African University of Science and Technology [AUST]

Knowledge is Freedom

M.Sc. Mathematical Modelling

Ride on the wave of AUST's success

with a degree that offers you an opportunity to catapult your career in a new direction

As a pan-African university and a World Bank "Center of Excellence" which draws its faculty from over 140 of the world's top academic and research institutions, and graduates with an extremely high employability rate, AUST has created a global footprint and now enjoys world-wide recognition as a place which produces high class graduates in Science and Engineering. You now have the opportunity to ride that wave of success by enrolling in one of AUST's newest degree programs, the new M.Sc. in Mathematical Modelling.

Program structure

This is an intensive 36-credit program designed to impart skills that will enable graduates to play key middle to upper management roles in modelling, forecasting and data management, leading to great opportunities in the new and rapidly growing field of Big Data. Specially selected courses offered over a continuous period of twelve calendar months, combined with a limited amount of independent research impart an exceptional set of skills on the participants of this program.

The ideal candidate for this program

While this program is largely designed to target professionals already working in relevant fields, it is also an opportunity for those seeking a career change to move into data management and use of data for decision-making, from a wide range of professional backgrounds, as the coursework covers core areas of knowledge for effective engagement in a range of approaches to the use of mathematical techniques for solving practical problems of designing pathways for managing and monitoring processes. Under normal circumstances, ONLY CANDIDATES WITH A MINIMUM OF UPPER SECOND CLASS (2:1) UNDERGRADUATE DEGREE will be considered for admission into AUST Master's programs.

Program cost

Please note that, while AUST has historically supported all its students with financing from an institutional scholarship program, THIS IS NOT A SPONSORED PROGRAM. So, unless you can secure your own funding or get

sponsorship from your employer, please DO NOT submit an application, the university will not have resources to fund this program. The cost of this program, for tuition only, is N N2 580 000 (for Nigerian students) $8 000 (for international students). As this will be offered as a non-residential program, that fee does not include accommodation. For international students and applicants from outside Abuja, who may prefer to be "resident students", additional fees apply, for board (food) and lodging. For further details on that, please e-mail dap@aust.edu.ng As space is limited, the first 20 applicants who qualify for admission may receive a special discount on the tuition fee.

Application process

To apply, please complete the form available at this link and submit online. Should you need more information before applying, please send an e-mail to dap@aust.edu.ng or call +234 907 034 3071 OR +234 907 034 3065.

Calendar

Closing date for applications: 16th November, 2018
Selection of candidates, including interviews: 5-16th November, 2018

Classes start: 7th January, 2019
Completion of classes: 19th December, 2019
Last date to submit projects: 8th March, 2020

Further details of degree structure

Background and Justification

Most things in the real world are really complex systems which cannot be fully understood by using linear representations. Consider, for example, the complex biological systems that make up our lives and our environment, the increasingly complex financial markets and myriad industrial processes, managing traffic flows, etc, all of which can only be understood, mimicked and predicted if we use dynamic mathematical models. Mathematical modelling, an essential part of contemporary applied mathematics, is a fundamental tool for understanding these systems and can be a powerful tool for planning purposes in modern economies. This program will both draw from existing capacity in the Mathematics Institute and add capacity to it.

Program Aims

This course has three main aims:

- To provide an understanding of the processes involved in creating a viable mathematical model
- To teach the fundamental analytical techniques and computational methods used in understand the behaviour of systems
- To expose students to a range of typical applications (e.g. industrial, biological and environmental)

Program Structure

The program will consist of nine 4-credit courses to make up a total of 36 credits, plus a project in which theory is applied to a practical problem. All courses will be taught and assessed on the basis of any combination of continuous assessment, examinations and applied mini projects. A letter grade will be awarded for each course completed. Courses will be offered over 2 sessions, with 4 courses being offered during the first session and the second session being slightly longer than the first, in order to allow time for any project-based courses or allow sufficient time for 5 courses to be offered.

1. Non-Linear Systems
2. Numerical Solution of Partial Differential Equations
3. Computational and Simulation Methods
4. Advanced Mathematical Modelling Techniques
5. Asymptotic Models and Boundary Layer Theory
6. Geophysical Fluid Dynamics
7. Biomathematics
8. Discrete Mathematics and Algorithms
9. Stochastic dynamic modelling