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**

S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
		Teaching Scheme			**Contact Hours/Week**			**Exam Duration**	
		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**					

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S.No.	Subject Code	Course Title	Subject Area	Credits	Contact Hours/Week			Exam Duration	
					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

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

M.Tech. (Applied Mathematics and Scientific Computing)

Science, Technology, and Advanced Research-tools Basket

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

Social Sciences Course Basket

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

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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**

S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
		Teaching Scheme						**Contact Hours/Week**	**Exam Duration**
		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	SEM	14	-	-	-	-	-
		Total		**17**					

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Year : **II**
Model : **3**

S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
		Teaching Scheme				**Contact Hours/Week**		**Exam Duration**	
		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

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

Social Sciences Course Basket

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