Approved scheme of studies and courses for Graduate Programs

Ph.D (Mathematics)

Admission Criterion:

a) A candidate seeking admission to the degree must have acquired 18 years of education, i.e. MS/M.Phil/ Six years education after HSSC/F.A./F.Sc/Grade 12 equivalent in mathematics with CGPA ≥ 3.0.

b) A candidate with Masters (foreign) degree shall be required to obtain equivalence letter from HEC, stating his/her eligibility for admission into PhD program.

c) A subject test conducted by the National Testing Service (NTS) or ETS, USA in the area of specialization chosen at the PhD level must be cleared prior to admission for the PhD Program.

    i. In the case of GAT Subject test (http://www.nts.org.pk/GAT/GATSubject.asp) a minimum of 60% marks is required to pass the test.

    ii. In the case GRE subject test (International), a minimum of 60% Percentile Score is valid for Admission.

    iii. If the Test is not available in NTS or ETS subject list, then a University Committee consisting of at least 3 PhD faculty members in the subject area will conduct the Test at par with GRE Subject Test and qualifying score for this will be 70% score.

Scheme of Studies

Semester –I			
S. No	**Course Name**	**Course Code**	**Cr. Hrs.**
1	Core Course-I (Major Course)		3
2	Core Course-II (Major Course)		3
3	Core Course-III (Major Course)		3
Total Cr. Hrs.			**9**

Approved in 3rd AC Meeting.

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Semester –II			
S. No	Course Name	Course Code	Cr. Hrs.
1	Elective-I (Major Specialized)		3
2	Elective-II (Major Specialized)		3
3	Elective-III(Major Specialized)		3
Total Cr. Hrs			**9**
Semester -III onwards			
S. No	Name	Code	Cr. Hrs.
	Ph.D. Thesis	MATH-800	30
Grand Total Credit Hours of the Program			**48**

Approved Graduate Courses (Ph.D)

S #	Course Code	Course Title	Credit Hours
Support courses			
1	STAT-625	Statistical Applications	3
2	MATH-602	Research Methodology	3
3	MATH-604	Computational skills for Research	3
Major Core			
1	MATH-701	Advance Differential Equations	3
2	MATH-702	Rings and Modules	3
3	MATH-703	Topological Groups	3
4	MATH-704	Hilbert Space Methods	3
5	MATH-705	Optimization Theory	3
6	MATH-706	Perturbation Methods I	3
7	MATH-731	Advance Group theory	3
8	MATH-708	Numerical Solution of ODEs	3
9	MATH-709	Advanced Numerical Analysis	3
10	MATH-710	Numerical Linear Algebra	3
11	MATH-711	Approximation Theory and Applications	3
12	MATH-712	Advanced Partial Differential Equations	3
13	MATH-713	Unconstrained Optimization Theory	3

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14	MATH-714	Numerical Solutions of PDEs-I	3
15	MATH-715	Commutative Algebra -I	3
16	MATH-716	Commutative Algebra -II	3
17	MATH-717	Advanced Topology-I	3
18	MATH-718	Algebraic Topology	3
19	MATH-742	Graph Theory	3
20	MATH-740	Advance Functional Analysis	3
21	MATH-719	Mathematical Analysis	3
22	MATH-720	General Relativity	3
23	MATH-721	Probability Models and Application	3
24	MATH-722	Numerical Optimization	3
Major Specialized			
1	MATH-723	Complexity Theory	3
2	MATH-724	Finite Fields	3
3	MATH-725	Fuzzy Logic and Applications	3
4	MATH-726	Fuzzy Probability and Statistics	3
5	MATH-727	Topology	3
6	MATH-728	Geometric Function Theory	3
7	MATH-729	Advanced Convex Analysis	3
8	MATH-730	Advanced Modern Algebra with Applications	3
9	MATH-707	Fixed Point Theory	3
10	MATH-732	Symmetry Methods in Differential Equations	3
11	MATH-733	Rough Set Theory and its Applications	3
12	MATH-734	Numerical Solutions of PDEs II	3
13	MATH-735	Fuzzy sets and their applications	3
14	MATH-736	Modeling and Simulations of Cellular structures	3
15	MATH-737	Digital Image processing and 3D reconstruction-I	3
16	MATH-738	Digital Image processing and 3D reconstruction-II	3

| 17 | MATH-739 | Topics in Applied Commutative Algebra | 3 |
| 18 | MATH-741 | Computational Geometry | 3 |