

**DEPARTMENT OF MATHEMATICS  
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**

Program Code : 312 BS-MS (Mathematics and Computing)  
 Department : MA 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
<b>Autumn Semester</b>														
1.	MAN-001	Mathematics-1	BSC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	PHN-001	Mechanics	BSC	4	3	0	2	3	0	20-35	-	20-30	40-50	-
3.	CEN-105	Introduction to Environmental Studies	GSC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
4.	HSN-001	Communication Skills	HSSC	2	1	0	2	2	0	20-35	-	20-30	40-50	-
5.	HSN-002	Introduction to Psychology	HSSC	2	1	1	0	2	0	20-35	-	20-30	40-50	-
6.	MA-101	Introduction to Mathematical Sciences	PCC	2	2	0	0	2	0	20-35	-	20-30	40-50	-
7.	MA-103	Introduction to Computer Programming	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
<b>Total</b>				<b>21</b>	<b>17</b>	<b>2</b>	<b>6</b>							
<b>Spring Semester</b>														
1.	MAN-004	Numerical Methods	BSC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	MAN-006	Probability and Statistics	BSC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	MA-102	Elementary Real Analysis	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	MA-104	Number Theory	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	CSN-102	Data Structures	ESC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
<b>Total</b>				<b>20</b>	<b>15</b>	<b>5</b>	<b>0</b>							

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 Year : II

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
<b>Autumn Semester</b>														
1.	MA-201	Basic Abstract Algebra	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	MA-203	Design and Analysis of Algorithms	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	MA-205	Discrete Mathematics	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	MA-207	Linear Algebra	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	MA-209	Ordinary and Partial Differential Equations	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
<b>Total</b>				<b>20</b>	<b>15</b>	<b>4/5</b>	<b>0</b>							
<b>Spring Semester</b>														
1.	MA-202	Complex Analysis	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	MA-204	Statistical Machine Learning	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
3.	MA-206	Stochastic Calculus	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	MA-208	Technical Communication	PCC	2						100				
5.	MA-210	Transform Techniques	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.	HSS-ELE	HSS Elective Course	HSSMEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
<b>Total</b>				<b>21</b>	<b>17</b>	<b>4</b>	<b>0</b>							

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Program Code : 312 BS-MS (Mathematics and Computing)  
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Year : III

		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
<b>Autumn Semester</b>														
1.	CSN-351	Database Management System	ESC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	MA-301	Fluid Dynamics	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	MA-303	Numerical Analysis	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	MA-305	Operations Research	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	MS-ELE	Management Elective Course	HSSMEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
6.	*OEC-1	Institute Open Elective	OEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
<b>Total</b>				<b>19-22</b>	<b>15</b>	<b>4</b>	<b>0</b>							
<b>Spring Semester</b>														
1.	MA-302	Mathematical Modeling and Simulation	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	MA-304	Theory of Computation	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	MA-ELE	Program Elective – 1	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	MA-ELE	Program Elective – 2	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	*OEC-2	Institute Open Elective	OEC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
6.	MSC-1	Minor Specialization Course-1	MSC	3/4	3	0/1	0	3	0	20-35	-	20-30	40-50	-
<b>Total</b>				<b>16-23</b>	<b>18</b>	<b>4/5</b>	<b>0</b>							

\*Students can take one or both courses under OEC category.

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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	
<b>Autumn Semester</b>															
1.	MA-401	Abstract Algebra	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-	
2.	MA-409	Real Analysis	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-	
3.	MA-411	Theory of Ordinary Differential Equations	PCC	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	-	
5.	MSC-2	Minor Specialization Course-2	MSC	3/4	3	0/1	0	3	0	20-35	-	20-30	40-50	-	
6.	MSC-3	Minor Specialization Course-3	MSC	3/4	3	0/1	0	3	0	20-35	-	20-30	40-50	-	
<b>Total</b>				<b>16-24</b>	<b>12/18</b>	<b>4/6</b>	<b>0</b>								
<b>Spring Semester</b>															
1.	MA-404	Functional Analysis	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-	
2.	MA-408	Theory of Partial Differential Equations	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-	
3.	MA-410	Topology	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-	
4.	MA-ELE	Program Elective -4	MA-400 Project*	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	MA-ELE	Program Elective -5		PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.	MSC-4	Minor Specialization Course-4	MSC	3/4	3	0/1	0	3	0	20-35	-	20-30	40-50	-	
7.	MSC-5	Minor Specialization Course-5	MSC	3/4	3	0/1	0	3	0	20-35	-	20-30	40-50	-	
<b>Total</b>				<b>20-28</b>	<b>15/21</b>	<b>5/7</b>	<b>0</b>								

\*Students can take either Department Electives 4 and 5 or Project to complete 8 credits under PEC category in 8<sup>th</sup> Semester.

**NOTE:** The students wishing to exit the program with BS degree must inform the Department/Institute before subject registration for 5<sup>th</sup> Year.

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 Year : V

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
<b>Autumn Semester</b>														
1.	MA-500A	Thesis Stage-1	PCC	4	0	0	0	0	0	-	-	30	70	-
2.	MA-ELE	Program Elective - 6	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	MA-ELE	Program Elective - 7	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	MA-ELE	Program Elective - 8	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
<b>Total</b>				<b>16</b>	<b>9</b>	<b>3</b>	<b>0</b>							
<b>Spring Semester</b>														
1.	MA-500B	Thesis Stage-2	PCC	12	0	0	0	0	0	-	-	30	70	-
<b>Total</b>				<b>12</b>	<b>0</b>	<b>0</b>	<b>0</b>							