Education at your fingertips

Bachelor of Science in Mathematics and Business Studies, With IT eLearning Programme

SCHOOL OF MATHEMATICS AND APPLIED STATISTICS

ISO 9001:2008
CERTIFIED

KENYA
VISION 2030
TOWARDS A GLOBALLY COMPETITIVE
AND PROSPEROUS NATION

1. Introduction

Bachelor of Science programme in Mathematics and Business Studies offers a flexible degree course with IT which provides a foundation in Mathematics and Business Studies.

The first years ensure that students will have a solid foundation. The flexibility offered in the later years allows the students to adapt their degree according to their own interests, ambitions and ability.

This degree program is designed to engage with and complement the existing programs from the school of Mathematics, Statistics and Actuarial Science, and the School of Business Studies and Economics.

2. Objectives:

The main objectives of this programme are to:

i) Equip the student with a solid mathematical foundation and knowledge about business.

ii) Give a flexible program that informs the student about different mathematical disciplines.

iii) Prepare students for Postgraduate studies and research in applied statistics or business studies.

iv) Prepare students for a career in business.

v) Prepare students for employment in scientific, banking or business areas requiring mathematical or statistical background.

3. Expected Learning Outcomes:

On successful completion of this programme, graduates should be able to demonstrate knowledge and understanding of

i) the core disciplines of Calculus and Linear Algebra;

ii) the processes and pitfalls of mathematical approximation;

iii) the formulation of problems in mathematical form;

iv) a range of analytical, numerical, and qualitative techniques;

v) the applicability of computer software to the solution of mathematical problems.

vi) foundational disciplines of business and management;

vii) the development and operation of markets for resources, goods and services including customer expectations, market orientation and the marketing mix;

viii) the sources, uses and management of finance, the use of accounting and other information systems for business applications;

ix) the development, management and exploitation of information systems and their impact upon organisations;

x) the development of appropriate strategies at the corporate level within a changing national and international environment;

4. Admission Requirements.

A student wishing to study Mathematics and Economics must satisfy the minimum University requirements. In addition, the student must have passed Mathematics in the KCSE with a minimum grade of B-.

5. Duration of the Programme

The duration of the programme shall normally extend over a period of four academic years.

6. Programme Structure

(a) In the first two years, students will take 6 core units i) In the first year, students will take 14 core units in the department. In the second year they will take 6 core units and in the third year 4.

ii) The students will take at least the equivalent of 3 IT units for the first year of study and 4 IT units for each subsequent year of study. These may be MIT units offered by the School.

iii) In all years the department will offer elective courses. Students will choose elective courses in line with their desired area of specialisation.

7. Mode of Delivery

i) Face to face sessions involving students and lecturers with 42 contact hours

ii) eLearning

8. Examinations

(a) The University and Faculty of Science common examination regulations shall apply.

(b) Examinations shall be held at the end of the semester in which the courses are taught.

9. Key

C - CORE
R - REQUIRED
E - ELECTIVE

10. Modules Distribution

First Year

FIRST SEMESTER

MMA	100	Basic Mathematics	1 C
MMA	109	Foundation of Pure Mathematics	1 C
MMA	111	Introduction to Probability and Distribution Theory	1 C
ABA	101	Introduction to Business Studies	1 C
ABA	102	Introduction to Management	1 C
ABA	104	Elements of Marketing	1 C
CCS	105	Fundamentals of Computing	1 C
CIT	105	Introduction to the Internet and Internet Technologies	1 C
SMI	101	Multimedia Introduction to Statistics	1 E
MMA	101	Analytical Geometry	1 E
MAS	101	Descriptive Statistics	1 E
ABA	103	Introduction to Accounting I	1 E
AEN	105	Communication Skills	

SECOND SEMESTER

MMA	102	Calculus I	1 C
MMA	103	Linear Algebra I	1 C
MMA	110	Foundation of Applied Mathematics	1 C
ABA	105	Business Environment	1 C
ABA	106	Business Law I	1 C
ABA	108	Business Communication	1 C
CIT	112	Introduction to Computer Applications (word processing & spreadsheets)	1C
CCS	109	Object-Oriented Programming I	1C
SMI	103	Handling Data	1 E
SMI	104	Descriptive Statistical; Analysis and Presentation	1 E
MAS	104	Programming Methodology	1 E
MAS	106	Introduction to Biostatistics	1 E
ABA	107	Management Mathematics I	1 E

Second Year

FIRST SEMESTER

MMA	200	Calculus II	1 C
MMA	202	Vector Analysis	1 C
MMA	205	Numerical Analysis I	1 C
ABA	201	Behavioral Science	1 C
ABA	202	Introduction to Finance	1 C
ABA	204	Fundamentals of Human Resource Management	1C
CIT	202	Introduction to databases	1C
CIT	204	Web systems and Technologies	1C
SMI	201	Statistical Computing I	1 E
SMI	203	Collecting and organising data	1 E
MMA	203	Classical Mechanics	1 E
MAS	201	Sample Surveys	1 E
MAS	203	Economic Statistics	1 E
MAS	207	Probability and Distribution Theory II	1 E
ABA	205	Management Mathematics II	1 E

SECOND SEMESTER

MMA	201	Linear Algebra II	1C
MA	206	Algebraic Structure	1C
MMA	208	Real Analysis I	1C
ABA	207	Organization Theory	1C
ABA	208	Business Law II	1C
ABA	209	Cost Accounting	1C
CCS	208	Systems Analysis and design	1C
CCS	215	Visual Basic Programming	1C
SMI	202	Data Management	1 E
SMI	204	Scientific Report Reading, Writing and Presentation	1 E
MMA	204	Dynamics	1 E
MMA	207	Calculus III	1 E
MMA	209	Numerical Analysis II	1 E
MAS	202	Principles of Statistical Inference	1 E
MAS	204	Demography and Social Statistic	1 E
SAC	204	Theory of Interest	1 E
SAC	208	Risk Theory	1 E
SAC	210	Investment and Asset Management I	1 E
ABA	206	Business Statistics	1 E

Third Year

FIRST SEMESTER

MMA	301	Ordinary Differential Equations I	1 C
ABA	301	Principles of Taxation	1 C
SMI	301	Computer based survey techniques	1 E
SMI	303	Computers applied to Mathematics	1 E
SMI	305	Introduction to programming	1 E
CIT	303	Information management	1C
CIT	305	System administration and	

Code	No.	Title	
		management	1C
MMA	313	Fundamentals of Measure Theory	1 E
MMA	300	Real Analysis II	1 E
MMA	305	Numerical Analysis III	1 E
MMA	307	Methods I	1 E
MMA	308	Fluid Mechanics I	1 E
MAS	301	Numerical Analysis I	1 E
MAS	303	Estimation Theory	1 E
MAS	305	Stochastic Processes I	1 E
MAS	307	Theory of sampling Techniques	1 E
MAS	309	Time Series Analysis and Forecasting	1 E
MAS	311	Statistical Demography I	1 E
MAS	313	Principles of Econometrics	1 E
MAS	315	Statistical Genetics	1 E
SAC	307	Financial Economics I	1 E
ABA	302	Company Law	1 E
ABA	303	Financial Management	1 E
ABA	305	Auditing I	1 E
ABA	306	Managerial Economics	1 E
ABA	307	Human Resource strategy & Policy	1 E
ABA	308	Sales Management	1 E
ABA	309	Marketing Strategy and Planning	1 E
ABA	310	Advertising	1 E
ABA	311	Marketing Communication	1 E
ABA	312	Channels Management	1 E
ABA	321	Labour Relations	1 E
ABA	331	Organizational theory and Behaviour	1 E
AEC	321	Labour Economics	1 E
ABA	335	Procurement and supply chain: Theory and Practice	1 E
ABA	336	Supply chain Processes	1 E
ABA	337	Public procurement Management	1 E
ABA	338	Procurement legal framework	1 E
ABA	339	Procurement in Project Environments	1 E

SECOND SEMESTER

Code	No.	Title	
MMA	314	Introduction to PDE	1 C
ABA	316	Research Methods in Business	1 C
CCS	309	Human Computer Interaction	1C
CIT	317	Multimedia and Graphics	1C
SMI	302	Statistical Computing II	1 E
SMI	304	Introduction to object oriented programming	1 E
SMI	306	Web design Project	1 E
MMA	302	Linear Algebra III	1 E

Code	No.	Title	
MMA	303	Complex Analysis I	1 E
MMA	304	Group Theory	1 E
MMA	306	Numerical Analysis IV	1 E
MMA	309	Real Analysis III	1 E
MMA	310	Dynamics II	1 E
MMA	311	Waves	1 E
MMA	312	Operations Research I	1 E
MAS	302	Mathematical Methods	1 E
MAS	304	Test of Hypotheses	1 E
MAS	306	Statistical Modelling	1 E
MAS	308	Analysis of Experimental Designs I	1 E
MAS	310	Stochastic Decision Models I	1 E
MAS	312	Statistical Computing II	1 E
MAS	314	Research Methodology	1 E
ABA	313	Trust and Executorships Accounts	1 E
ABA	314	Tax Planning and Management	1 E
ABA	315	Quantitative Methods in Business I	1 E
ABA	317	Auditing II	1 E
ABA	318	Financial Institutions and Markets	1 E
ABA	319	Financial Planning, Budgeting & Control	1 E
ABA	320	Investment and Portfolio management	1 E
ABA	321	Labor Relations	1 E
ABA	322	Organizational Behavior	1 E
ABA	323	Productions and Operations Management	1 E
ABA	324	Marketing of Services	1 E
ABA	325	International Marketing	1 E
ABA	326	Retail Management	1 E
ABA	327	Consumer Behavior	1 E
ABA	332	Human Resource Planning	1 E
ABA	322	Human Capital Management	1 E
ABA	333	Performance Management	1 E
ABA	334	Compensations Management	1 E
ABA	340	International Procurement Management	1 E
ABA	341	Relationships and Negotiations Management	1 E
ABA	342	Procurement records and Inventory Management	1 E
ABA	343	Risk Management in supply Chain	1 E
MMA	317	Industrial Attachment	
or			
ABA	330	Industrial Attachment	

Fourth Year

FIRST SEMESTER

CCS	403	Management information systems	1C
CIT	404	IT and Society	1C
SMI	401	Bayesian Modelling	1 E
SMI	403	Writing Macros	1 E
SMI	405	Programming: Advanced objects and Data Structures	1 E
MMA	405	Partial Differential Equations I	1 E
MMA	401	Ring Theory	1 E
MMA	403	Topology I	1 E
MMA	404	Complex Analysis II	1 E
MMA	406	Numerical Analysis V	1 E
MMA	409	Differential Geometry	1 E
MMA	412	Fluids Mechanics II	1 E
MMA	413	Methods II	1 E
MMA	417	Group Theory II	1 E
MMA	420	Operation Research II	1 E
MAS	401	Further Distribution Theory	1 E
MAS	403	Non Parametric methods	1 E
MAS	405	Analysis of Experimental Designs II	1 E
MAS	407	Further Time series Analysis	1 E
MAS	409	Further Sample Survey Theory and Methods	1 E
MAS	411	Stochastic Decision Models II	1 E
MAS	413	Stochastic Models for Biological Processes	1 E
MAS	415	Biometric Models	1 E
MAS	417	Statistical Demography II	1 E
MAS	419	Econometric Models I	1 E
MAS	421	Stochastic Processes II	1 E
MAS	423	Practical Statistics	1 E
MAS	425	Labour Dynamics	1 E
MAS	427	Agricultural Indices	1 E
MAS	429	Energy Analysis	1 E
MAS	431	Teaching of Statistics	1 E
SAC	401	Mathematics of Demography & Graduation	1 E
SAC	407	Principles of Financial Management	1 E
SAC	411	Theory of Business decisions	1 E
SAC	415	Survival Analysis	1 E
ABA	401	Auditing Practice and Investigation	1 E
ABA	402	Quantitative Methods in Business II	1 E
ABA	403	Advanced Financial Accounting I	1 E
ABA	404	Management Accounting I	1 E
ABA	405	Strategic Management	1 E
ABA	406	Management of Financial Services	1 E
ABA	407	Insurance Theory and Practice	1 E
ABA	408	International Business Management	1 E
ABA	409	Planning Theory and Techniques	1 E
ABA	410	Applications of Marketing Research	1 E
ABA	411	Industrial Marketing	1 E
ABA	412	Logistics Management	1 E
ABA	413	Entrepreneurship & small Business Mgt	1 E
ABA	414	Issues in Management	1 E
ABA	433	Employee Development and Careers Management	1 E
ABA	434	Occupational Health and Safety	1 E
ABA	438	Logistics Management	1 E
ABA	439	Financial Management in SCM	1 E
ABA	440	E- Procurement and Supply Chain Management	1 E
ABA	441	Operations Management	1 E
ABA	442	Procurement Audit and Investigations	1 E

SECOND SEMESTER

CIT	418	IT and Development	1C
CIT	428	Business Process Management	1C
SMI	402	Problem based statistical analysis	1 E
SMI	404	Algorithms	1 E
SMI	406	Programming project	1 E
MMA	402	Measure Theory	1 E
MMA	414	Fourier Analysis	1 E
MMA	410	Functional Analysis	1 E
MMA	407	Field Theory	1 E
MMA	408	Topology II	1 E
MMA	411	Partial Differential Equations II	1 E
MMA	415	Fluid Mechanics III	1 E
MMA	416	Galois Theory	1 E
MMA	418	Algebraic Geometry	1 E
MMA	419	Numerical Analysis VI	1 E
MMA	429	Operations Research III	1 E
MAS	402	Bayesian Inference and Decision Theory	1 E
MAS	408	Multivariate Methods	1 E
MAS	406	Robust Methods and Non-Parametrics	1 E
MAS	410	Statistical Model Building	1 E
MAS	412	Stochastic Models for Social Processes	1 E
MAS	414	Survey Research Methods	1 E

MAS	416	Quality Control Methods	1 E
MAS	418	Applied Population Analysis	1 E
MAS	420	Applied demography	1 E
MAS	422	Econometric Models II	1 E
MAS	424	Applied Econometrics	1 E
MAS	426	Statistical Computing III	1 E
MAS	428	Response Surface Methodologies	1 E
MAS	430	Educational Statistics	1 E
MAS	432	Health Indicators	1 E
MAS	434	Government Financing Structure	1 E
MAS	436	Environmental/Ecological Indicators	1 E
MAS	438	Statistical Organization	1 E
SAC	404	Computational Finance	1 E
SAC	406	Risk and Credibility Theory	1 E
SAC	408	Risk Mathematics	1 E
ABA	415	Advanced Financial Accounting II	1 E
ABA	416	Management Accounting II	1 E
ABA	417	Bankruptcy and Insolvency Accounts	1 E
ABA	418	Total Quality Management	1 E
ABA	419	International Finance	1 E
ABA	420	Corporate Finance	1 E
ABA	421	Insurance Risk Management	1 E
ABA	422	International trade	1 E
ABA	423	Strategic Marketing	1 E
ABA	424	Labor Law	1 E
ABA	425	Conflict Management	1 E
ABA	426	Accounting Theory	1 E
ABA	427	Product Management	1 E
ABA	428	Social Security Pensions Fund	1 E
ABA	429	Planning and Administrative Decision Making	1 E
ABA	430	Agricultural Marketing	1 E
ABA	431	Public Relations	1 E
ABA	432	Issues in Marketing Management	1 E
ABA	435	International HRM	1 E
ABA	436	Industrial and Labour Laws	1 E
ABA	437	Contemporary issues in Human Resource Management	1 E
ABA	443	Procurement and Supply Chain Research	1 E
ABA	444	Contracts and Dispute Management	1 E
ABA	445	Strategic Procurement Management	1 E
ABA	446	Sustainable Supply Chain Management	1 E