



DEPARTMENT OF COMPUTING

Dr. Gunjan Mansingh - Head Of Department

BSc (Bombay University, India), MPhil, PhD (UWI)

OVERVIEW

The Department of Computing (DoC) continues to offer multiple undergraduate and postgraduate programmes in Computer Science, Information Technology, Software Engineering and Data Science. We regularly revise our programmes to keep them in line with international curricula recommendations for Computing. The DoC continues to contribute towards society, as various faculty members gave talks and participated in many workshops locally, regionally, and internationally. In Summer 2022, between July 4 - 29, the DoC organized and hosted a residential coding programme called JamCoders (<https://jamcoders.org.jm/>). This summer camp focused on algorithms and programming for 50 high school students across 12 parishes of Jamaica. This programme was organized by the faculty from the Department of Computing at The UWI, Mona, members of the Caribbean Diaspora working at Google and The University of California – Berkeley, and the reggae artist Jamar McNaughton aka Chronixx, via his CHOR Foundation.

We run internship programme in two formats, general and targeted. In the general category our students work in various private and public companies in Jamaica. During the COVID-19 Pandemic our interns were equipped to work in the virtual mode. We run a targeted internship program with Jamaica's National Commercial Bank (NCB). In the summer of 2021/22, we successfully completed training (virtually) the fifth cohort of the NCB-UWI Agile Laboratory Project with 15 students. Our student numbers continue to grow, especially in the postgraduate and advanced undergraduate Computing courses. Numbers in the introductory, i.e., Level 1, Computing courses are lower in line with the broader trends seen in the faculty and

the entire campus; however, our student numbers in the advanced courses remained stable. During the pandemic the need for computing graduates increased. Also, the ability for talent to work from anywhere has opened many options in the job market. Our graduates from the undergraduate and graduate programmes are highly sought after and can easily find employment both locally and internationally.

The department continues to operate with very limited resources, both in terms of people and infrastructure; however, it manages to provide a quality education to our students. In the virtual mode the lack of physical infrastructure did not impact us as much; however, as we move towards resuming classes face-to-face, the department will face challenges in its operations.

PROGRAMMES & STUDENT NUMBERS

The department continues to offer many undergraduate and postgraduate programmes as shown below.

Undergraduate

BSc General

Computer Science major (CS)

Software Engineering major (SE)

BA (Computer Science major)

BSc Information Technology (IT) – Offered at both Mona and the Western Jamaica Campus

BSc Software Engineering – Mobile Application Technologies – Years 1 and 2 are offered at The UWI and years 3 and 4 in China at GIST.

Graduate/Postgraduate

MSc – Applied Data Science

MSc – Computer Science

MSc – Information Systems (Computer-Based Masters in Information Systems – CBMIS)

Postgraduate Diploma in IT

Postgraduate Diploma in Applied Data Science

Postgraduate Certificate in Applied Data Science

M.Phil. and PhD – Computer Science

The number of students registered in the various programmes in the 2021/22 academic year are displayed in Table 1. The data in Table 1 reflects the number of distinct students who register for courses at each level within the specified academic years. Our Advanced Level student numbers continue to increase indicating that our student retention is good. On the other hand, our Introductory Level student numbers are trending downwards in line with the broader declines seen across the Faculty of Science & Technology. Table 2 shows our graduation numbers in various undergraduate majors and programmes. This year we graduated the second cohort of BSc Software Engineering – Mobile Application Technologies. Two PhD candidates Ms. Nadine Maitland and Mr. Sean Miller had their defence in the months of August and September respectively, both were successful and were awarded their PhD degrees in February 2022.

Table 1. Students registered in the Department of Computing in the last 5 (five) years

LEVEL	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022
Introductory	723	622	555	524	487
Advanced	375	432	443	498	501
PG. Cert. Applied Data Science	-	-	2	1	1
PG. Diploma Information Tech.	13	5	-	1	-
PG. Diploma Applied Data Science	-	-	-	2	1
M.Sc. Comp. Science	30	27	22	29	35
M.Sc. CBMIS	71	76	68	57	74
M.Sc. Applied Data Science	-	-	8	21	26
M.Phil.	16	9	10	7	7
Ph.D.	6	6	5	5	5

Table 2: Undergraduate Students graduating across majors in 2021

	M/F	Upper Seco nd M/F	Second M/F	Pass M/F	Total M/F
Computer Science (B.Sc.)	5/1	19/8	8/9	6/1	38/19
Computer Science (B.A.)	0/0	1/0	0/0	0/0	1/0
Information Technology	2/1	3/4	6/3	2/2	13/10
Software Engineering	0/1	1/2	2/0	0/1	3/4
Software Engineering – Mobile Application Technologies	1/0	1/1	0/0	0/0	2/1
Total	8/3	25/15	16/12	8/4	57/34= 91

ACCESS

Online mode of delivery continued throughout the academic year 2021/22. Both undergraduate and postgraduate students mastered the transition of virtual learning of labs and tutorials sessions. Students readily accessed their course containers on OurVLE. In addition, Lab Assistants were put in place to assist with course work. Streaming courses also continues to the WJC campus to assist students to cope in a virtual environment.

Workshops and Seminars

Dr. Claudine Allen was a panellist and working session lead on the topic “Hybrid Classroom and Software Engineering Education” at the 18th Software Engineering workshop for Educators held August 3-5, 2021 online, and hosted by the Software Engineering Institute at the Carnegie Mellon University

Workshop - Industry Case Studies – Bridging the Gap between Researchers and Practitioners; K. Borowa, M. Wiese, D. Tamzalit & C. Allen; The 8th ACM Celebration of Women in Computing, womENCourage '21, 22–24 September, 2021, Prague/virtual, CZE 2021.

Extended Abstract and Poster: K. Borowa, M. Wiese, D. Tamzalit, C. Allen

& A. Singjai (2021). A Marketplace for Industrial Case Studies in Software Engineering The 8th ACM Celebration of Women in Computing, wom-ENCourage '21, 22–24 September, 2021, Prague/virtual, CZE 2021.

Professor Daniel Coore participated in a virtual panel discussion titled “Tackling Jamaica’s Media and Information Literacy Deficit”, on October 27 2021. This was part of the 10th annual Global Media and Information Literacy (GMIL) week commemorated from the 24-31 October 2021, under the theme “Media and Information Literacy for the Public Good”.

Professor Daniel Coore attended another meeting which was held at the US Embassy on Friday, 19th November, 2021. The objective of this co-creation session was to discuss the future of Digital IT workforce in Jamaica and how ASU can develop a project plan to establish their presence in Jamaica. At the conclusion of the exercise, there was a good prospect to fit the University of the West Indies’s objectives into those plans.

Dr. Claudine Allen was a panellist at the discussion on Software Engineering for Post-Covid growth held virtually on November 24th, 2021. The panel was hosted by The University of The West Indies Global Institute of Software Technology and the China Institute of Information Technology.

Dr. Gunjan Mansingh appeared on CVM Television’s “Editorial Thursday” on February 3rd, 2022, where she presented on the topic “Insights into the 4th Industrial Revolution”.

Conferences

On December 1, 2021, the Department hosted the 2nd Annual Mini-Conference on Software Engineering (Virtually). The conference was organised and chaired by Dr. Claudine Allen. The conference had 15 speakers which included Grady Booch, an internationally known speaker, researcher and author in the area of Object-Oriented Design and Software Engineering in general. There were four other specially invited speakers - Dr. Phillipa Bennett and Mr. Matthew Ormsby—both from the Mona Campus, Dr. Michelle Gittens from the Cave Hill campus, and Dr. Rochelle Elva from Rollins College in Florida. The conference also featured presentations from 10 of our MSc. Computer Science students. The conference was attended by staff and students of the Mona, Cave Hill, St. Augustine, and Five Islands cam-

puses of the UWI, as well as from the University of Technology, Jamaica. A total of 68 attendees were recorded for the event.

Outreach

For the National Cybersecurity Awareness month the department participated in various activities hosted by Jamaica Incidence Response Team JaCIRT, Ministry of Science Energy and Technology, Jamaica.

oDr. Gunjan Mansingh and Dr. Curtis Busby-Earle participated in a virtual round table talk on “Formal Learning Paths in Cybersecurity” on October 20, 2021.

Dr. Gunjan Mansingh and Dr. Curtis Busby-Earle participated in a panel discussion on “Security Research-Is Jamaica Ready” on Wednesday, October 21, 2021.

The UWI Mona Computing Society, student organization, also jointed in National Cybersecurity Month by hosting a talk on October 28, 2021, on “Learn about online safety: How to identify phishy emails Privacy and more!!!”

Dr. Claudine Allen and Dr. Gunjan Mansingh participated in an EdTech roundtable discussion hosted by the US Embassy in Kingston in partnership with the ASU on November 15, 2021. They were invited to share perspectives on issues impacting the educational technology landscape in Jamaica. Anthony Drummonds and Rushawn Campbell (2nd year BSc IT student) facilitated a Google Classroom workshop by the Western Jamaica Campus on November 13, 2021. The aim of the workshop was to assist parents from the Glendevon community in Montego Bay, to be better equipped with the knowledge and expertise to navigate and effectively use the Google Classroom platform, so they will be able to assist their children better. The workshop was hosted by the Mona Social Services.

The Department of Computing participated in the CAPE Workshops organized by the Faculty of Science & Technology on January 5th and 6th, 2022, by delivering content from the CAPE Computer Science syllabus and engaging with students and teachers. On January 5th, 35 students and teachers participated in this session. Dr. Ricardo Anderson, covered Unit 1 of the syllabus. On January 6th, Mr. Alton Bodley and Mr. Seaford Bacchas, covered Unit 2 of the syllabus. Thirty-eight persons (38) participated in this session

which includes both students and teachers. The workshops were hosted via Zoom.

Mr. Anthony Drummonds facilitated a Google Classroom workshop by the UWI, Mona Campus on Saturday, February 26th, 2022. The aim of the workshop was to assist parents from the surrounding UWI, Mona communities to be better equipped with the knowledge and expertise to navigate and effectively use the Google Classroom platform, so they will be able to assist their children better. The workshop was hosted by the Mona Social Services.

Dr. Gunjan Mansingh was the moderator for the event hosted by CARICOM Girls in ICT Partnership who celebrated International Girls in ICT Day, Theme: Access and Safety on April 28, 2022. She was also a panellist for an International Girls in ICT activities, organized in Jamaica by Youth Can Do IT (YCDI), #iamWITy 2022 (I AM A WOMAN IN TECH) on April 28, 2022.

Prof. Daniel Coore was one of the five judges at an inaugural innovation competition put on by the Energy Chamber of Trinidad and Tobago at their annual conference, held on June 1, 2022.

Partnership

The Department and Huawei are collaborating to establish a Huawei ICT Talent Hub at UWI by providing necessary equipment to establish labs, learning platform (for example, MOOC) and courses to train trainers and trainees. An MOU was signed.

This partnership will consist of the following initiatives

Huawei Seeds For the Future program promoted by Huawei in collaboration with local institutions and universities to encourage the transfer of knowledge for students and generate ICT innovation in national education

Huawei ICT Competition. (An ICT Competition that involves Huawei Authorized Learning Partners to invite all Huawei ICT Academy and other colleges to lead technical certification, train future ICT professionals, and build a healthy talent supply.) Huawei will provide related training, certification, and examination resources to all the participants for all Huawei related certifications at different levels, such as HCIX (HCIA, HCIP, HCIE).

Huawei ICT Academy. (Huawei global cooperation project with local universities and institutions in ICT careers, with the objective to create a bridge between Industry and Academy, and open employability opportunities for certified talents.)

Scholarship Program (to provide financial support to Jamaican students who are interested in the ICT industry and to promote the development of young ICT talents within this Country). Up to two million dollars in prizes and scholarship funds will be made available to the participants.

Summer Camp – JAMCODERS

The department hosted a residential coding camp for high school students from July 3rd to 29th, 2022 (<https://jamcoders.org.jm/>). Fifty (50) students were selected out of the pool of 150 applicants to participate in Jamaica's "JamCoders", a summer camp on algorithms and programming that was free for participating high school students. The selected students came from various schools across 12 of 14 Jamaica parishes, and included 30 girls and 20 boys.

The camp was organized by the Department in collaboration with Prof Jelani Nelson (of UC Berkley) founder of Addiscoder and members of the Caribbean diaspora. It was funded by Mr. Jamar McNaughton (aka Chronixx), Survival and Flourishing Fund and The D.E Shaw Group.

The high school students selected were from 3rd to 5th form. Every day the students had lectures and lab sessions. They were taught by lectures from different institutions. Prof. Boaz Barak - Harvard, Dr. Gunjan Mansingh - UWI, Prof. Jelani Nelson – UC Berkeley and Dr. Adam Kalai - Microsoft Research. In the computer lab the students were assisted by 11 Teaching Assistants (Computing University Students) from the following institutions UWI, UC Berkley, Harvard, Cambridge and Stanford. While staying on halls and experiencing University life they were supervised by UWI students from the Faculty of Science and Technology to act as their chaperones. Campers were exposed to advanced Computer Science topics including some taught in the advanced levels of Computer Science baccalaureate programmes. Given JamCoder's cutting-edge course on algorithms, the goal was to build the foundation for good habits and discipline in Computer Science for the next generation of Science and Engineering leaders in Jamaica. Through weekend activities including excursions and fun activities

such as Sports Day, Crazy Dress-up Day and a graduation evening dinner, students were able to build camaraderie. This was achieved with the support of many in the community including Dr. Thera Edwards, the Guardsman Group, Hope Zoo, Island Grill, StarApple AI, and Holywell National Park. The camp was a huge success and needs to be repeated, organizers are in discussions to explore running the camp in 2023.

Publications

Journal

- Bonadio E., Mimler M., Mansingh G., Cortesy G., Stone M., McDaniel G., Parkes A. and Harvey S. (2022). Implications of Artificial Intelligence in Action – A Jamaican Perspective. *European Intellectual Property Review*, 44(10), 611-622.
- Brown, P.A., Anderson, R.A. (2022). A methodology for preprocessing structured big data in the behavioral sciences. *Behavior Research Methods*.
- <https://doi.org/10.3758/s13428-022-01895-4>

Conference Proceedings

- A.O. Drummonds, J. Henry and K. Mirpuri.(2022). An Analysis of Website Phishing Awareness in Jamaica, *SoutheastCon 2022*, pp. 368-373, DOI: 10.1109/SoutheastCon48659.2022.9764050.
- Z. Richards and P. Gaynor (2022). Identifying Faults In Javelin Throwing Technique Using Computer Vision, *SoutheastCon 2022*, pp. 221-226, DOI: 10.1109/SoutheastCon48659.2022.9764130.
- D. T. Fokum (2022). The Effect of the COVID-19 Pandemic on Student Participation in an Undergraduate Networking Course. In *Proceedings of the 27th ACM Conference on Innovation and Technology in Computer Science Education Vol. 1 (ITiCSE '22)*. Association for Computing Machinery, New York, NY, USA, 407–413. DOI: <https://doi.org/10.1145/3502718.3524792>

Student Matters

This department has two awards—namely the Karl Robinson and the Ezra Mugisa Awards—for computing students: The recipient of the Karl Robinson Best Final Year Computer Science award for the 2021/2022 academic year was Mr. Matthew Alexander Palmer. The recipient of the Ezra

Mugisa Best Second Year Computer Science award for the academic year 2021/2022 was Mr. Raheem Zackary Wilson. These awards were handed out during the Faculty of Science and Technology's annual awards ceremony. Mr. Alton Bodley successfully upgraded from M.Phil. to Ph.D. on January 30th, 2021. The title of his thesis is "Intelligent Decision Support System for Resource Optimisation: An Application in Cricket Team Selection". His supervisors are Dr. Gunjan Mansingh and Prof. Kweku-Muata Osei-Bryson.

Ms. Nadine Barrett-Maitland was awarded a PhD in February 2022. The title of her thesis is "Designing A Decision Support System to Assist in Strengthening Information Security Policy Development in Developing Countries using A Hybrid Approach". Her supervisors were Prof. Kweku-Muata Osei-Bryson and Dr. Gunjan Mansingh.

Mr. Sean Miller was awarded a PhD in February 2022. The title of his thesis is "MPML: Multi-perspective Machine Learning - An Ensemble Learning Method for Botnet Detection and Analysis". His supervisor was Dr. Curtis Busby-Earle.

ALIGNMENT

Academic Attractive courses are offered to meet and develop the need of our current industry.

Internships

Numerous relationships are formed with organizations to make the internship programme larger as the year's progresses. Recruitment process continues via Zoom with our local and international associates. In the academic year approximately 50 students participated in various internship activities. Fifteen (15) student interns were identified by the department and vetted by NCB (National Commercial Bank) for The UWI-NCB Agile Lab. This year's programme was also offered in a virtual mode and most of our interns have been offered full time employment.

In May 2021, a virtual meeting was held between Goldman Sachs and Computing representatives from the UWI campuses in Mona, Cave Hill, and St. Augustine. Goldman Sachs. The purpose of the meeting was to indicate that Goldman Sachs was looking to expand their existing Jamaica and

Africa recruiting initiatives across the Caribbean, using the UWI campuses. This is undoubtedly a result of Goldman Sachs' good experience with the three interns that they have hired from the Mona Campus.

New Appointment

Dr. Gunjan Mansingh elected as Vice President- Innovation and Education, Jamaica Technology and Digital Alliance (formerly Jamaica Computer Society) on February 2022.

Prof. Daniel Coore is appointed to the Board of Directors of Jamaica National General Insurance (JNGI) effective December 2021.

Dr. Gunjan Mansingh is appointed to the Board of Directors of Jamaica National Financial Group Limited effective September 2021.

Visits

The department hosted two representatives from Arizona State University (ASU) and two US Embassy personnel on 15th November, 2021. This meeting was to discuss potential collaboration and engagement in the field of technology especially cybersecurity. Dean of the Faculty - Professor Michael Taylor, Dr. Gunjan Mansingh, Professor Daniel Coore, Dr. Curtis Busby-Earle and Mr. Sean Miller from the department made presentations to the visitors and introduced them to The University of the West Indies and the Department of Computing.

An international company Grid Dynamics visited the department to understand the technology pipeline in the country. Subsequently they set up offices on the Mona Campus and we assisted them with organizing informational sessions with our students. Grid Dynamics also hired four Computing graduates once the local offices were set-up.

Career Fair

The department assisted the UWI Mona Computing Society in hosting an annual Career Fair on March 17th, 2022. The goal of this event was to provide participants with the opportunity to display their knowledge and skills gained from school and/or personal projects to recruiters in the hopes of