

**DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**

Program Code : **XXX M.Tech. (Thermal Engineering)**
 Department : **Department of Mechanical and Industrial Engineering**
 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.	MIC-501	Measurements and Instrumentation	PCC	4	3	0	2	3	0
2.	MIC-503	Finite Element Methods	PCC	4	3	0	2	3	0
3.	MIC-505	Numerical Methods for Engineers	PCC	4	3	1	0	3	0
4.	MIC-507	Continuum Mechanics	PCC	4	3	1	0	3	0
5.		Social Science Course	SSC	2	-	-	-	-	-
		Total		18					
Semester-II (Spring)									
1.		Program Elective-I	PEC	4	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-
6.	MIC-700	Seminar	SEM	2	-	-	-	-	-
		Total		21					

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Program Code : **XXX M.Tech. (Thermal Engineering)**
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 Year : **II**
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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.	MIC-691	Internship Social Activity	ISA	3	-	-	-	-	-
2.	MIC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-
		Total		13					
Semester-II (Spring)									
1.	MIC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-
		Total		14					

Summary				
Semester	1	2	3	4
Semester-wise Total Credits	18	21	13	14
Total Credits	66			

M.Tech. (Thermal Engineering)

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.	MIL-519	Modeling and Simulation	PEC	4	3	1	2/2	3	0
2.	MIL-520	Advanced Thermodynamics	PEC	4	3	1	0	3	0
3.	MIL-521	Advanced Fluid Mechanics	PEC	4	3	1	0	3	0
4.	MIL-522	Advanced Heat Transfer	PEC	4	3	1	0	3	0
5.	MIL-527	Computational Fluid Dynamics & Heat Transfer	PEC	4	3	1	0	3	0
6.	MIL-523	Gas Turbines & Compressors	PEC	4	3	1	0	3	0
7.	MIL-524	Two Phase Flow & Heat Transfer	PEC	4	3	1	0	3	0
8.	MIL-525	Solar Energy	PEC	4	3	1	0	3	0
9.	MIL-632	Advanced Gas Dynamics	PEC	4	3	1	0	3	0
10.	MIL-528	Boundary Layer Theory	PEC	4	3	1	0	3	0
11.	MIL-529	Turbulent Flows	PEC	4	3	1	0	3	0
12.	MIL-531	Hydro-dynamic Machines	PEC	4	3	1	2/2	3	0
13.	MIL-532	Renewable Energy Systems	PEC	4	3	1	2/2	3	0
14.	MIL-533	Refrigeration & Air-Conditioning System Design	PEC	4	3	1	2/2	3	0
15.	MIL-536	Convective Heat and Mass Transfer	PEC	4	3	1	0	3	0
16.	MIL-537	I. C. Engines	PEC	4	3	1	2/2	3	0
17.	MIL-538	I. C. Engine Combustion Processes Modelling	PEC	4	3	1	2/2	3	0
18.	MIL-539	Micro and Nano Scale Thermal Engineering	PEC	4	3	1	0	3	0
19.	MIL-540	Combustion	PEC	4	3	1	2/2	3	0
20.	MIL-541	Bio-Fluid Mechanics	PEC	4	3	1	0	3	0
21.	MIL-542	Energy Management	PEC	4	3	1	0	3	0
22.	MIL-543	Fluid Power Systems	PEC	4	3	1	0	3	0
23.	MIL-544	Design of Heat Exchangers	PEC	4	3	1	0	3	0
24.	MIL-545	Fuel Cells	PEC	4	3	1	0	3	0

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Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
25.	MIL-546	Thermal Management of Energy Storage Devices	PEC	4	3	1	0	3	0
26.	MIL-548	Hydrogen Energy	PEC	4	3	1	0	3	0
27.	MIL-604	Fire Dynamics	PEC	4	3	1	0	3	0
28.	MIL-549	Aircraft Propulsion	PEC	4	3	1	0	3	0
29.	MIL-612	Hydrodynamic Stability	PEC	4	3	1	0	3	0
Students should mandatorily earn a minimum of 3 credits from practical components in a program. These practical components can be part of a course or a dedicated practical /laboratory course.									

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.	MIT-501	Value Engineering	STAR	3	2	1	0	3	0