



Program Structure M.Tech. Materials Engineering (2 years)

Credits Distribution:

S.No.	Category	Category Title	Total Courses	Total Credits
1	C	Compulsory	4	16
2	E	Program Electives	6	18
3	E	Open Electives	2	6
4	C	Project	16	16
<i>Total</i>				56

Structure:

Cat.	Course Number, Course Title	L-T-P-D	Credits	Cat.	Course Number, Course Title	L-T-P-D	Credits
I Semester				II Semester			
C	MT7LXX0 Metallurgical Thermodynamics and Kinetics	3-1-0-0	4	C	MT7LXX0 Computational Materials Engineering	3-0-2-0	4
C	MT7LXX0 Characterization of Minerals, Metals and Materials	3-0-2-0	4	C	MT7LXX0 Phase Transformations in Solids	3-0-2-0	4
E	MT7LXX0 Program Elective -1	3-0-0-0	3	E	MT7LXX0 Program Elective-3	3-0-0-0	3
E	MT7LXX0 Program Elective -2	3-0-0-0	3	E	MT7LXX0 Program Elective-4	3-0-0-0	3
NH	HSN7XX0 Technical Communication	1-0-0-0	0	NH	HSN7XX0 Professional Ethics	1-0-0-0	0
Total			14	Total			14
III Semester				IV Semester			
E	MT7LXX0 Program Elective-5	3-0-0-0	3	O	Open Elective-2	3-0-0-0	3
E	MT7LXX0 Program Elective-6	3-0-0-0	3	C	MT7DXX0 Project (Stage-II)	0-0-0-11	11
O	Open Elective-1	3-0-0-0	3	NH	HSN7XX0 IP Management and Exploitation	1-0-0-0	0
C	MT7DXX0 Project (Stage-I)	0-0-0-5	5				
NH	HSN7XX0 Systems Engineering and Project Management	1-0-0-0	0				
Total			14	Total			14

Program electives can be taken from any of the following courses offered by the department. Open electives may be taken from other departments.

List of Electives

Following is the list of courses that can be offered to M.Tech. Students

(A) ***ELECTIVE I: Materials Modeling and Simulation***

Course Number	Course Title	L-T-P-D	Credits
MT7LXX0	Alloy Design : Computational Thermodynamic approach	3-0-2-0	4

(B) ***ELECTIVE II: Extractive and Process Metallurgy***

Course Number	Course Title	L-T-P-D	Credits
MT7LXX0	Mineral Engineering	3-0-0-0	3
MT7LXX0	Iron and Steel Making	3-0-0-0	3
MT7LXX0	Solidification Processing	3-0-0-0	3
MT7LXX0	Industrial Waste: Control and Utilization	3-0-0-0	3

(C) ***ELECTIVE III: Metallurgical Manufacturing***

Course Number	Course Title	L-T-P-D	Credits
MT7LXX0	Light Metals and Alloys	3-0-0-0	3
MT7LXX0	Near Net Forming	3-0-0-0	3
MT7LXX0	Powder Metallurgy	3-0-0-0	3
MT7LXX0	Thermo Mechanical Processing	3-0-0-0	3
MT7LXX0	Material Aspects in Additive Manufacturing	3-0-0-0	3

(D) ***ELECTIVE IV: Physical Metallurgy***

Course Number	Course Title	L-T-P-D	Credits
MT7LXX0	Plastic Deformation and Microstructure Evolution	3-0-0-0	3
MT7LXX0	Corrosion Engineering	3-0-0-0	3
MT7LXX0	Introduction to Dislocations	3-0-0-0	3
MT7LXX0	Structure-Property-Correlation	3-0-0-0	3
MT7LXX0	Mechanical Behavior of Materials	3-0-2-0	4
MT7LXX1	Electron and Scanning Probe Microscopy	1-0-0-0	1
MT7LXX2	Light Microscopy and Spectroscopic Techniques	1-0-0-0	1
MT7LXX3	Diffraction and Thermal Analysis Techniques	1-0-0-0	1
MT7PXX4	Materials Characterization Laboratory	0-0-2-0	1

(E) ***ELECTIVE V: Functional Materials and Devices***

Course Number	Course Title	L-T-P-D	Credits
MT7LXX0	Ceramics	3-0-0-0	3
MT7LXX0	Composites	3-0-0-0	3
MT7LXX0	Polymers and their composites	3-0-0-0	3
MT7LXX0	Principles of Engineering Material Selection	3-0-0-0	3