Resonance (NMR) Circuits – Part 1; Columbia University NMR Training Seminar, Summer 2002
8. Sources of Noise in Nuclear Magnetic Resonance (NMR) Circuits – Part 2; Columbia University NMR Training Seminar, Summer 2002
9. Sources of Noise in Nuclear Magnetic Resonance (NMR) Circuits – Part 3" Columbia University NMR Training Seminar, Summer 2002
10. Fundamentals of circuit components and design, Columbia University Workshop, August 2003.
11. A security device for neighborhood watch, Mona Community Security Workshop, Jamaica, 1994

12. Designing circuits with ORCAD, Electronic Unit Workshop, University of the West Indies, February 1991.

PUBLIC SERVICE

1. Chief Examiner, Committee of Examiners, Government Electrical Regulators (GER), Ministry of Science, Energy and Technology (MSET), since September 2020
2. Member, S&T XXtrordineers JA Adjudication Panel; Scientific Research Council (SRC), Jamaica; Nov 2021
3. Member, Review Board of the Jamaican Journal of Science and Technology (JJST); SRC; June 2021
4. Member, Professional Engineering Registration Board sub-committee on continuing education, re-instated since 2020
5. Director, Board of Directors, Petrojam Ltd. June-Nov. 2020.
6. Member, Task Force on Industry, Competitiveness & Global Logistics. 2019 - 20
7. UWI Engineering representative on BPO Task Force in Ministry of Economic Growth and Development, since 2017
8. Member, UNESCO Commission to Jamaica: Science advisory committee. Since 2017
9. Member, Engineering Accreditation Committee; University Council of Jamaica, 2015 - 18
10. Member, PERB Continuing Education Committee, 2013 -18
11. Chair Opening Ceremony and 1st Technical Session, Engineering Conference, Jamaica Institution of Engineers (JIE), Sept 2011
12. Chief Judge; SRC National Science Competition, National Arena, 2011
13. Chair for 2nd Technical Session; Engineering Conference, Jamaica Institution of Engineers (JIE), Sept 2010
14. Science Judge, SRC National Science Competition, Eastern Section, 2010
15. Several radio interviews on engineering education and UWI programs since 2007

OTHER PROFESSIONAL ACTIVITY AND EXPERIENCE

1. Lead Evaluator, Mock Mid-Term Continuing Accreditation Assessment; UWI St. Augustine Campus; November 19, 2021
2. Quality Assurance Evaluator; Department of Electrical and Computer Engineering; UWI St. Augustine Campus; Nov. 22 – 26, 2021.

3. Engineering Lead Expert, UWI Consulting Group to Revise and Develop the Engineering Programs at the University of Guyana; Feb 27, 2014 to Feb 26, 2017.
4. Chair, 9th Biennial Conference, Faculty of Pure and Applied Sciences; April 2012
5. Chair Working Group; 2 Day Expo; CARICOM Energy Week, UWI, 2011
6. Co-Editor; CaribXplorer Magazine, since 2010 - Present
7. Book Reviewer for Pearson Technology Group - IT Pro/Certification, USA, 2010. Title: Power Integrity Analysis and Management for Integrated Circuits – by Raj Nair and Donald Bennett, 2009/10
8. Adjunct Associate Professor in Faculty of Engineering UTECH: 2007-10
9. Appointments Committee Member; UTECH Sept. 2008. Served as external expert for the appointments of Associate Professors in the Faculty of Engineering and Computing and the Faculty of the Built Environment
10. Guest speaker at Clarendon College Founders Day activities; Feb. 2, 2008
11. Guest Speaker at the Jamaica Flour Mills Scholarship Award Ceremonies; Nov. 27, 2008
12. Peer Reviewer for IEEE Transaction on Microwave Theory and Techniques. 2004 - 05

RESEARCH GRANTS

1. P. Aiken, K Alli, & D. Sanderson; 'Cadmium remediation in soil using an integrated cadmium extraction system (ICES)'; Value US\$3,000. Research and Publication Awards, UWI Mona, 2018
2. P. Aiken, W. Mulder and A. Dunkley; Electrical characterization of dye sensitized solar cells; Value US\$3,300. Research and Publication Awards, UWI Mona, 2010.

SUPERVISION OF POSTGRADUATE RESEARCH

PhD

1. DaVaugh Sanderson; 'Cadmium remediation in soil using an integrated cadmium extraction system (ICES)'; Biomedical Engineering, Faculty of Engineering, UWI Mona.
Start date: Sept 2018
PhD Thesis submitted January 2021
PhD awarded April 2021. This is the first PhD out of the newly formed Faculty of Engineering.

2. Andrew Johnson; 'Novel optimization of battery storage for solar P.V with battery for microgrid unique to Jamaica and other small island states.'
Commenced: September 2021

MPhil

1. Shaquille Dias; 'Artificial Intelligence for Peripheral Nerve Mapping and Artificial Prosthesis Integration'; commenced Sept 2021.
2. Yahnique Barrett; 'Investigating the impacts of code complexity and antenna diversity of the OFDM signal'; Physics/Electronics, UWI Mona; MPhil awarded 2008
3. Chad T. Andrade; 'A Novel Solution to Integrating GPS and INS Systems;'
Physics/Electronics, UWI Mona; MPhil awarded 2011

THESES INTERNALLY EXAMINED

PhD

1. Jevan Persad; "Exploration and assessment of electrical properties of #D printed multi-materials." Dept of Electrical and Computer Engineering, UWI St. Augustine, Trinidad; November 2023.
2. George Marcus Lloyd; 'Multi-Precision Floating Point Multiplier Architecture.'
Dept of Electrical and Computer Engineering, UWI St. Augustine, Trinidad; July 2018.
3. Carlton Campbell; 'Noise Influences Associated with the Operation of a Power Generation Facility Adjacent to Rural Communities, Old Harbour, Jamaica
'UWI Mona, PhD (awarded 2015)

MPhil to PhD Upgrades

1. Jeevan Persad; 'Exploration and assessment of electrical properties of 3-D printed multi-materials'. Successfully upgraded to PhD research Aug 23, 2021.

MPhil

2. Leonardo Grant; "MITIGATION OF NON-TECHNICAL LOSSES IN THE DEVELOPING WORLD THROUGH THE USE OF DATA ANALYSIS AND MACHINE LEARNING"; October 2023
4. Matthew Budram; Fluid Pressure Manipulation in the UWI Cardiac Surgery Simulator: Modeling and Controller Design; UWI Mona, MPhil. MPhil 2013
5. Leotis Buchanan; Retargetable Ladder Logic Diagrams Tool; UWI Mona, MPhil 2007

6. Dwight Reid; Modeling of Power System Economic Dispatch Data Using the Multilayered Neural Network. Faculty of Engineering, UTECH, MPhil 2008
7. Romaindra Mohabir; Optimizing of Crystallization Process Control at Worthy Park Estate Ltd; Faculty of Engineering, UTECH, MPhil 2008

SUPERVISED UNDERGRADUATE PROJECTS

1. David Nelson; Remote Detection of Water leakage from NWC pipes; Electronics Engineering Capstone Project (ECNG3020), 2012-13
2. Imrhon Ford; Silt detection in Water Flows; Electronics Engineering Capstone Project (ECNG3020), 2012-13
3. Jeremy Hall; Communication through Water; Electronics Engineering Capstone Project (ECNG3020), 2012-13
4. Kevron Walton and Otis James; Lightning Detection and Circuit Protection; Electronics Engineering Capstone Project (ECNG3020), 2012-13
5. Darrel Gordon; Solar Panel Test Bed; Electronics Engineering Capstone Project (ECNG3020), 2012-13
6. Simone-Claire Campbell, Media Kerr and Jason McGowan; Navigation Device for the Visually Impaired (co-supervise by Dr Andrew Pearson, Basic Medical Dept); Electronics Engineering Capstone Project (ECNG3020), 2012-13
7. Matthew Davis, Oshane Thomas and Kellesia Ebanks; Remote Tracking of Crocodiles in Swamp Areas (co-supervised by Dr Byron Wilson, Life Science Dept); Electronics Engineering Capstone Project (ECNG3020), 2012-13
8. Vanessa Glenn and Jason Ashman; Electronic Security Device for Neighborhood Watch; Electronics Engineering Capstone Project (ECNG3020), 2012-13
9. Samuel Duncan, Industrial Pressure and Depth Level Sensors (co-supervised by Mr Irvin Lyle); Electronics Engineering Capstone Project (ECNG3020), 2012-13
10. Ewan Pitter; PLC Controlled Hydroponics Greenhouse; Electronics Engineering Capstone Project (ECNG3020), 2011-12. Applied for Provisional US Patent.
11. Dayne Robinson and Michael Prescod (co-supervised by Ervin Lyle); Chick Weigh System for Industrial Applications; Electronics Engineering Capstone Project (ECNG3020), 2011-12
12. Kelton Edwards; Solar Panel Test Bed; Electronics Engineering Capstone Project (ECNG3020), 2011-12
13. Keon Salmon; Low-Cost Self Adjustable Sun Tracker; Electronics Engineering Capstone Project (ECNG3020), 2011-12

14. Richard Blackwood; Lightning Detector Device; Electronics Engineering Capstone Project (ECNG3020), 2011-12
15. Sean Fuller (co-supervised by Dr. Andre Coy); External Cardiac Pacemaker; ELET3490 Electronics Project, 2012
16. Greg Marsh; 50 Hz to 60 Hz AC Power Supply; ELET3490 Electronics Project, 2012
17. Dale Frith, Shamara White and Imano Williams (co-supervised by L Clarke); Environment Simulator for Physics Global Warming Booth; ELET3490 Electronics Project, 2012
18. Andrew Johnson, Nashoon Haye and Jermaine Williams; Community Security Wireless device; P34P Electronics Project, 2011
19. Shamara White, Otis James, Marshall Simpson, Timothy Lamb, Nekita Reid, Raymond Dixon and Jodi-Ann Mcleod; Multi-parameter Samplers (YSI) and measurement Instrument for sea water (light, temp, conductivity, nitrates, phosphates, and pH); ELET2405 Practices in Electronics 1, 2010
20. Greg Marsh, Leon Powell and Imano Williams (co-supervised by Basil Mangaroo); Digitization of an Ice Machine; ELET2405 Practices in Electronics 1, 2010
21. Rickaylia Foster and Denise Smith; Solar cell Test Bed with Dynamic Loading; P34P Electronics Project, 2010
22. Sean Fuller and Sean Duffus (co-supervised by Basil Mangaroo); Electric Arc Spot Welder; ELET2405 Practices in Electronics 1, 2010
23. Romaine Reid and Derval Dalley; A Constant Voltage AC Power Supply (Voltage Stabilizer), P34P Electronics Project, 2009
24. Mickel Pinnock and Danae Thomas; A Low Cost Oscilloscope; P34P Electronics Project, 2009
25. Lindsworth Deer and Shane Shaw; Telephone Call Blocker; P34P Electronics Project, 2008
26. Laycya Holmes and Alistair Thomas; Electronic Braille Reader; P34P Electronics Project, 2008
27. Tousan Royal and Dwayne Graham; Remote Temperature Sensing; P34P Electronics Project, 2007

TEACHING EXPERIENCE, COURSE AND PROGRAM DEVELOPMENT

Teaching (2006 – 2018) and Assessment

- Teaching scores ranged from 4.0 to 4.8 out of 5.0
- Several assignments as first examiner and university examiner

- Since 2018 have consistently taught the following courses:
 - o ECSE1102 Electrical circuits and Devices
 - o ECSE1104 Digital circuits and systems
 - o ECSE2202 Analog circuits and Instrumentation
 - o ECSE3042 RF circuits and systems
 - o ELNG3030 Power electronics and protection circuits

New Courses Developed and Revised (at UWI Mona)

- Engineering, electronics and physics courses within the undergraduate engineering programs listed below, totaling over 60 courses (some courses are shared between programs)

Programs Developed (at UWI Mona)

- MSc Engineering and Management – Commenced Sept. 2022
- BSc. Biomedical Engineering – Commenced Sept. 2018 (deferred from 2017)
- Preliminary Engineering Programme – Commenced Sept. 2017
- MPhil/PhD Engineering Programmes – Commenced Sept. 2017
- BSc. Electrical Power Engineering - Commenced Sept. 2015
- BSc Computer System Engineering (with Dept. of Computing) – Commenced Sept.2013
- BSc Civil Engineering (adopted from St Augustine) - Commenced Sept. 2013
- BSc. Electronics Engineering – Commenced Sept. 2009

OTHER WORK IN ACADEMIA & INDUSTRY

Mona-Tech Engineering Services Limited; Kingston, Jamaica

Chief Executive Officer

Sept 2019 to June 2024

- Operation and maintenance (O&M) Contractor for the UWI 7 MWe Combined Heat and Power (CHP) Plant powered by LNG fuel
- Developed and implemented the vision and mission of the company
- Led a team of biomedical, chemical, civil, electronics, electrical and mechanical engineers to perform various levels of engineering services
- Managed the daily operation of the company to offer the following services: Low-cost energy systems and solutions; HVAC procurement, installation and maintenance; maintenance and repairs of biomedical, industrial and analytical equipment and systems; engineering research and development; manufacturing, training, and engineering consultancy services.
- Liaised with industry and business partners to develop ideas for new industries and provide engineering support to existing industries.

- Prepared annual budget and financial forecast and planned and developed new businesses.

Managing Director

Nov. 2014 to July 2017

- Managed the daily operation of the company to offer the following services: maintenance to biomedical, industrial and analytical equipment; research and development; manufacturing; training, and engineering services.
- Provided technical expertise for the planning, design and construction of a 7 MW Combined Heat and Power (CHP) plant. This led to cost savings more than US\$4 million per year.

Intel Corporation; Chandler, AZ, USA

Senior Test Engineer

April 2004 to June 2006

- Performed circuit board level designs and gigabit signal integrity analysis for high performance CPU, chipset, PCBs, sockets, vias and other interconnects, and compare to golden standards developed by ATD.
- Measure droop analyses of power supply voltages and recommend solutions
- Used vector network analyzer (VNA), reflectometers, and gigahertz differential oscilloscope to measure and quantify the eye diagram for SATA high speed differential signals.
- Specified and recommend the purchase of an anti-vibration table for S21 and RLGC modeling of physical interconnects
- Recommended signal integrity analyses of sockets and packages for Intel processors.
- Create simulation decks to simulate the interconnecting pathway from microprocessor die to chipset.
- Developed innovative graphical means of comparing eye width and length versus giga-bit rates and presented findings at Design-Con conference and Intel internal seminars and conferences.
- Contracted by Pearson Technology Group to review book titled Title: Power Integrity Analysis and Management for Integrated Circuits – by Raj Nair and Donald Bennett (Intel staff).
- Led an international team of engineers in the design and development of Test Interface Units (TIU) for the Intel Servers.
- Owned, defined, developed and transferred test processes for Dempsey and Woodcrest processors into the Assembly/Test virtual factory.
- Researched and developed new test process technologies to meet customer requirements.

- Managed process development while collaborating with internal and external development partners, to support virtual factory ramp up.
- Extensively interacted with technology development partner organizations, internal suppliers, Product Divisions, Q&R and Test Factories in Arizona and Costa Rica.
- Performed factory setup and readiness in Costa Rica Virtual factory for Robot Controlled TIUs.
- Trained engineers and technicians via classroom, laboratory and online modalities.
- Led an international team of engineers in Signal Integrity and Radio Frequency (RF) Pathfinding for new technology development such as WIMAX (4G) and MIMO technologies.

Columbia University; New York City, NY, USA

NMR/Electronics Engineer

Jan. 1997 to March 2004

- Performed all levels of maintenance and upgrades to seven advanced nuclear magnetic resonance (NMR) machines.
- Designed and simulated RF and microwave circuits including low noise amplifiers (LNAs), power amplifiers, power splitters, mixers, filters, oscillators, directional couplers, modulators, and demodulators for application to solid state NMR research and projects in Electrical Engineering.
- Designed an NMR probe containing tuned RF circuits, fiber optics and a 50 GHz waveguide for measuring polarization transfers between nuclei and electrons within strong magnetic fields.
- Designed and constructed a 1 GHz phased array driver device to be used for verification of a novel concept for electromagnetic radiation from patch antenna arrays.
- Designed optical NMR apparatus for experimental studies of photosynthetic processes for application to the development of biological and inorganic solar cells.
- Investigated the design and fabrication of an integrated microwave transceiver for Ka band (30 GHz) application.

Scientific Officer, Physics Department, UWI, Jamaica

1989 – 90 and 1991 - 93

- Oversaw the daily operation of the Advanced Electronics Laboratory.
- Designed, constructed and maintained laboratory equipment.
- Assisted final year students in lab procedures and final projects
- Provided technical and technological support for teaching and research.

- Designed, constructed and field-tested an electronic security device utilizing transmission and reception of digitally coded messages for application to neighborhood watch programs.

Senior Technologist, Electronics Unit, UWI 1990 – 1991

- Lead a team of technicians and technologist to maintain all electronic equipment (excluding computers) within the faculty
- Consulted by local companies on purchasing, installing, maintaining and upgrading advanced electronic instrumentations including fishing boat electronic compass installation and repair for the Fisheries Department.

JAMALCO Bauxite Company, Heyes Clarendon, Jamaica 1985 - 88

- Laboratory Attendant (1985-86)
- Junior Analyst (summer (1987)
- Senior Analyst (summer (1988)