Uganda: Gregory Sankaran, University of Bath, UK, and Juma Kasozi, Makerere University, Kampala, Uganda

Makerere University is effectively the national university of Uganda. It was founded in 1922 and assumed its present form in 1970, but was practically suppressed during the 1970s and effectively refounded in 1986. The best-known alumnus outside Uganda is probably John Sentamu, Archbishop of York.

Mathematics Department (in the Faculty of Science): about 20 staff, several with PhD. There is some research activity and an MSc programme, and there are occasional PhD students, mainly junior members of staff.

Contact: Juma Kasozi, now Head of Department, is mainly interested in financial mathematics but studied algebra earlier and retains an interest in it. John Mango, the previous Head of Department, has been very much involved with this programme. He works in numerical analysis.

Requests to MARM were for help with building up strength in pure mathematics, especially algebra, by whatever means seemed most useful, and for assistance for other research groups of possible.

Research: There is some research going on especially in financial mathematics, numerical analysis and biomathematics. Pure mathematics research is very limited but Dr Vincent Ssembatya publishes occasional papers in topology. However, he is Dean of the Faculty of Science and therefore has limited time for research.

Issues, problems and solutions

- The library is adequate at MSc level but is insufficient as a resource for research.
- Internet access is slow and not very reliable, largely because of load shedding (i.e. power cuts).
- Teaching loads are quite heavy.
- The only research active member of staff in pure mathematics is Dr Vincent Ssembatya, who is Dean of the Faculty. One other member of staff, Dr Saul Nsuguba, has a fairly recent PhD (from Edinburgh) and would like to resume research. In applied mathematics there is more activity but contacts and collaborators are needed.
- The teaching resources to run the MSc as it should be run are not always available.
- A revised MSc with better structure, both administratively and mathematically, is needed. More opportunities for PhD students should be created and a serious attempt needs to be made to start research activities, necessarily on a small scale at first.
- There is a good system for collaboration at the level of teaching with universities in Nairobi, Dar-es-Salaam and to some extent Kigali. This does involve a lot of travel. Videoconferencing is not a suitable alternative because of infrastructure issues such as frequent power cuts.

Activities undertaken and planned

The first visit of the mentor took place in September 2008. Apart from general fact-finding and familiarisation, I gave a complete MSc course introducing ring and field theory, eight two-hour lectures in a week. One of the students (David Ssevviiri) chose to write an MSc project on a related topic, which is now complete.

A second visit took place in March and April 2009. This time I gave some lectures, again at MSc level, on topology, complementing lectures by Dr Ssembatya; completed the assessment of the algebra course from September; discussed the MSc project and future plans of David Ssevviiri; and began to think about the possible future shape of the MSc, in response to questions from the staff. Two more MSc students expressed some interest in possible MSc topics in pure mathematics and one of them (Patrick Muwereza) started work on a project under my supervision. I started discussions with Dr Nsuguba on a possible joint research project.

Betty Nannyonga, a member of staff who is simultaneously doing a PhD in mathematical biology, visited the UK in June and July 2009. She started a collaboration with two other members of the department in Bath and we expect this to allow her to complete her PhD quickly and move on to wider and more independent research. Unfortunately it is impractical for Dr Nsuguba to visit the UK at this stage.

My third visit was planned for May 2010 but had to be cancelled at short notice for personal reasons. We supported the participation of Dr Mango in the ICM in Hyderabad, and we arranged for brief visits to Makerere by two UK-based mathematicians who were visiting Uganda independently.

Future plans include: continuing to support the research programmes of Ms Nannyonga and Dr Nsuguba; finding contacts and opportunities for Dr Ssembatya to pursue his research; continuing support for Mr Ssevviiri (who has been studying in South Africa); and at least one further visit, as soon as possible, by the mentor to Kampala to undertake teaching, support Mr Muwereza's work, collaborate with Dr Nsuguba, and rebuild the MSc.

An interesting deveolpment is a proposal to have a Ugandan campus of AIMS at Makerere University.