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Development of Research Curriculum for Engineering Education at the Mbarara University of Science and Technology (MUST) in Uganda. - Academics Without Borders / Universitaires Sans Frontieres

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3–4 minutes

The Mbarara University of Science and Technology (MUST), founded in 1989, is an AWB partner institution in South Western Uganda. MUST has more than 10,000 full-time undergraduate and graduate students, 500 members of faculty, and 100 non-academic staff.

Following successful completion of the pilot of the AWB Strengthening Engineering Research program in 2022, Dr. William Wasswa, Senior Lecturer and Head of the Department of Biomedical Sciences and Engineering at MUST, approached AWB with a new AWB project request: Could AWB provide volunteer assistance with the development of a research component for the undergraduate engineering program to improve the educational offering for students and to better prepare them to join business, industry, and civil society.

In partnership with MUST, AWB recruited two outstanding AWB volunteers for the project in August 2023 – Dr. Arash Habibi Lashkari, Associate Professor in the School of Information Technology at York University and Canada Research Chair in Cyber Security; and Dr. Pranav Chintalapati, Assistant Professor of Teaching, Faculty of Applied Sciences, University of British Columbia. Together, they began their collaborative work with Dr. Wasswa.

In the first phase of the project, the volunteers participated remotely in a systematic review of the existing courses, identifying existing components that could serve undergraduate research, and suggesting areas for improvement. They also highlighted opportunities for updating resources, recommended new courses, and emphasized the necessity of building industry partnerships.

For the second phase, both AWB volunteers visited the MUST partner faculty onsite in 2024, Dr. Lashkiri in May and Dr. Chintalapati in August. In-person visits were essential for the collaborators to gather further information and engage more intensely in faculty and student workshops. From these visits, they developed and agreed on a finalized research program that will give undergraduates at MUST new tools and opportunities for engaging in potentially impactful research.

When asked how the new curriculum will impact student success, Dr. Lashkiri said: “The new research component integrated into the undergraduate engineering program at MUST is a transformative step forward. It equips students with the tools, knowledge, and industry-relevant experience to engage in impactful research, significantly enhancing their perspectives for the future. By bridging the gap between academia and industry, this initiative

ensures graduates are better prepared to secure meaningful jobs and thrive in competitive professional environments.”

After the AWB volunteers returned to their respective universities, they continued to engage remotely with AWB’s MUST partners on developing course materials and evaluation metrics that will be used to monitor outcomes after implementing the new curriculum. This important collaboration will continue into 2025.