

BS Mathematics

Year 1

Semester 1				Semester 2			
Course No	Subject	Credit Hours		Course No	Subject	Credit Hours	
		Th	Pr			Th	Pr
MATH-101	Calculus-I	3	0	MATH-104	Calculus-II	3	0
MA-154	Quantitative Reasoning-I	3	0	MATH-105	Statistics	3	0
CSC-100 & 100L	Applications of Information and Communications Technologies	2	1	HU-214 / MGT-105	Psychology / Introduction to Economics	2	0
HU-111	Communication Skills	3	0	CS-103 & 103L	Introduction of Computer Programming for Data Science	2	1
IS-104	Islamic Studies/ Ethics for Non-Muslims	2	0	HU-200	Technical Report Writing	3	0
PHYS-101 & 101L	Mechanics	3	1	IS-111	Pakistan Studies	2	0
				IS-109L/IS-212L	Fehm - e – Quran – I/ Social Ethics-I	1	

Year 2

Semester 3				Semester 4			
Course No	Subject	Credit Hours		Course No	Subject	Credit Hours	
		Th	Pr			Th	Pr
MATH-201	Calculus-III	3	0	MATH-205	Ordinary Differential Equations	3	0
MATH-203 & 203L	Scientific Programming	2	1	MATH-206	Discrete Mathematics	3	0
MATH-204	Linear Algebra	3	0	MATH-211	Operation Research-I	3	0
MA-259	Quantitative Reasoning-II	3	0	CSC-250 & 250L	Applications of Artificial Intelligence	2	1
PHYS-201 & 201L	Waves and Oscillations	3	1	PHYS-202	Heat and Thermodynamics	3	0
HU-212	Civics and Community Engagement	2	0	IS-203	Ideology and Constitution of Pakistan	2	0
				HU-204	Any Foreign Language	1	0

Year 3

Semester 5				Semester 6			
Course No	Subject	Credit Hours		Course No	Subject	Credit Hours	
		Th	Pr			Th	Pr
MATH-301	Real Analysis-I	3	0	MATH-307	Classical Mechanics	3	0
MATH-302	Vector and Tensor Analysis	3	0	MATH-308	Partial Differential Equations	3	0
MATH-303	Probability	3	0	MATH-309	Complex Analysis	3	0
MATH-304	Topology	3	0	MATH-310	Differential Geometry	3	0
MATH-312	Operation Research-II	3	0	MATH-311	Real Analysis-II	3	0
MATH-305	Modern Algebra-I	3	0	IS-209L/IS-213L	Fehm - e – Quran – II/ Social Ethics-II	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				Semester 8			
Course No	Subject	Credit Hours		Course No	Subject	Credit Hours	
		Th	Pr			Th	Pr
MATH-401	Numerical Analysis	3	0	MATH-404	Fluid Mechanics-II	3	0
MATH-402	Fluid Mechanics-I	3	0	MATH-405	Integral Equations	3	0
MATH-403	Mathematical Physics	3	0		Elective – 3	3	0
	Elective -1	3	0		Elective – 4	3	0
	Elective -2	3	0	MATH-460	Project	3	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
Total:		15

*** 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
Total:		15

*** 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