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Indian Institute of Technology Jodhpur
Proposed Curriculum
M.Tech. (Metallurgical and Materials Engineering)

(Institute level discussion should happen to renumber the M.Tech. core courses from 5xx to 6xx.)

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	MT513	Metallurgical Thermodynamics and Kinetics	3-0-2-0	4	C	MT516	Computational Materials Engineering	3-0-2-0	4
C	MT515	Characterization of Minerals, Metals and Materials	3-0-2-0	4	C	MT517	Phase Transformations in Solids	3-0-2-0	4
E		Elective-1	3-0-0-0	3	E		Elective-3	3-0-0-0	3
E		Elective-2	3-0-0-0	3	E		Elective-4	3-0-0-0	3
Total				14	Total				14
III Semester					IV Semester				
E		Elective-5	3-0-0-0	3	E		Elective-8	3-0-0-0	3
E		Elective-6	3-0-0-0	3	C	MT6XX	Project (Stage-II)	0-0-0-11	11
E		Elective-7	3-0-0-0	3					
C	MT6XX	Project (Stage-I)	0-0-0-5	5					
Total				14	Total				14

Distribution of Credits (M.Tech.)

S.No.	Category	Category Title	Total Courses	Total Credits
1	C	Compulsory	4	16
2	E	Electives (Program Electives)	6	18
2	E	Electives (Open Electives)	2	6
4	C	Project	16	16
Total				56

The eight elective (E) courses may be taken from those listed in five groups in Tables to follow or any other as applicable.

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
MT654	Atomistic Simulations of Materials	3-0-0-0	3
MT6XX	Modeling of Metallurgical Processes	3-0-0-0	3
ME618	Numerical Methods	3-0-0-0	3
CY 513	Statistical Thermodynamics and Chemical Kinetics	3-0-0-0	3

(B) ELECTIVE II: Extractive and Process Metallurgy

Course Number	Course Title	L-T-P-D	Credits
MT6XX	Mineral Engineering	3-0-0-0	3
MT6XX	Fuels, Furnaces and Refractories	3-0-0-0	3
MT6XX	Iron and Steel Making	3-0-0-0	3
MT665	Solidification Processing	3-0-0-0	3
MT6XX	Industrial Waste: Control and Utilization	3-0-0-0	3
EE	Instrumentation and Process Control	3-0-0-0	3
ME761	Renewable Energy Sources	3-0-0-0	3

(C) ELECTIVE III: Metallurgical Manufacturing

Course Number	Course Title	L-T-P-D	Credits
MT6XX	Light Metals and Alloys	3-0-0-0	3
MT6XX	Near Net Forming	3-0-0-0	3
MT6XX	Powder Metallurgy	3-0-0-0	3
MT670	Thermo Mechanical Processing	3-0-0-0	3
ME757	Metallurgy of Joining Processes	3-0-0-0	3
ME752	Theory of Arc Welding Processes	3-0-0-0	3
ME657	Manufacturing of Plastics, Ceramics and Composites	3-0-0-0	3

(D) ELECTIVE IV: Physical Metallurgy

Course Number	Course Title	L-T-P-D	Credits
MT655	Plastic Deformation and Microstructure Evolution	3-0-0-0	3
MT6XX	Corrosion Engineering	3-0-0-0	3
MT6XX	Introduction to Dislocations	3-0-0-0	3
MT6XX	Structure-Property-Correlation	3-0-0-0	3
PH764	Electronic Transport in Mesoscopic System	3-0-0-0	3
CY513	Understanding Scanning Tunneling Microscopy	3-0-0-0	3
ME616	Mechanical Metallurgy	3-0-3-0	4

(E) ELECTIVE V: Functional Materials and Devices

Course Number	Course Title	L-T-P-D	Credits
MT6XX	Ceramics	3-0-0-0	3
MT675	Composites	3-0-0-0	3
MT6XX	Nanomaterials: Principles, Processing and Characterization	3-0-0-0	3
MT6XX	Opto-Electro-Mechanical Systems	3-0-0-0	3
MT6XX	Polymers and their composites	3-0-0-0	3
MT6XX	Principles of Engineering Material Selection	3-0-0-0	3
MT6XX	Cellular Materials	3-0-0-0	3
CY759	Advance Material Design	3-0-0-0	3
EE659	Biomedical Instrumentation	3-0-0-0	3
EE619	Sensors in Instrumentation	3-0-0-0	3
PH758	Semiconductor Device Technology	3-0-0-0	3
PH765	Vacuum Systems and Thin film Technology	3-0-0-0	3