BS Mathematics

Year 1

Semester 1

Course No	Subject	Credit Hours	
		Th	Pr
MATH-101	Calculus-I	3	0
MATH-102	Elements of Set Theory and Mathematical Logic	3	0
CSC-100 & 100L	Applications of Information and Communication Technologies	2	1
HU-111L	Communication Skills	0	1
IS-102	Islamic Studies / Ethics for Non-Muslims	3	0
PHYS-101 &101L	Mechanics	3	1
QT-101	Translation of the Holy Qur'an-I	1	0

Semester 2

Course No	Subject	Credit Hours	
		Th	Pr
MATH-104	Calculus-II	3	0
MATH-105	Statistics	3	0
HU-214 / MGT-105	Psychology / Introduction to Economics	2	0
CS-103 & 103L	Introduction of Computer Programming for Data Science	2	1
HU-200	Technical Report Writing	3	0
IS-202	Ideology and Constitution of Pakistan	3	0

Year 2

Semester 3

Course No	Subject	Credit Hours	
		Th	Pr
MATH-201	Calculus-III	3	0
MATH-203	Scientific Programming	2	1
MATH-204	Linear Algebra	3	0
PHYS-201 & 201L	Waves and Oscillations	3	1
HU-212	Civics and Community Engagement	2	0
HU-204	Any Foreign Language	1	0

Semester 4

Course No	Subject	Credit Hours	
		Th	Pr
MATH-205	Ordinary Differential Equations	3	0
MATH-206	Discrete Mathematics	3	0
MATH-211	Operation Research-I	3	0
CSC-250 & 250L	Applications of Artificial Intelligence	2	1
PHYS-202	Heat and Thermodynamics	3	0
QT-201	Translation of the Holy Qur'an-II	1	0

Year 3

Semester 5

Course No	Subject	Credit Hours	
		Th	Pr
MATH-301	Real Analysis-I	3	0
MATH-302	Vector and Tensor Analysis	3	0
MATH-303	Probability	3	0
MATH-304	Topology	3	0
MATH-312	Operation Research-II	3	0
MATH-305	Modern Algebra-I	3	0

Semester 6

Course No	Subject	Credit Hours	
		Th	Pr
MATH-307	Classical Mechanics	3	0
MATH-308	Partial Differential Equations	3	0
MATH-309	Complex Analysis	3	0
MATH-310	Differential Geometry	3	0
MATH-311	Real Analysis-II	3	0
QT-301	Translation of the Holy Qur'an-III	1	0
MGT-349	Entrepreneurship	2	0
MATH-312	Internship*	0	0

*** Six to Eight Week Internship will be compulsory for degree requirement.**

Year 4 (Applied Mathematics)

Semester 7

Course No	Subject	Credit Hours	
		Th	Pr
MATH-401	Numerical Analysis	3	0
MATH-402	Fluid Mechanics-I	3	0
MATH-403	Mathematical Physics	3	0
	Elective -1	3	0
	Elective -2	3	0

Semester 8

Course No	Subject	Credit Hours	
		Th	Pr
MATH-404	Fluid Mechanics-II	3	0
MATH-405	Integral Equations	3	0
	Elective – 3	3	0
	Elective – 4	3	0
MATH-460	Project	3	0
QT-401	Translation of the Holy Qur'an-IV	1	0

*** Elective Subjects (Applied Mathematics)**

- MATH-406 Electromagnetism
- MATH-407 Analytical Dynamics
- MATH-408 Quantum Mechanics
- MATH-409 General Relativity
- MATH-410 Special Relativity
- MATH-411 Elastic Theory

Fourth Year 7th Semester (Computational Mathematics)

Course Code	Course Title	Credit Hours
MATH-401	Numerical Analysis	3
MATH-403	Mathematical Physics	3
MATH-416	Optimization Theory	3
	Elective-1	3
	Elective-2	3
	Total:	15

Fourth Year 8th Semester (Computational Mathematics)

Course Code	Course Title	Credit Hours
MATH-405	Integral Equations	3
MATH-412	Numerical Solutions of Differential Equations	3
	Elective-3	3
	Elective-4	3
MATH-460	Project	3
QT-401	Translation of the Holy Qur'an-IV	1
	Total:	16

*** Elective Subjects (Computational Mathematics)**

- MATH-417 Mathematical Modeling and Simulation
- MATH-418 Dynamical Systems
- MATH-419 Mathematical Biology
- MATH-420 Computational Fluid Dynamics

Fourth Year 7th Semester (Pure Mathematics)

Course Code	Course Title	Credit Hours
MATH-400	Number Theory	3
MATH-401	Numerical Analysis	3
MATH-403	Mathematical Physics	3
	Elective-1	3
	Elective-2	3
	Total:	15

Fourth Year 8th Semester (Pure Mathematics)

Course Code	Course Title	Credit Hours
MATH-405	Integral Equations	3
MATH-441	Functional Analysis	3
	Elective-3	3
	Elective-4	3
MATH-460	Project	3
QT-401	Translation of the Holy Qur'an-IV	1
	Total:	16

*** Elective Subjects (Pure Mathematics)**

- MATH-442 Measure Theory
- MATH-443 Algebraic Topology
- MATH-444 Convex Analysis
- MATH-445 Modern Algebra II (Rings and Modules)
- MATH-446 Advanced Group Theory
- MATH-447 Axiomatic Set Theory
- MATH-448 Riemannian Geometry
- MATH-449 Galois Theory