

**DEPARTMENT OF APPLIED MATHEMATICS AND SCIENTIFIC COMPUTING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**

Program Code : **XXX M.Tech. (Applied Mathematics and Scientific Computing)**
 Department : **Department of Applied Mathematics And Scientific Computing**
 Year : **I**
 Model : **2**

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
Semester-I (Autumn)									
1.	AMC-501	Applied Optimization Techniques	PCC	3	3	0	0	3	0
2.	AMC-503	Stochastic Processes	PCC	3	3	0	0	3	0
3.	AMC-505	Numerical Linear Algebra	PCC	3	3	0	0	3	0
4.	AMC-507	Advanced Data Structures and Algorithms	PCC	4	3	0	2	3	0
5.	AMC-509	Programming Lab	PCC	3	0	0	6	0	3
6.		Social Science Course	SSC	2	-	-	-	-	-
		Total		18					
Semester-II (Spring)									
1.		Program Elective-I	PEC	3	-	-	-	-	-
2.		Program Elective-II	PEC	3	-	-	-	-	-
3.		Program Elective-III	PEC	3	-	-	-	-	-
4.		Program Elective-IV	PEC	3	-	-	-	-	-
5.		Program Elective-V	PEC	3	-	-	-	-	-
6.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-
7.	AMC-700	Seminar	SEM	2	-	-	-	-	-
		Total		20					

**DEPARTMENT OF APPLIED MATHEMATICS AND SCIENTIFIC COMPUTING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**

Program Code : **XXX M.Tech. (Applied Mathematics and Scientific Computing)**
 Department : **Department of Applied Mathematics And Scientific Computing**
 Year : **II**
 Model : **2**

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
Semester-I (Autumn)									
1.	AMC-691	Internship Social Activity	ISA	3	-	-	-	-	-
2.	AMC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-
		Total		13					
Semester-II (Spring)									
1.	AMC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-
		Total		14					

Summary				
Semester	1	2	3	4
Semester-wise Total Credits	18	20	13	14
Total Credits	65			

M.Tech. (Applied Mathematics and Scientific Computing)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
1.	AML-501	Approximation Theory	PEC	3	3	0	0	3	0
2.	AML-502	Advanced Transform Techniques	PEC	3	3	0	0	3	0
3.	AML-503	Applied Soft Computing	PEC	3	3	0	0	3	0
4.	AML-504	Applied Operations Research	PEC	3	3	0	0	3	0
5.	AML-505	Mathematical Finance	PEC	3	3	0	0	3	0
6.	AML-506	Mathematical and Computational Biology	PEC	3	3	0	0	3	0
7.	AML-507	Computational Differential Equations	PEC	3	3	0	0	3	0
8.	AML-508	Advanced Decision Making	PEC	3	3	0	0	3	0
9.	AML-509	Integral Equations	PEC	3	3	0	0	3	0
10.	AML-510	Advanced Evolutionary Algorithms	PEC	3	3	0	0	3	0
11.	AML-511	Logistics and Supply Chain Management	PEC	3	3	0	0	3	0
12.	AML-512	Advanced Computational Fluid Dynamics	PEC	3	3	0	0	3	0
13.	AML-513	Game Theory & Industrial Organization	PEC	3	3	0	0	3	0
14.	AML-514	Explainable Artificial Intelligence	PEC	3	3	0	0	3	0
15.	AML-515	Stochastic Differential Equations	PEC	3	3	0	0	3	0
16.	AML-516	Quantum Optimization	PEC	3	3	0	0	3	0

M.Tech. (Applied Mathematics and Scientific Computing)

Science, Technology, and Advanced Research-tools Basket

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
1.	AMT-501	Deep Learning	STAR	3	3	0	0	3	0

Social Sciences Course Basket

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
1.	AMS-501	Ethics in Artificial Intelligence and Data Science	SSC	2	2	0	0	2	0

**DEPARTMENT OF APPLIED MATHEMATICS AND SCIENTIFIC COMPUTING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**

Program Code : **XXX Master of Science (by Research) in Applied Mathematics and Scientific Computing**
 Department : **Department of Applied Mathematics And Scientific Computing**
 Year : **I**
 Model : **3**

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
Semester-I (Autumn)									
1.	AMC-501	Applied Optimization Techniques	PCC	3	3	0	0	3	0
2.	AMC-503	Stochastic Processes	PCC	3	3	0	0	3	0
3.	AMC-505	Numerical Linear Algebra	PCC	3	3	0	0	3	0
4.	AMC-507	Advanced Data Structures and Algorithms	PCC	4	3	0	2	3	0
5.	AMC-509	Programming Lab	PCC	3	0	0	6	0	3
6.		Social Science Course	SSC	2	-	-	-	-	-
		Total		18					
Semester-II (Spring)									
1.		Program Elective-I	PEC	3	-	-	-	-	-
2.	AMC-751A	Thesis Stage-I	THESIS	14	-	-	-	-	-
		Total		17					

**DEPARTMENT OF APPLIED MATHEMATICS AND SCIENTIFIC COMPUTING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**

Program Code : **XXX Master of Science (by Research) in Applied Mathematics and Scientific Computing**
 Department : **Department of Applied Mathematics And Scientific Computing**
 Year : **II**
 Model : **3**

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
Semester-I (Autumn)									
1.	AMC-751B	Thesis Stage-II	THESIS	16	-	-	-	-	-
		Total		16					
Semester-II (Spring)									
1.	AMC-751C	Thesis Stage-III	THESIS	16	-	-	-	-	-
		Total		16					

Summary				
Semester	1	2	3	4
Semester-wise Total Credits	18	17	16	16
Total Credits	67			

Master of Science (by Research) in Applied Mathematics and Scientific Computing

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
1.	AML-501	Approximation Theory	PEC	3	3	0	0	3	0
2.	AML-502	Advanced Transform Techniques	PEC	3	3	0	0	3	0
3.	AML-503	Applied Soft Computing	PEC	3	3	0	0	3	0
4.	AML-504	Applied Operations Research	PEC	3	3	0	0	3	0
5.	AML-505	Mathematical Finance	PEC	3	3	0	0	3	0
6.	AML-506	Mathematical and Computational Biology	PEC	3	3	0	0	3	0
7.	AML-507	Computational Differential Equations	PEC	3	3	0	0	3	0
8.	AML-508	Advanced Decision Making	PEC	3	3	0	0	3	0
9.	AML-509	Integral Equations	PEC	3	3	0	0	3	0
10.	AML-510	Advanced Evolutionary Algorithms	PEC	3	3	0	0	3	0
11.	AML-511	Logistics and Supply Chain Management	PEC	3	3	0	0	3	0
12.	AML-512	Advanced Computational Fluid Dynamics	PEC	3	3	0	0	3	0
13.	AML-513	Game Theory & Industrial Organization	PEC	3	3	0	0	3	0
14.	AML-514	Explainable Artificial Intelligence	PEC	3	3	0	0	3	0
15.	AML-515	Stochastic Differential Equations	PEC	3	3	0	0	3	0
16.	AML-516	Quantum Optimization	PEC	3	3	0	0	3	0