

this part he should be starting on his research project. The areas:

Pure Mathematics:

Area A: This consists of subjects such as:
Real Analysis
General Topology
Complex Analysis

Area B: This consists of subjects such as:
Real Analysis/Abstract Algebra
Global Analysis
Algebraic Topology
Differential Equations.

Area C: This consists of subjects such as:
Linear Algebra
Abstract Algebra
Mathematical Foundations (e.g.
Number Theory, Math. Logic, etc.)

Applied Mathematics

Area A: Consists of subjects such as:
Numerical Analysis
Differential Equations
Computer Science

(Real Analysis and/or Linear Algebra may be some of the prerequisites and/or core courses).

Area B: Consists of subjects such as:
Analytical Mechanics
Quantum Mechanics
Fluid Mechanics
Continuum and Statistical Mechanics.
(the pre-requisites may be in Abstract Algebra, Differential Equations and/or Complex Variables).

Area C: Consists of subjects such as:
Operations Research
Computer Science
Biomathematics Equations
Stochastic Process)

Area D: Consists of subjects such as:
Probability Theory
(including Measure Theory)
Stochastic Processes
Mathematical Statistics.

Examinations

In each of the courses done a candidate will do one 3 hour paper. Thus for Part I one will do 5 papers and for Part 2 two papers plus presenting a dissertation on his/her research project.

MASTER OF MATHEMATICS

(Day and Evening)

Introduction

The department of Mathematics has since 1986 offered courses for the Msc.. (Mathematics) in Pure Mathematics, Numerical Analysis, Computer Science and Statistics. This programme has two objectives;
to provide training for those who intend to apply Mathematics in industry, economic development and scientific research;

- (i) to provide training for mathematicians who are interested in fundamental ideas of Mathematics.
- (ii) The department does research in Analysis, topology and Algebra; Biomathematics, Stochastic modelling, Non-linear Dynamics, Numerical Analysis, Operations Research, Statistics and Computational Mathematics.

Objectives

The Master of Mathematics programme has the following objectives:

- (i) to provide courses in Mathematics at a postgraduate level for teachers, and those working in industry;
- (ii) to provide skills for applications of Mathematics including Statistics in Industry and Agriculture and business sectors of the Economy;

Target Group

The programme seeks to attract:

- (i) Tutors and Lecturers of National Teacher Colleges, Technical Institutes and Business Education training institutes.
- (ii) Professionals in business and industry who require advanced Mathematical skills in their work.
- (iii) Scientists in Agricultural and Medical research institutes.
- (iv) Secondary School Teachers.

- (v) Graduates of Bachelor of Science and Bachelor of Science. (Education) (teachers) majoring in Mathematics.

Part-time Students

Part-time students will be part of the full time programme. However, they will take less than the full semester load. The normal load for full-time students is 9-15CU.

Pass Mark

The Pass mark for all courses in the programme will be at 50%.

Curriculum

The programme will consist of a minimum of 48 credit Units (CU) spread over three semesters, including production of a project report (8 CU). The areas of emphasis: Applicable Mathematics and Industrial Mathematics. The Master of Mathematics is conducted by course work and project paper. Students are required to take all the compulsory courses and electives in the selected area of emphasis.

Programme Structure

Year I: Semester I		
Course Code	Course	CU
(a) Applicable Mathematics		
MMA 711	Foundations of Mathematics	4
MMA 712	Dynamical Systems I	4
MMA 713	Differential Equations	4
	No Electives	
Semester II		
MMA 722	Measure & Integration	4
2 Electives		
MMA 724	Topics in Mechanics	4
MMA 723	Functional Analysis I	4
MMA 728	Topology I	4
MMI 720	Discrete Mathematics I	4
Recess Term		
MMC 701	Computing & Simulation	4
Semester III		
MMA 731	Algebra	4
2 Electives		
MMA 706	Topics in Mechanics	4

MMA 734	Functional Analysis II	4
MMA 731	Complex Variables	4
MMI 736	Topology II	4
MMC 732	Discrete Mathematics II	4
MMC 735	Dynamical Systems II	4
Semester IV		
MMC 731	Project Report	8
(b) Industrial Mathematics		
Semester I		
MMA 711	Foundations of Mathematics	4
MMI 718	Stochastic Process I	4
MMS 711	Probability & Statistics	4
	No Electives	
Semester II		
MMI 722	Operations Research I	4
2 Electives		
MMI 723	Insurance Mathematics I	4
MMI 720	Discrete Mathematics I	4
MMA 712	Dynamical Systems I	4
MMI 738	Industrial Economics	4
Recess Term		
MMC 701	Computing & Simulation	4
Semester III		
MMA 731	Algebra	4
3 Electives		
MMI 734	Financial Mathematics I	4
MMI 735	Insurance Mathematics II	4
MMI 733	Operations Research II	4
MMI 736	Optimization Methods	4
Semester IV		
MMI 740	Project Report	8
Course Assessment		
Each course is assessed on the basis of 100 total marks with the following proportions:		
	Course work - 40%	
	Examination - 60%	
A minimum of two Course Assignments/Tests shall be required per Course per semester.		
(c) Biomathematics		
Semester I		
MMA 711	Foundations of Mathematics	4
MMA 713	Differential Equations	4
MMS 718	Introduction to Stochastic Processes	4

Semester II		
MMB 727	Populations Dynamics	4
MMB 725	Mathematical Epidemiology	4
	1 Elective	
MMI 720	Discrete Mathematics I	4
MMA 712	Dynamical Systems I	4
MMS 725	Data Analysis I	4
Recess Term		
MMC 701	Computing & Simulation	4
Semester III (3 Electives)		
MMB 739	Mathematical Ecology	4
MMB 736	Mathematical Bioeconomics	4
MMC 735	Dynamical System II	
MMI 719	Stochastic Processes II	4
Semester IV		
MMB 740	Project Report	8
(d) Mathematical Statistics		
Semester I		
MMA 711	Foundations of Mathematics	4
MMI 718	Stochastic Process I	4
MMS 711	Probability & Statistics	4
	No Electives	
Semester II		
MMS 722	Linear Statistical Models	4
2 Electives		
MMS 729	Probability Theory	4
MMS 725	Data Analysis I	4
MMS 727	Multivariate Methods I	4
Recess Term		
MMC 701	Computing & Simulation	4
Semester III		
MMA 731	Algebra	4
3 Electives		

MMA 712	Numerical Analysis I	4
MMS 726	Data Analysis II	
MMI 739	Stochastic Processes	4
MMS 739	Time Series	4
MMI 736	Optimization Methods	4
Semester IV		
MMS 740	Project Report	8
(e) Computational Mathematics		
Semester I		
MMA 711	Foundations of Mathematics	4
MMC 716	Database Design & Implementation	4
MMC 710	Programming Methodology	4
	No Electives	
Semester II		
MMI 752	Operations Research I	4
	2 Electives	
MMC 727	Database Management Systems	4
MMI 720	Discrete Mathematics I	4
MMC 721	Algorithms, Data Structures & Programming I	4
MMC 722	Software Engineering I	4
Recess Term		
MMC 701	Computing & Simulation	4
Semester III 3 Electives		
MMI 722	Operational Research II	4
MMC 772	Software Engineering II	4
MMI 736	Optimization Methods	4
MMC 735	Systems Development	4
MMI 736	Optimization Methods	4
Semester IV		
MMS 740	Project Report	8

MASTER OF SCIENCE IN MATHEMATICAL MODELLING

Objective of the Programme

The objectives of the programme are hinged towards the AMI-Net objectives being.

- To provide skills for high quality research and teaching in the field of mathematical modeling in Africa.
- To raise a critical mass of mathematical modelers in the region to popularize and meet challenges of computational

and mathematical applications to the industry and society.

- To support the application of the methods and results of mathematical modeling in the areas of industry.
- To facilitate efforts of researchers in biomathematics and modeling and draw them towards interdisciplinary research.