

**DEPARTMENT OF MATHEMATICS GRADUATE COURSES**

Order	Course C	Course Name	C-O	T	P	C	E
FBE	<b>MATH501</b>	MSc. Seminar	Compulsory	0	0	0	6
FBE	<b>MATH502</b>	Ph.D. Seminar	Compulsory	0	0	0	6
FBE	<b>MATH599</b>	MSc. Thesis	Compulsory	0	0	0	24
FBE	<b>MATH600</b>	Ph.D. Thesis	Compulsory	0	0	0	24
FBE	<b>MATH601</b>	Area of Expertise	Compulsory	6	0	6	6
FBE	<b>MATH666</b>	Ph.D. Qualification	Compulsory	0	0	0	24
FBE	<b>FBE610</b>	<b>Scientific Research Methods</b>	Compulsory	3	0	3	6
1	<b>MATH701</b>	<b>General Mathematical Analysis</b>	<b>Compulsory</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>6</b>
2	<b>MATH702</b>	<b>Fundamentals of Geometry</b>	<b>Compulsory</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>6</b>
3	<b>MATH703</b>	<b>Fundamentals of Applied Mathematics</b>	<b>Compulsory</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>6</b>
4	<b>MATH704</b>	<b>Academic Writing Methods</b>	<b>Compulsory</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>6</b>
5	MATH705	Hilbert and Sobolev Spaces I	Optional	3	0	3	6
6	MATH706	Hilbert and Sobolev Spaces II	Optional	3	0	3	6
7	MATH707	Multi-Variable Functions I	Optional	3	0	3	6
8	MATH708	Multi-Variable Functions II	Optional	3	0	3	6
9	MATH709	Advanced Functional Analysis I	Optional	3	0	3	6
10	MATH710	Advanced Functional Analysis II	Optional	3	0	3	6
11	MATH711	Operator Theory I	Optional	3	0	3	6
12	MATH712	Operator Theory II	Optional	3	0	3	6
13	MATH713	Sequence Spaces and Series I	Optional	3	0	3	6
14	MATH714	Sequence Spaces and Series II	Optional	3	0	3	6
15	MATH715	Fuzzy Set Theory I	Optional	3	0	3	6
16	MATH716	Fuzzy Set Theory II	Optional	3	0	3	6
17	MATH717	Spectral Theory of Differential Operators I	Optional	3	0	3	6
18	MATH718	Spectral Theory of Differential Operators II	Optional	3	0	3	6
19	MATH719	Advanced Time Scale Calculus I	Optional	3	0	3	6
20	MATH720	Advanced Time Scale Calculus II	Optional	3	0	3	6
21	MATH721	Fourier Analysis I	Optional	3	0	3	6
22	MATH722	Fourier Analysis II	Optional	3	0	3	6
23	MATH723	Set Theory I	Optional	3	0	3	6
24	MATH724	Set Theory II	Optional	3	0	3	6
25	MATH725	Advanced Complex Analysis I	Optional	3	0	3	6
26	MATH726	Advanced Complex Analysis II	Optional	3	0	3	6
27	MATH727	Measurement and Integration I	Optional	3	0	3	6
28	MATH728	Measurement and Integration II	Optional	3	0	3	6
29	MATH729	Analytic Functions I	Optional	3	0	3	6
30	MATH730	Analytic Functions II	Optional	3	0	3	6
31	MATH731	Matrix Transformations and Divergent Series I	Optional	3	0	3	6
32	MATH732	Matrix Transformations and Divergent Series II	Optional	3	0	3	6
33	MATH733	Riemannian Geometry I	Optional	3	0	3	6
34	MATH734	Riemannian Geometry II	Optional	3	0	3	6
35	MATH735	Curves and Surfaces in Differential Geometry I	Optional	3	0	3	6
36	MATH736	Curves and Surfaces in Differential Geometry II	Optional	3	0	3	6
37	MATH737	Manifolds Theory I	Optional	3	0	3	6
38	MATH738	Manifolds Theory II	Optional	3	0	3	6
39	MATH739	Transformations and Geometries in n-dimensional Spaces I	Optional	3	0	3	6
40	MATH740	Transformations and Geometries in n-dimensional Spaces II	Optional	3	0	3	6
41	MATH741	Lorentzian Spaces I	Optional	3	0	3	6

42	MATH742	Lorentzian Spaces II	Optional	3	0	3	6
43	MATH743	Quaternions Theory I	Optional	3	0	3	6
44	MATH744	Quaternions Theory II	Optional	3	0	3	6
45	MATH745	Differential Forms I	Optional	3	0	3	6
46	MATH746	Differential Forms II	Optional	3	0	3	6
47	MATH747	Theoretical Kinematics I	Optional	3	0	3	6
48	MATH748	Theoretical Kinematics II	Optional	3	0	3	6
49	MATH749	Semi-Riemann Geometry I	Optional	3	0	3	6
50	MATH750	Semi-Riemann Geometry II	Optional	3	0	3	6
51	MATH751	Tensors and Vector Analysis I	Optional	3	0	3	6
52	MATH752	Tensors and Vector Analysis II	Optional	3	0	3	6
53	MATH753	Affine Differential Geometry I	Optional	3	0	3	6
54	MATH754	Affine Differential Geometry II	Optional	3	0	3	6
55	MATH755	Integration and Differential Geometry I	Optional	3	0	3	6
56	MATH756	Integration and Differential Geometry II	Optional	3	0	3	6
57	MATH757	Advanced Differential Geometry I	Optional	3	0	3	6
58	MATH758	Advanced Differential Geometry II	Optional	3	0	3	6
59	MATH759	Technology-Aided Geometric Design	Optional	3	0	3	6
60	MATH760	Advanced Ordinary Differential Equations I	Optional	3	0	3	6
61	MATH761	Advanced Ordinary Differential Equations II	Optional	3	0	3	6
62	MATH762	Advanced Partial Differential Equations I	Optional	3	0	3	6
63	MATH763	Advanced Partial Differential Equations II	Optional	3	0	3	6
64	MATH764	Advanced Nonlinear Differential Equations I	Optional	3	0	3	6
65	MATH765	Advanced Nonlinear Differential Equations II	Optional	3	0	3	6
66	MATH766	Advanced Numerical Analysis I	Optional	3	0	3	6
67	MATH767	Advanced Numerical Analysis II	Optional	3	0	3	6
68	MATH768	Eigenvalue Problems and Green Functions I	Optional	3	0	3	6
69	MATH769	Eigenvalue Problems and Green Functions II	Optional	3	0	3	6
70	MATH770	Numerical Solutions of ODE's	Optional	3	0	3	6
71	MATH771	Numerical Solutions of Partial Differential Equations	Optional	3	0	3	6
72	MATH772	Initial and Boundary Value Problems I	Optional	3	0	3	6
73	MATH773	Initial and Boundary Value Problems II	Optional	3	0	3	6
74	MATH774	Theory of Difference Equations I	Optional	3	0	3	6
75	MATH775	Theory of Difference Equations II	Optional	3	0	3	6
76	MATH776	Spectral Theory of Sturm-Liouville Operator I	Optional	3	0	3	6
77	MATH777	Spectral Theory of Sturm-Liouville Operator II	Optional	3	0	3	6
78	MATH778	Analytical solutions of the Nonlinear PDE's I	Optional	3	0	3	6
79	MATH779	Analytical solutions of the Nonlinear PDE's II	Optional	3	0	3	6
80	MATH780	Fractional Differential Equations I	Optional	3	0	3	6
81	MATH781	Fractional Differential Equations II	Optional	3	0	3	6
82	MATH782	Spectral Theory of Hill Equation I	Optional	3	0	3	6
83	MATH783	Spectral Theory of Hill Equation II	Optional	3	0	3	6
84	MATH784	Laplace Transformation and its Applications I	Optional	3	0	3	6
85	MATH785	Laplace Transformation and its Applications II	Optional	3	0	3	6
86	MATH786	Mathematical Statistics	Optional	3	0	3	6
87	MATH787	General Topology	Optional	3	0	3	6
88	MATH788	Algebraic Topology	Optional	3	0	3	6
89	MATH789	Advanced Algebra	Optional	3	0	3	6
90	MATH790	Rings and Moduls Theory	Optional	3	0	3	6
91	MATH791	Fundamentals of Mathematics I	Optional	3	0	3	5

92	MATH792	Fundamentals of Mathematics II	Optional	3	0	3	5
93	MATH793	Mathematics in Science and Technology	Optional	3	0	3	5
100	MATH800	Applied Linear Algebra	<b>Compulsory</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>6</b>
101	MATH801	q-type Calculus I	Optional	3	0	3	6
102	MATH802	q-type Calculus II	Optional	3	0	3	6
103	MATH803	Metric Spaces and its Topology I	Optional	3	0	3	6
104	MATH804	Metric Spaces and its Topology II	Optional	3	0	3	6
105	MATH805	Banach Spaces and its Geometrical Properties I	Optional	3	0	3	6
106	MATH806	Banach Spaces and its Geometrical Properties II	Optional	3	0	3	6
107	MATH807	Convex functions and Orlicz Spaces I	Optional	3	0	3	6
108	MATH808	Convex functions and Orlicz Spaces II	Optional	3	0	3	6
109	MATH809	Harmonic Analysis I	Optional	3	0	3	6
110	MATH810	Harmonic Analysis II	Optional	3	0	3	6
111	MATH811	Positive Operators I	Optional	3	0	3	6
112	MATH812	Positive Operators II	Optional	3	0	3	6
113	MATH813	Classical and Modern Methods in Summability I	Optional	3	0	3	6
114	MATH814	Classical and Modern Methods in Summability II	Optional	3	0	3	6
115	MATH815	Advanced Mathematical Analysis I	Optional	3	0	3	6
116	MATH816	Advanced Mathematical Analysis II	Optional	3	0	3	6
117	MATH817	Applied Functional Analysis I	Optional	3	0	3	6
118	MATH818	Applied Functional Analysis II	Optional	3	0	3	6
119	MATH819	Inverse Problems of Spectral Theory I	Optional	3	0	3	6
120	MATH820	Inverse Problems of Spectral Theory II	Optional	3	0	3	6
121	MATH821	Discrete Mathematics I	Optional	3	0	3	6
122	MATH822	Discrete Mathematics II	Optional	3	0	3	6
123	MATH823	Applied Differential Geometry I	Optional	3	0	3	6
124	MATH824	Applied Differential Geometry II	Optional	3	0	3	6
125	MATH825	Tensor Analysis and Relativity Theory I	Optional	3	0	3	6
126	MATH826	Tensor Analysis and Relativity Theory II	Optional	3	0	3	6
127	MATH827	Algebraic Geometry I	Optional	3	0	3	6
128	MATH828	Algebraic Geometry II	Optional	3	0	3	6
129	MATH829	Fractal Geometry I	Optional	3	0	3	6
130	MATH830	Fractal Geometry II	Optional	3	0	3	6
131	MATH831	Complex Manifolds I	Optional	3	0	3	6
132	MATH832	Complex Manifolds II	Optional	3	0	3	6
133	MATH833	Differential Topology I	Optional	3	0	3	6
134	MATH834	Differential Topology II	Optional	3	0	3	6
135	MATH835	Space kinematics and Lie groups I	Optional	3	0	3	6
136	MATH836	Space kinematics and Lie groups II	Optional	3	0	3	6
137	MATH837	Finsler Geometry I	Optional	3	0	3	6
138	MATH838	Finsler Geometry II	Optional	3	0	3	6
139	MATH839	Hessian Manifolds I	Optional	3	0	3	6
140	MATH840	Hessian Manifolds II	Optional	3	0	3	6
141	MATH841	Contact Manifolds I	Optional	3	0	3	6
142	MATH842	Contact Manifolds II	Optional	3	0	3	6
143	MATH843	Statistical Manifolds I	Optional	3	0	3	6
144	MATH844	Statistical Manifolds II	Optional	3	0	3	6
145	MATH845	Cayley-Klein Geometries I	Optional	3	0	3	6
146	MATH846	Cayley-Klein Geometries II	Optional	3	0	3	6
147	MATH847	Geometry of Lightlike Manifolds I	Optional	3	0	3	6

148	MATH848	Geometry of Lightlike Manifolds II	Optional	3	0	3	6
149	MATH849	Submersions Theory I	Optional	3	0	3	6
150	MATH850	Submersions Theory II	Optional	3	0	3	6
151	MATH851	Fuzzy Differential Equations I	Optional	3	0	3	6
152	MATH852	Fuzzy Differential Equations II	Optional	3	0	3	6
153	MATH853	Solitons Theory I	Optional	3	0	3	6
154	MATH854	Solitons Theory II	Optional	3	0	3	6
155	MATH855	Mathematical Bases of Artificial Neural Networks I	Optional	3	0	3	6
156	MATH856	Mathematical Bases of Artificial Neural Networks II	Optional	3	0	3	6
157	MATH857	Mathematical Programming and Modeling I	Optional	3	0	3	6
158	MATH858	Mathematical Programming and Modeling II	Optional	3	0	3	6
159	MATH859	High Successful Mathematical Calculation in Technology I	Optional	3	0	3	6
160	MATH860	High Successful Mathematical Calculation in Technology II	Optional	3	0	3	6
161	MATH861	Biomathematics	Optional	3	0	3	6
162	MATH862	Approximation Theory of Functions	Optional	3	0	3	6
163	MATH863	Mathematical Optimization I	Optional	3	0	3	6
164	MATH864	Mathematical Optimization II	Optional	3	0	3	6
165	MATH865	Dynamical Systems and Stability Theory I	Optional	3	0	3	6
166	MATH866	Dynamical Systems and Stability Theory II	Optional	3	0	3	6
167	MATH867	Integral Equations and its Spectral Theory I	Optional	3	0	3	6
168	MATH868	Integral Equations and its Spectral Theory II	Optional	3	0	3	6
169	MATH869	Stochastic Differential Equations I	Optional	3	0	3	6
170	MATH870	Stochastic Differential Equations II	Optional	3	0	3	6
171	MATH871	Quantum Mechanics and Inverse Scattering Problems I	Optional	3	0	3	6
172	MATH872	Quantum Mechanics and Inverse Scattering Problems II	Optional	3	0	3	6
173	MATH873	Mathematical Modeling in Fluid Mechanics	Optional	3	0	3	6
174	MATH874	Calculus of Variations	Optional	3	0	3	6
175	MATH875	Mathematical Optimal Control Theory I	Optional	3	0	3	6
176	MATH876	Mathematical Optimal Control Theory II	Optional	3	0	3	6
177	MATH877	Basic Methods of Mathematical Economics I	Optional	3	0	3	6
178	MATH878	Basic Methods of Mathematical Economics II	Optional	3	0	3	6
179	MATH879	Discrete Fractional Equations I	Optional	3	0	3	6
180	MATH880	Discrete Fractional Equations II	Optional	3	0	3	6
181	MATH881	Lie Theory I	Optional	3	0	3	6
182	MATH882	Lie Theory II	Optional	3	0	3	6
183	MATH883	Game Theory I	Optional	3	0	3	6
184	MATH884	Game Theory II	Optional	3	0	3	6
185	MATH885	Advanced Topology I	Optional	3	0	3	6
186	MATH886	Advanced Topology II	Optional	3	0	3	6
187	MATH887	Fuzzy Topology I	Optional	3	0	3	6
188	MATH888	Fuzzy Topology II	Optional	3	0	3	6
189	MATH889	Digital Topology	Optional	3	0	3	6
190	MATH890	Numbers Theory and Cryptology I	Optional	3	0	3	6
191	MATH891	Numbers Theory and Cryptology II	Optional	3	0	3	6
192	MATH892	Optical Theory	Optional	3	0	3	6
193	MATH893	Mathematical Logic and Proof Techniques I	Optional	3	0	3	6
194	MATH894	Mathematical Logic and Proof Techniques II	Optional	3	0	3	6
195	MATH895	Philosophy of Mathematics	Compulsory	3	0	3	6