DEPARTMENT OF MATHEMATICS
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code: **XX** **M.Sc. (Mathematics)**
Department: **CY** **Mathematics**
Year: **I**

Teaching Scheme					Contact Hours/Week			Exam. Duration (Hrs)		Relative Weight (%)				
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
Semester-I (Autumn)														
1.	MA-401	Abstract Algebra	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	MA-403	Introduction to Computer Programming	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
3.	MA-405	Linear Algebra	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	MA-407	Probability and Statistics	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	MA-409	Real Analysis	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.	MA-411	Theory of Ordinary Differential Equations	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
			Total	**24**	**18**	**5**	**2**							
Semester-II (Spring)														
1.	MA-402	Complex Analysis	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	MA-404	Functional Analysis	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	MA-406	Technical Communication	PCC	2						100				
4.	MA-408	Theory of Partial Differential Equations	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	MA-410	Topology	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.	MA-ELE	Program Elective-1	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
			Total	**22**	**17**	**5**	**0**							

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Semester-III (Autumn)														
1.	MA-501	Numerical Analysis	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	MA-503	Operations Research	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	MA-ELE	Program Elective-2	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	MA-ELE	Program Elective-3	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
Total				**16**	**12**	**4**	**0**							
Semester-IV (Spring)														
1.	MA-599	Project	PCC	8	-	-	-	-	-	-	-	30	70	-
2.	MA-ELE	Program Elective-4	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	MA-ELE	Program Elective-5	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
Total				**16**	**6**	**2**	**0**							

Summary				
Semester	I	II	III	IV
Credits	24	22	16	16
Total Credits	**78 (PEC: 20, PCC: 58 (including 8 credits for Project and 2 credits for Tech. Comm.)**			

List of Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs.)		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
Program Elective Courses (Elective-1 to Elective 5) to be chosen in First Year and Second Year														
1.	MA-301	Fluid Dynamics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	MA-411	Analytic Number Theory	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	MA-412	Combinatorial Mathematics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	MA-413	Credit Risk Management	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	MA-414	Differential Geometry	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.	MA-415	Financial Risk Management	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
7.	MA-416	Graph Theory	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
8.	MA-417	Mathematical Image Processing	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
9.	MA-418	Numerical Optimization	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
10.	MA-419	Stochastic Calculus	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
11.	MA-511	Abstract Harmonic Analysis	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
12.	MA-512	Advanced Complex Analysis	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
13.	MA-513	Advanced Matrix Theory	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
14.	MA-514	Advanced Numerical Analysis	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
15.	MA-515	Advanced Operations Research	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
16.	MA-516	Advanced Partial Differential Equations	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

17.	MA-517	Algebraic Number Theory	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
18.	MA-518	Algebraic Topology	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
19.	MA-519	Approximation Theory	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
20.	MA-520	Coding Theory	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
21.	MA-521	Commutative Algebra	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
22.	MA-522	Computational Fluid Dynamics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
23.	MA-523	Control Theory	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
24.	MA-524	Dynamical Systems	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
25.	MA-525	Financial Mathematics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
26.	MA-526	Finite Element Methods	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
27.	MA-527	Fuzzy Sets and Fuzzy Systems	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
28.	MA-528	Hyperbolic Conservation Laws	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
29.	MA-529	Integral Equations and Calculus of Variations	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
30.	MA-530	Machine Learning in Finance	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
31.	MA-531	Mathematical Biology	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
32.	MA-532	Mathematical Cryptography	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
33.	MA-533	Measure Theory	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
34.	MA-534	Multivariate Techniques	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
35.	MA-535	Numerical Linear Algebra	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
36.	MA-536	Operator Theory	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
37.	MA-537	Optimal Control Theory	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
38.	MA-538	Orthogonal Polynomials and Special Functions	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
39.	MA-539	Portfolio Optimization	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

40.	MA-540	Regularization Theory for Inverse Problems	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
41.	MA-541	Representation Theory of Finite Groups	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
42.	MA-542	Semigroup Theory and Applications	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
43.	MA-543	Sobolev Spaces and Applications	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
44.	MA-544	Statistical Inference	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
45.	MA-545	Stochastic Differential Equations	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
46.	MA-546	Stochastic Partial Differential Equations	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
47.	MA-547	Wavelet Analysis	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-