



MASENO UNIVERSITY
FOUNTAIN OF EXCELLENCE

eCampus



Education at your fingertips

Bachelor of Science (Mathematical Sciences, 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 with IT offers a flexible degree course which provides a foundation in Mathematics and Business Studies.

The first two 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 both the School of Mathematics and Applied Statistics, and the School of Economics and Business Studies.



2. Objectives:

The main objectives of this programme are to:

- (a) Equip the student with a solid foundation in mathematical and business studies.
- (b) Give a flexible program that informs the student about different mathematical disciplines.
- (c) Give students the opportunity to receive a training which prepares them for:
 - i. Postgraduate studies and research in mathematics or business studies.
 - ii. A career in business.
 - iii. Employment in scientific, banking or business areas requiring mathematical or statistical background.

3. Admission Requirements.

A student wishing to study Mathematics and Economics must satisfy the minimum University requirements and Faculty of Science regulations. A student must have passed Mathematics in the KCSE or its equivalent with a minimum grade of C+.

4. Programme Structure

(a) In the first two years, students will take 6 core units in each department and in the third year 2 core units in each department.

(b) In addition to the core units, students will choose elective units, in line with their desired area of specialisation, ensuring that they take a minimum of 14 units a year.

(c) 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 SMI units offered by the School of Mathematics and Applied Statistics.

5. 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.

6. Duration of the Programme

- (a) The duration of the programme shall normally extend over a period of four academic years.
- (b) The courses are offered in units in which a course unit is defined as three hour lecture or equivalent per week.
- (c) A student will take a minimum of 14 and a maximum of 16 units in each year of study. Students wishing to take more than 16 units will require Senate approval.

7. Key

C - CORE
R - REQUIRED
E - ELECTIVE

8. Modules Distribution

First Year

FIRST SEMESTER

SMA	100	Basic Mathematics	1 C
SMA	109	Foundation of Pure Mathematics	1 C
SMA	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
SMI	101	Multimedia Introduction to Statistics	1 C
SMA	101	Analytical Geometry	1 E
SAS	101	Descriptive Statistics	1 E
ABA	103	Introduction to Accounting I	1 E
AEN	105	Communication Skills.	1 E

SECOND SEMESTER

SMA	102	Calculus I	1 C
SMA	103	Linear Algebra I	1 C
SMA	110	Foundation of Applied Mathematics	1 C
ABA	105	Business Environment	1 C
ABA	106	Business Law I	1 E
ABA	108	Business Communication	1 C
SMI	103	Handling Data	1 C
SMI	104	Descriptive Statistical; Analysis and Presentation	1 C
SAS	104	Programming Methodology	1 E
SAS	106	Introduction to Biostatistics	1 E
ABA	107	Management Mathematics I	1 E

Second Year

FIRST SEMESTER

SMA	200	Calculus II	1 C
SMA	202	Vector Analysis	1 C
SMA	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	1 C
SMI	201	Statistical Computing I	1 C
SMI	203	Collecting and organising data	1 C
SMA	203	Classical Mechanics	1 E
SAS	201	Sample Surveys	1 E
SAS	203	Economic Statistics	1 E

SAS	207	Probability and Distribution Theory II	1 E
ABA	205	Management Mathematics II	1 E

SECOND SEMESTER

SMA	201	Linear Algebra II	1 C
SMA	206	Algebraic Structure	1 C
SMA	208	Real Analysis I	1 C
ABA	207	Organization Theory	1 C
ABA	208	Business Law II	1 C
ABA	209	Cost Accounting	1 C
SMI	202	Data Management	1 C
SMI	204	Scientific Report Reading, Writing and Presentation	1 C
SMA	204	Dynamics	1 E
SMA	207	Calculus III	1 E
SMA	209	Numerical Analysis II	1 E
SAS	202	Principles of Statistical Inference	1 E
SAS	204	Demography and Social Statistics	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

SMA	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
SMA	313	Fundamentals of Measure Theory	1 E
SMA	300	Real Analysis II	1 E
SMA	305	Numerical Analysis III	1 E
SMA	307	Methods I	1 E
SMA	308	Fluid Mechanics I	1 E
SAS	301	Numerical Analysis I	1 E
SAS	303	Estimation Theory	1 E
SAS	305	Stochastic Processes I	1 E
SAS	307	Theory of sampling Techniques	1 E
SAS	309	Time Series Analysis and Forecasting	1 E
SAS	311	Statistical Demography I	1 E
SAS	313	Principles of Econometrics	1 E
SAS	315	Statistical Genetics	1 E

SAC	307	Financial Economics I	1 E	ABA	317	Auditing II	1 E
ABA	302	Company Law	1 E	ABA	318	Financial Institutions and Markets	1 E
ABA	303	Financial Management	1 E	ABA	319	Financial Planning, Budgeting & Control	1 E
ABA	305	Auditing I	1 E	ABA	320	Investment and Portfolio management	1 E
ABA	306	Managerial Economics	1 E	ABA	321	Labor Relations	1 E
ABA	307	Human Resource strategy & Policy	1 E	ABA	322	Organizational Behavior	1 E
ABA	308	Sales Management	1 E	ABA	323	Productions and Operations Management	1 E
ABA	309	Marketing Strategy and Planning	1 E	ABA	324	Marketing of Services	1 E
ABA	310	Advertising	1 E	ABA	325	International Marketing	1 E
ABA	311	Marketing Communication	1 E	ABA	326	Retail Management	1 E
ABA	312	Channels Management	1 E	ABA	327	Consumer Behavior	1
ABA	321	Labour Relations	1 E	ABA	332	Human Resource Planning	1 E
ABA	331	Organizational theory and Behaviour	1 E	ABA	322	Human Capital Management	1 E
AEC	321	Labour Economics	1 E	ABA	333	Performance Management	1 E
ABA	335	Procurement and supply chain: Theory and Practice	1 E	ABA	334	Compensations Management	1 E
ABA	336	Supply chain Processes	1 E	ABA	340	International Procurement Management	1 E
ABA	337	Public procurement Management	1 E	ABA	341	Relationships and Negotiations Management	1 E
ABA	338	Procurement legal framework	1 E	ABA	342	Procurement records and Inventory Management	1 E
ABA	339	Procurement in Project Environments	1 E	ABA	343	Risk Management in supply Chain	1 E

SECOND SEMESTER

SMA	314	Introduction to PDE	1 C
ABA	316	Research Methods in Business	1 C
SMI	302	Statistical Computing II	1 E
SMI	304	Introduction to object oriented programming	1 E
SMI	306	Web design Project	1 E
SMA	302	Linear Algebra III	1 E
SMA	303	Complex Analysis I	1 E
SMA	304	Group Theory	1 E
SMA	306	Numerical Analysis IV	1 E
SMA	309	Real Analysis III	1 E
SMA	310	Dynamics II	1 E
SMA	311	Waves	1 E
SMA	312	Operations Research I	1 E
SAS	302	Mathematical Methods	1 E
SAS	304	Test of Hypotheses	1 E
SAS	306	Statistical Modelling	1 E
SAS	308	Analysis of Experimental Designs I	1 E
SAS	310	Stochastic Decision Models I	1 E
SAS	312	Statistical Computing II	1 E
SAS	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	342	Procurement records and Inventory Management	1 E
ABA	343	Risk Management in supply Chain	1 E
SMA	317	Industrial Attachment	
		or	
ABA	330	Industrial Attachment	

Fourth Year

FIRST SEMESTER

SMI	401	Bayesian Modelling	1 E
SMI	403	Writing Macros	1 E
SMI	405	Programming: Advanced objects and Data Structures	1 E
SMA	405	Partial Differential Equations I	1 E
SMA	401	Ring Theory	1 E
SMA	403	Topology I	1 E
SMA	404	Complex Analysis II	1 E
SMA	406	Numerical Analysis V	1 E
SMA	409	Differential Geometry	1 E
SMA	412	Fluids Mechanics II	1 E
SMA	413	Methods II	1 E
SMA	417	Group Theory II	1 E
SMA	420	Operation Research II	1 E



SAS	401	Further Distribution Theory	1 E			Management	1 E
SAS	403	Non Parametric methods	1 E	ABA	441	Operations Management	1 E
SAS	405	Analysis of Experimental Designs II	1 E	ABA	442	Procurement Audit and Investigations	1 E
SAS	407	Further Time series Analysis	1 E				
SAS	409	Further Sample Survey Theory and Methods	1 E	SECOND SEMESTER			
SAS	411	Stochastic Decision Models II	1 E	SMI	402	Problem based statistical analysis	1 E
SAS	413	Stochastic Models for Biological Processes	1 E	SMI	404	Algorithms	1 E
SAS	415	Biometric Models	1 E	SMI	406	Programming project	1 E
SAS	417	Statistical Demography II	1 E	SMA	402	Measure Theory	1 E
SAS	419	Econometric Models I	1 E	SMA	414	Fourier Analysis	1 E
SAS	421	Stochastic Processes II	1 E	SMA	410	Functional Analysis	1 E
SAS	423	Practical Statistics	1 E	SMA	407	Field Theory	1 E
SAS	425	Labour Dynamics	1 E	SMA	408	Topology II	1 E
SAS	427	Agricultural Indices	1 E	SMA	411	Partial Differential Equations II	1 E
SAS	429	Energy Analysis	1 E	SMA	415	Fluid Mechanics III	1 E
SAS	431	Teaching of Statistics	1 E	SMA	416	Galois Theory	1 E
SAC	401	Mathematics of Demography & Graduation	1 E	SMA	418	Algebraic Geometry	1 E
SAC	407	Principles of Financial Management	1 E	SMA	419	Numerical Analysis VI	1 E
SAC	411	Theory of Business decisions	1 E	SMA	429	Operations Research III	1 E
SAC	415	Survival Analysis	1 E	SAS	402	Bayesian Inference and Decision Theory	1 E
ABA	401	Auditing Practice and Investigation	1 E	SAS	408	Multivariate Methods	1 E
ABA	402	Quantitative Methods in Business II	1 E	SAS	406	Robust Methods and Non-Parametrics	1 E
ABA	403	Advanced Financial Accounting I	1 E	SAS	410	Statistical Model Building	1 E
ABA	404	Management Accounting I	1 E	SAS	412	Stochastic Models for Social Processes	1 E
ABA	405	Strategic Management	1 E	SAS	414	Survey Research Methods	1 E
ABA	406	Management of Financial Services	1 E	SAS	416	Quality Control Methods	1 E
ABA	407	Insurance Theory and Practice	1 E	SAS	418	Applied Population Analysis	1 E
ABA	408	International Business Management	1 E	SAS	420	Applied demography	1 E
ABA	409	Planning Theory and Techniques	1 E	SAS	422	Econometric Models II	1 E
ABA	410	Applications of Marketing Research	1 E	SAS	424	Applied Econometrics	1 E
ABA	411	Industrial Marketing	1 E	SAS	426	Statistical Computing III	1 E
ABA	412	Logistics Management	1 E	SAS	428	Response Surface Methodologies	1 E
ABA	413	Entrepreneurship & small Business Mgt	1 E	SAS	430	Educational Statistics	1 E
ABA	414	Issues in Management	1 E	SAS	432	Health Indicators	1 E
ABA	433	Employee Development and Careers Management	1 E	SAS	434	Government Financing Structure	1 E
ABA	434	Occupational Health and Safety	1 E	SAS	436	Environmental/Ecological Indicators	1 E
ABA	438	Logistics Management	1 E	SAS	438	Statistical Organization	1 E
ABA	439	Financial Management in SCM	1 E	SAC	404	Computational Finance	1 E
ABA	440	E- Procurement and Supply Chain	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