



KENYATTA UNIVERSITY
DEPARTMENT OF MATHEMATICS & ACTUARIAL SCIENCE

Email: chairman-mathematics@ku.ac.ke

Ext: 3774/3775

**UNITS FOR BSC (ACTUARIAL SCIENCE), BSC (MATHEMATICS & COMPUTER SCIENCE) AND
 BSC (STATISTICS & PROGRAMMING)**

BSc. (Actuarial Science)_ II62 (14:13:13:12 = 52)

LEVEL 100 (Total of 14 Units)	
1st Semester Units	2nd Semester Units
EET 100 : Elements of Microeconomics SAC 100 : Principles of Actuarial Science SAC 102 : Introduction to Actuarial Modelling SMA 102 : Basic Mathematics SMA 103 : Analytical Geometry SST 101 : Introduction to Probability and Statistics UCU 110 : Communication Skills	EET 101 : Elements of Macroeconomics SAC 101 : Fundamentals of Actuarial Mathematics SMA 104 : Calculus I SMA 191 : Introduction to Computer Programming SST 100 : Introductions to Business and Social Statistics SST 103 : Linear Algebra I UCU101 : Introduction to Entrepreneurship management (Department of Business Administration)
LEVEL 200 (Total of 13 Units)	
1st Semester Units	2nd Semester Units
SAC 201 : Principles of Law SAC 202 : Models in Actuarial Mathematics SAC 204 : Risk Management SMA 200 : Calculus II SST 202 : Object Oriented Programming SST 204 : Probability and Statistics I UCU112 : Creative Thinking & Innovation	SAC 203 : Actuarial Mathematics I SMA 201 : Calculus III SMA 203 : Linear Algebra II SST 201 : Operations Research I SST203 : Data Base Systems SST 205 : Probability and Statistics II UCU111 : Critical Thinking and Problem Solving
LEVEL 300 (Total of 13 Units)	
1st Semester Units	2nd Semester Units
Core SAC 300 : Stochastic Differential Equations SAC 301 : Actuarial Mathematics II SAC 308 : General Insurance SAC 310 : Economic Time Series modelling SST 305 : Theory of Estimation	Core SAC 304 : Pension Mathematics SAC 305 : Investment and Asset Management I SAC 306 : Life Assurance SAC 309: Life Contingencies SST 306 : Tests of Hypothesis I

Electives SMA 330 : Numerical Analysis I SST 304 : Multivariate Statistical Methods I	Electives SST 307 : Applied Statistical Methods SST 308 : Designs and Analysis of Sample Surveys I
LEVEL 400 (Total of 12 Units)	
1st Semester Units	2nd Semester Units
Core SAC 402 : Principles of Financial Management SAC 406 : Computational Finance SAC 407 : Project in Actuarial Science (Two units) SAC 409 : Risk Theory SST 409 : Stochastic Processes Electives SST 412 : Designs and Analysis of Experiments	Core SAC 401 : Survival Models SAC 404 : Investments and Asset Management II SAC 405 : Loss Distributions and Credibility Theory SAC 410 : Probability Modeling Electives SAC 400 : Mathematics of Demography and Graduation SST 410 : Operations Research II SST 414 : Multivariate Statistical Methods II SST 415 : Tests of Hypothesis II

BSc. (Mathematics and Computer Science)_I163 (14:13:13:12 = 52)

LEVEL 100 (Total of 14 Units)	
1st Semester Units	2nd Semester Units
SCO 100: Computer Fundamentals SCO 104: Computer Organisations & Architecture SCO 106: Electronics SMA 102: Basic Mathematics SMA 103: Analytical Geometry SST 101: Introduction to Probability & Statistics UCU 110: Communication Skills	SCO 113: Foundations of Artificial Intelligence SMA 104: Calculus I SMA 130: Introduction to Electronics SMA 191: Introduction to Computer Programming SST 102: Discrete Mathematics UCU111: Critical Thinking and Problem Solving UCU 104: Entrepreneurship
LEVEL 200 (Total of 13 units)	
1st Semester Units	2nd Semester Units

<p>SMA 200: Calculus II</p> <p>SMA 202: Linear Algebra I</p> <p>SMA 230: Vector Analysis</p> <p>SST 204: Probability and Statistics I</p> <p>SCO 203: Software Testing and Quality Assurance</p> <p>UCU112: Creative Thinking & Innovation</p>	<p>SMA 201: Calculus III</p> <p>SMA 203: Linear Algebra II</p> <p>SMA 204: Algebraic Structures</p> <p>SST 205: Probability and Statistics II</p> <p>SCO 107: Operating Systems</p> <p>SCO 202: Event Driven Programming</p> <p>SCO 204: Data Structures and Algorithms</p>
--	---

LEVEL 300 (Total of 13 units)

1st Semester Units	2nd Semester Units
<p>Applied Mathematics Option</p> <p>Core</p> <p>SMA 300: Real Analysis I</p> <p>SMA 330: Numerical Analysis I</p> <p>SMA 333: Fluid Mechanics I</p> <p>SMA 335: Ordinary Differential Equations I</p> <p>SMA 391: Object Oriented Programming</p> <p>SCO 307: Human Computer Interface</p> <p>Electives</p> <p>SCO305: Computer Graphics</p> <p>SCO 207: Web Development Technologies</p> <p>Pure Mathematics Option</p> <p>Core</p> <p>SMA 300: Real Analysis I</p> <p>SMA 302: Group Theory</p> <p>SMA 335: Ordinary Differential Equations I</p> <p>SMA 391: Object Oriented Programming</p> <p>SCO 307: Human Computer Interface</p> <p>Electives</p>	<p>Applied Mathematics Option</p> <p>Core</p> <p>SMA 305: Complex Analysis I</p> <p>SMA 336: Ordinary Differential Equations II</p> <p>SMA 390: Scientific Programming</p> <p>SCO 206: Database Systems</p> <p>SCO 300: Computer Networks (SMA 491)</p> <p>Electives</p> <p>SMA 332: Methods of Applied Mathematics I</p> <p>SMA 334: Fluid Mechanics II</p> <p>Pure Mathematics Option</p> <p>Core</p> <p>SMA 301: Real Analysis II</p> <p>SMA 303: Ring Theory</p> <p>SMA 305: Complex Analysis I</p> <p>SMA 390: Scientific Programming</p> <p>SCO 206: Database Systems</p> <p>SCO 300: Computer Networks (SMA 491)</p>

<p>SCO305: Computer Graphics</p> <p>SCO 207: Web Development Technologies</p> <p>Statistics Option</p> <p>Core</p> <p>SMA 300: Real Analysis I</p> <p>SMA 335: Ordinary Differential Equations I</p> <p>SMA 391: Object Oriented Programming</p> <p>SST 305: Theory of Estimation</p> <p>SCO 307: Human Computer Interface</p> <p>Electives</p> <p>SCO305: Computer Graphics</p> <p>SCO 207: Web Development Technologies</p>	<p>Electives</p> <p>SMA 304: Number Theory</p> <p>SCO 300: Computer Networks (SMA 491)</p> <p>Statistics Option</p> <p>Core</p> <p>SMA 305: Complex Analysis I</p> <p>SMA 390: Scientific Computing</p> <p>SST 306: Tests of Hypothesis I</p> <p>SST 308: Design and Analysis of Sample Surveys I</p> <p>SCO 206: Database Systems</p> <p>SCO 300: Computer Networks</p>
--	---

LEVEL 400 (Total of 12 units)

1st Semester Units	2nd Semester Units
<p>Applied Mathematics Option</p> <p>SMA 406: Functional Analysis</p> <p>SMA 431: Differential Geometry</p> <p>SMA 432: Partial Differential Equations I</p> <p>SCO 303: Simulations and Modelling</p> <p>SCO 406: Computer Systems Security</p> <p>SCO 408: Information Systems Management</p> <p>Electives</p> <p>SMA 434: Gas Dynamics</p> <p>SMA 490: System Analysis and Design</p> <p>SCO 407: Human Computer Interface</p> <p>SCO 411: Neural Networking</p>	<p>Applied Mathematics Option</p> <p>SMA430: Numerical Analysis II</p> <p>SMA 433: Partial Differential Equations II</p> <p>SCO 408: Information Systems Management</p> <p>SCO 412: Mobile Computing and Wireless Technology</p> <p>Electives</p> <p>SMA 437: Method of Applied Mathematics II</p> <p>SMA 490: System Analysis and Design</p> <p>SMA 499: Project (equivalent to two units)</p>

<p>Pure Mathematics Option</p> <p>SMA 400: Topology I SMA 404: Complex Analysis II SMA 406: Introductory Functional Analysis SCO 303: Simulations and Modeling SCO 406: Computer Systems Security</p> <p>Electives</p> <p>SMA 403: Galois Theory SMA 409: Algebraic Geometry SCO 407: Multimedia Technologies SCO 411: Neural Networks</p> <p>Statistics Option</p> <p>Core</p> <p>SST 409: Stochastic Processes SST 411: Time Series Analysis SST 412: Design and Analysis of Experiments SST 413: Measure & Probability SCO 303: Simulations and Modeling</p> <p>Electives</p> <p>SCO 407: Multimedia Technologies SCO 411: Neural Networks</p>	<p>Pure Mathematics Option</p> <p>SMA 401: Topology II SMA 402: Field Theory SMA 407: Measure and Integration SCO 408: Information Systems Management SCO 412: Mobile Computing and Wireless Technology</p> <p>Electives</p> <p>SMA 490: System Analysis and Design SMA 499: Project (equivalent to two units)</p> <p>Statistics Option</p> <p>Core</p> <p>SST 415: Tests of Hypothesis II SCO 406: Computer Systems Security SCO 408: Information Systems Management SCO 412: Mobile Computing and Wireless Technology</p> <p>Electives</p> <p>SMA 490: System Analysis and Design SST 414: Multivariate Statistical Method II SMA 499: Project (equivalent to two units)</p>
--	---

BSc. (Statistics and Programming)_ I122 (14:14:12:12 = 52)

LEVEL 100 (14 Units)

1st Semester Units	2nd Semester Units
ASC 100: Introduction to Sociology EET 100: Elements of Microeconomics SMA 102: Basic Mathematics SMA 103: Analytical Geometry SMA 190: Introduction to Computers SST 101: Introduction to Probability & Statistics UCU 110: Communication Skills	EET 101: Elements of Macroeconomics SMA 104: Calculus I SMA 191: Introduction to Computer Programming SST100: Introduction to Business and Social Statistics SST102: Discrete Mathematics SST103: Linear Algebra I UCU 104: Entrepreneurship
2nd Year Units (13 units)	
1st Semester Units (7 units)	2nd Semester Units (7 units)
SMA 200 : Calculus II SST 200 : Introduction to Computer Interactive Statistics SMA 204 : Algebraic Structures SMA230 : Vector Analysis SST 202 : Object Oriented Programming SST 204 : Probability and Statistics I UCU112: Creative Thinking & Innovation	SMA 201 : Calculus III SMA 203 : Linear Algebra II SST 201 : Operations Research I SST 203 : Database Systems SST 205 : Probability and Statistics II SCS 209 : Internet Technology UCU111: Critical Thinking and Problem Solving
3rd Year Units (12 units)	
1st Semester Units	2nd Semester Units
SMA 300 : Real Analysis I SMA 330 : Numerical Analysis I SMA 335 : Ordinary Differential Equations I SST 301 : Programming Language for Statistics I SST 304 : Multivariate Statistical Methods I SST 305 : Theory of Estimation	SST 300 : Econometrics I SST 302 : Programming Language for Statistics II SST 303 : Research Methodology SST 306 : Tests of Hypothesis I SST 307 : Applied Statistical Methods SST 308 : Design and Analysis of Sample Surveys I
4th Year Units (12 units)	
1st Semester Units	2nd Semester Units
Core	Core
SST 409 : Stochastic Processes	SST 400 : Demography and Vital Statistics

SST 411 : Time series Analysis	SST 406 : Statistical Programming
SST 412 : Design and Analysis of Experiments	SST 414 : Multivariate Methods Statistical Methods II
SST 413 : Measure and Probability	SST 415 : Tests of Hypothesis II
SST 416 : Data Science and Analytics I	SST 417 : Data Science and Analytics II
Elective	Elective
SST 401 : Decision Theory	SST 402 : Bayesian Statistics
SST 404 : Econometrics II	SST 403 : Non-Parametric Estimation
SST 408 : Design and Analysis of Sample Surveys II	SST 405 : Econometrics III
	SST 407 : Quality Control Methods
	SST 410 : Operations Research II