

12 | Department of Materials Science and Metallurgical Engineering

12.1 BTech

Code	Cred.	Course Title	Segments
Semester 1			
CY1031	2	Laboratory Experiments	16
ID1035	1	Independent Project	16
ID1054	2	Digital Fabrication	16
ID1303	2	Programming in C/C++ With Lab	
LAXXXX	1	LA/CA Elective	
MA1110	1	Calculus - I	12
MA1220	1	Calculus- II (Multivariable Calculus)	34
MA1230	1	Series of Functions	56
MS1010	1	Science and Engineering of Materials	
MS1040	1	Materials Synthesis	
PH1017	1	Classical Physics	34
PH1031	2	Physics Lab	16
Semester 2			
BO1010	1	Introduction to Life Sciences	46
CY1021	2	Dynamics of Chemical Systems-ii	36
CY1020	1	Dynamics of Chemical Systems-i	12
LAXXXX	2	LA/CA Elective	
MA1140	1	Elementary Linear Algebra	34
MA1130	1	Vector Calculus	12
MS1011	1	Metallography Lab	13
MS1021	1	Materials Synthesis Lab	46
MS1050	1	Physics of Solids	
MS1060	1	Polymers	
MS1080	1	Computational Methods in Materials Science I	
PH1027	1	Electromagnetism and Maxwell's Equations	56
PH2027	1	Quantum Physics	34
Semester 3			
BM1030	1	Bioengineering	
CY1017	1	Environmental Chemistry-i	12
EE1010	1	Electric Circuits	
EE1020	1	Magnetic Circuits	
ID1041	2	Engineering Drawing	16
ID1171	2	Fabrication Lab - I	16
LAXXXX	2	LA/CA Elective	
MS1020	1	Metallic Materials	
MS1030	1	Materials Characterization I	
MS1070	1	Semiconductor Materials	
MS2010	1	Soft Matter Science	

Code	Cred.	Course Title	Segments
MS2020	2	Physical Metallurgy	
MS2040	2	Advanced Materials Synthesis	
MA2110	1	Introduction to Probability	12
Semester 4			
ID1160	2	Solid Mechanics - I	13
LAXXXX	2	LA/CA Elective	
MS3080	2	Computational Methods in Materials Science II	
MA2140	1	Introduction to Statistics	34
MA1150	1	Differential Equations	56
MS2011	2	Functional Properties Characterization Lab	16
MS2030	2	Materials Characterization II	
MS2050	2	Mechanical Behaviour of Materials	
MS2060	2	Functional and Structural Polymers	
MS2080	1	Process Metallurgy	
MS2090	1	Electronic Materials	
MS2100	1	Rate Phenomena in Process Metallurgy	
Semester 5			
LAXXXX	2	LA/CA Elective	
ME1010	1	Manufacturing Technology	56
MS3010	1	Magnetic Materials	
MS3020	2	Casting and Solidification	
MS3021	1	Foundry and Solidification Lab	46
MS3030	1	Non-ferrous Extractive Metallurgy	
MS3090	1	Phase Equilibria	
MS3100	2	Kinetics of Materials	
MS3270	1	Iron Making and Steel Making	56
MS3280	1	Powder Metallurgy Processing	34
MS2021	2	Mechanical Behaviour Lab	
XXXX	2	Core Elective	
XXXX	1	Free Elective	
Semester 6			
ME2030	2	Manufacturing Science -I	36
MS3011	2	Heat Treatment Lab	16
MS3015	2	Mini Project	16
MS3040	2	Thin Films	
MS3110	2	Transport Phenomena	
MS3120	2	Phase Transformations	
MS3140	1	Technical Communication	
MS3150	1	Corrosion	
XXXX	2	Core Elective	
XXXX	1	Free Elective	
Semester 7			
LAXXXX	2	LA/CA Elective	
MS3015	2	Mini Project	16
MS4011	1	Metal Forming Lab	13
MS4020	1	Research Methodology	
MS4030	1	Materials Selection and Design	
MSXXXX	4	Core Elective	
XXXXXX	1	Free Elective	
Semester 8			
MS4016	1	Seminar	56
MS4050	2	Fatigue and Fracture	
MS4060	2	Thermo-mechanical Processing	
MSXXXX	4	Core Elective	

Code	Cred.	Course Title	Segments
XXXXXX	2	Free Elective	
Electives			
MS2070	1	Ceramics and Refractories	
MS3050	1	Iron Making	
MS3060	1	Steel Making	
MS3070	2	Powder Metallurgy	
MS3240	2	Metal Joining	
MS3290	2	Crystallography -I	
MS4070	1	Introduction to Nanofabrication	
MS4090	1	Wear and Tribology	
MS4140	2	Applications of Electrochemistry in Materials Science and Engineering	
MS4150	1	High Entropy Materials	
MS4170	2	Introduction to Functional Ceramics	
MS4190	2	Recent Developments in 2d Materials Science	
MS4200	2	Composites	
MS4210	2	Fundamentals of Plasmonics	
MS5150	2	Biomaterials- Materials in Medicine	

12.2 Minor

- In addition to the courses listed below, 5 more credits of electives can be taken from any of the department courses.

Code	Cred.	Course Title
MS2030	2	Materials Characterization II
MS1020	1	Metallic Materials
MS2020	2	Physical Metallurgy
MS1040	1	Materials Synthesis
MS1050	1	Physics of Solids

12.3 Honors

Code	Cred.	Course Title
MS3025	3	Honors Project-i
MS4015	4	Honors Project-ii
MS4025	5	Honors Project-iii

12.4 Double Major

- In addition to the courses listed below, 5 more credits of electives can be taken from any of the department courses.

Code	Cred.	Course Title
MS1020	1	Metallic Materials
MS1030	1	Materials Characterization I
MS1040	1	Materials Synthesis

Code	Cred.	Course Title
MS2010	1	Soft Matter Science
MS2020	2	Physical Metallurgy
MS1070	1	Semiconductor Materials
MS3090	1	Phase Equilibria
MS3100	2	Kinetics of Materials
MS4030	1	Materials Selection and Design
MS3021	1	Foundry and Solidification Lab
MS1050	1	Physics of Solids
MS2080	1	Process Metallurgy
MS2090	1	Electronic Materials
MS1011	1	Metallography Lab
MS1021	1	Materials Synthesis Lab
MS2011	2	Functional Properties Characterization Lab