



Program Specification

Program Name: Bachelor of Science in Applied Mathematics

Qualification Level: 6

Department: Mathematics and Statistics

College: Science

Institution: Imam Mohammad Ibn Saud Islamic University

Curriculum

1. Curriculum Structure

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	10	16	12%
	Elective	0	0	0%
College Requirements	Required	5	14	11%
	Elective	0	0	0%
Program Requirements	Required	25	90	68%
	Elective	3	9	7%
Capstone Course/Project		1	3	2%
Field Experience/ Internship		0	0	0%
Others		0	0	0%
Total		45	132	100%

* Add a table for each track (if any)

2. Program Study Plan

Level	Course Code	Course Title	Required or Elective	Pre-Requisite / Co-Requste Courses	Credit Hours	Type of requirements (Institution, College or Department)
Level 1	MAT 101	Calculus (1)	Required	None	4	College
	PHY 101	General Physics (1)	Required	None	3	College
	PHY 181	General Physics Laboratory (1)	Required	PHY 101	1	College
	CHM 101	General Chemistry (1)	Required	None	4	College
	IDE 133	Monotheism	Required	None	2	Institution
	HST 102	History of KSA	Required	None	2	Institution
	QUR 101	The Holy Quran 1	Required	None	1	Institution
Level 2	MAT 102	Calculus (2)	Required	MAT 101	4	Department
	MAT 151	Proofs & Structures	Required	None	4	Department
	STA 101	Probability & Statistics (1)	Required	MAT 102	3	Department
	PHY 102	General Physics (2)	Required	PHY 101	3	Program
	JR 200	Fiqh (Islamic Jurisprudence)	Required	None	2	Institution
	QUR 151	The Holy Quran 2	Required	None	1	Institution
Level 3	MAT 203	Calculus (3)	Required	MAT 102	4	Program
	MAT 223	Linear Algebra	Required	MAT 151	4	Department
	STA 202	Probability & Statistics (2)	Required	MAT 203, STA 101	3	Department
	MAT 241	Math Software	Required	MAT 101	3	Department
	HST 101	Sirah (Biography of Prophet Mohammad)	Required	None	2	Institution
	QUR 201	The Holy Quran 3	Required	None	1	Institution
Level 4	MAT 225	Introduction to Number Theory	Required	MAT 151	3	Program
	MAT 232	Introduction to Diff. Equations	Required	MAT 102, MAT 223	4	Program
	MAT 253	Introduction to Operations Research	Required	MAT 223	4	Program
	CS 249	Computer Program. for Science	Required	MAT 241	3	Department
	ART 102	Arabic Composition	Required	None	2	Institution
	QUR 251	The Holy Quran 4	Required	None	1	Institution
	MAT 311	Real Analysis	Required	MAT 203	4	Program

Level	Course Code	Course Title	Required or Elective	Pre-Requisite / Co-Requste Courses	Credit Hours	Type of requirements (Institution, College or Department)
Level 5	MAT 332	Mathematical Methods	Required	MAT 203, MAT 232	4	Program
	MAT 341	Numerical Analysis (1)	Required	MAT 232, CS 249	4	Program
	MAT 371	Financial Mathematics	Required	MAT 102	3	Program
	ECO 100	Principles of Economics	Required	None	2	Department
Level 6	MAT 321	Modern Algebra	Required	MAT 223, MAT 225	4	Program
	MAT 334	Partial Differential Equations	Required	MAT 332	4	Program
	MAT 353	Combinatorics and Graphs	Required	MAT 102, MAT 223	4	Department
		Elective Course (1)	Elective	Upon specifying the course	3	Program
	CUL 121	Islamic Culture	Required	None	2	Institution
Level 7	MAT 412	Complex Variables	Required	MAT 311	4	Program
	MAT 442	Numerical Analysis (2)	Required	MAT 341, MAT 334	4	Program
	MAT 461	Introduction to Cryptography and Coding	Required	MAT 321	4	Program
		Elective Course (2)	Elective	Upon specifying the course	3	Program
	ENG 206	Technical Writing	Required	None	2	College
Level 8	MAT 415	Categorical Data Analysis	Required	MAT 311	4	Program
	MAT 463	Modeling and Simulation	Required	MAT 334	4	Program
		Elective Course (3)	Elective	Upon specifying the course	3	Program
	MAT 497	Research Project	Required		3	Program

* Include additional levels if needed

** Add a table for each track (if any)

LIST OF ELECTIVE COURSES (1)

Course Code	Course Name	Credit Hours	Prerequisites
MAT 313	<u>Introduction to Measure and Integration</u>	3	MAT 311
MAT 317	<u>Introduction to Functional Analysis</u>	3	MAT 311
MAT 324	<u>Advanced Linear Algebra</u>	3	MAT 223
MAT 382	<u>Advanced Euclidean Geometry</u>	3	MAT 223
MAT 384	<u>Introduction to Differential Geometry</u>	3	MAT 203 MAT 223
MAT 391	<u>Selected Topics in Pure Mathematics</u>	3	

LIST OF ELECTIVE COURSES (2) & (3)

Course Code	Course Name	Credit Hours	Prerequisites
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MAT 444	<u>Introduction to Numerical Optimization</u>	3	MAT 253 MAT 341
MAT 465	<u>Discrete Simulation</u>	3	STA 202
MAT 467	<u>Introduction to Wavelets</u>	3	MAT 332
MAT 472	<u>Financial Mathematics (2)</u>	3	MAT 371
MAT 474	<u>Actuarial Mathematics</u>	3	MAT 371
MAT 491	<u>Selected Topics in Applied Mathematics (1)</u>	3	
MAT 493	<u>Selected Topics in Applied Mathematics (2)</u>	3	
STA 203	<u>Mathematical Statistics</u>	3	STA 202
STA 321	<u>Introduction to Regression</u>	3	STA 202
STA 351	<u>Introduction to Stochastic Processes</u>	3	STA 202, MAT 223
ME 222	<u>Fluid Mechanics</u>	3	MAT 334
PHY 205	<u>Classical Mechanics (1)</u>	3	MAT 223
PHY 211	<u>Modern Physics</u>	3	PHY 102
CS 449	<u>Oriented Object Programming</u>	3	CS 249