

Maulana Azad National Institute of Technology, Bhopal - 462003
DEPARTMENT OF MATERIALS AND METALLURGICAL ENGINEERING
SCHEME FOR B. TECH (Materials and Metallurgical Engineering)

First Year Credits (Cumulative) 45

THIRD SEMESTER:

Course Code	Course Name	Scheme of Studies Periods per week			Credits
		L	T	P	
MC MT 2101	Mathematics-3	3	1	-	4
HS 2101	Fundamentals of Entrepreneurship	3	-	-	3
MM 2101	Fundamentals of Metal Extraction	3	-	-	3
MM 2102	Thermodynamics of Materials	3	-	-	3
MM 2103	Physics of Materials	3	-	-	3
MM 2104	Physical Metallurgy	3	-	-	3
MM 2105	Metal Extraction Lab	-	-	2	1
MM 2106	Metallography Lab	-	-	2	1
MM 2107	Physical Property Measurement Lab	-	-	2	1
MM 2108	Professional Practices	-	2	-	2
Total Hours =27		18	3	6	24
Total Credits (Cumulative)					69
Additional Subject: - National Cadet Corps (NCC)					
NC 2151	National Cadet Corps III	1	5	1	7
Total Credits (Cumulative)					11

FOURTH SEMESTER:

Course Code	Course Name	Scheme of Studies Periods per week			Credits
		L	T	P	
MC MT 2201	Mathematics-4	3	-	-	3
ME 2201	Fundamentals of Design	2	1	-	3
MM 2201	Iron & Steel Making	3	1	-	4
MM 2202	Mechanical Behavior of Materials	3	-	-	3
MM 2203	Casting and Solidification	3	-	-	3
MM 2204	Transport Phenomena	3	-	-	3
MM 2205	Materials Testing Lab	-	-	2	1
MM 2206	Foundry Lab.	-	-	2	1
MM 2207	Project Based Lab-1	-	-	2	1
Total Hours =25		17	2	6	22
Total Credits (Cumulative)					91
Additional Subject: - National Cadet Corps (NCC)					
NC 2251	National Cadet Corps IV	2	-	1	3
Total Credits (Cumulative)					14

FIFTH SEMESTER:

Course Code	Course Name	Scheme of Studies Periods per week			Credits
		L	T	P	
ME 3101	Engineering Management	3	-	-	3
MM 3101	Phase Transformation and Heat Treatment	3	1	-	4
MM 3102	Materials Characterization	3	-	-	3
MM 3103	Welding and Joining Technology	3	-	-	3
MM 3104	Corrosion Science and Engineering	3	-	-	3
MM 3151- MM 3154	Programme Elective -1(A)	3	-	-	3
MM 3105	Metal Joining and Heat Treatment Lab	-	-	2	1
MM 3106	Materials Characterization Lab	-	-	2	1
MM 3107	Corrosion Lab	-	-	2	1
MM 3108	Internship / Industrial Training	-	-	2	1
Total Hours =27		18	1	8	23
Total Credits (Cumulative)					114
Additional Subject: - National Cadet Corps (NCC)					
NC 3151	National Cadet Corps V	1	5	1	7
Total Credits (Cumulative)					21

SIXTH SEMESTER:

Course Code	Course Name	Scheme of Studies Periods per week			Credits
		L	T	P	
CS 3201	Data Structures and Algorithm	3	1	-	4
MM 3201	Metal Forming	3	1	-	4
MM 3202	Ceramic Science and Technology	3	-	-	3
MM 3203	Non-Ferrous Metal Extraction	3	-	-	3
MM 3251- MM 3254	Programme Elective-2(A)	3	-	-	3
MM 3204	Metal Forming Lab	-	-	2	1
MM 3205	Ceramics and Powder Metallurgy Lab	-	-	2	1
MM 3206	Process Metallurgy Lab	-	-	2	1
MM 3207	Project-1			4	2
Total Hours =27		15	2	10	22
Total Credits (Cumulative)					136
Additional Subject: - National Cadet Corps (NCC)					
NC 3251	National Cadet Corps VI	2	-	1	3
Total Credits (Cumulative)					24

SEVENTH SEMESTER:

Course Code	Course Name	Scheme of Studies Periods per week			Credits
		L	T	P	
HS 4101	Engineering Economics and IPR	3	-	-	3
MM 4101	Fracture and Failure Analysis	3	-	-	3
MM 4151- MM 4159	Programme Elective-3 (A)	3	-	-	3
MM 4151- MM 4159	Programme Elective-4 (A)	3	-	-	3
	Open Elective-1(C)	3	-	-	3
MM 4102	Failure Analysis Lab	-	-	2	1
MM 4103	Project Based Lab - 2	-	-	4	2
MM 4104	Industrial / Field Training	-	-	2	1
Total Hours =23		15	-	8	19
Total Credits (Cumulative)					155

EIGHTH SEMESTER:

Course Code	Course Name	Scheme of Studies Periods per week			Credits
		L	T	P	
MM 4251- MM 4259	Programme Elective-5 (A)	3	-	-	3
MM 4251- MM 4259	Programme Elective-6 (A)	3	-	-	3
MM 4201/ MM 4202	Project-2 / Internship	-	-	16	8
MM 4203	General Proficiency	-	-	-	1
Total Hours =22		6	-	16	15
Total Credits (Cumulative)					170

LIST OF PROGRAMME ELECTIVES (GROUP A)

Programme Electives 1A (5th Semester)

Course Code	Course Name
MM 3151	Polymer Engineering
MM 3152	Selection and Design of Materials
MM 3153	Advanced Steel Making
MM 3154	Functional Materials
MM 3155	Nanomaterials
MM 3156	Energy Storage Materials

Programme Electives 2A (6th Semester)

Course Code	Course Name
MM 3251	Destructive and Non-Destructive Testing
MM 3252	Composite Materials
MM 3253	Computational Material Science
MM 3254	Additive Manufacturing
MM 3255	Optical, Electronics and Magnetic Materials
MM 3256	Advanced Materials and Processes

Programme Electives 3A and 4A (7th Semester)

Course Code	Course Name
MM 4151	Physical Metallurgy of Alloy Steels
MM 4152	High Temperature Materials
MM 4153	Powder Processing of Materials
MM 4154	Hydrogen Energy: Production, Storage and Applications
MM 4155	Surface Engineering
MM 4156	Light Weight Metallic Materials
MM 4157	Non-equilibrium Processing of Materials

Programme Electives 5A and 6A (8th Semester)

Course Code	Course Name
MM 4251	Defects in Crystalline Materials
MM 4252	Biomaterials
MM 4253	Nuclear Materials
MM 4254	Extraction of Rare Earth Metals and Alloys
MM 4255	Utilization of Industrial Wastes
MM 4256	Polymer-Derived Ceramics
MM 4257	Semiconductor Devices
MM 4258	Computational Welding Mechanics