Maulana Azad National Institute of Technology, Bhopal - 462003

DEPARTMENT OF MATERIALS AND METALLURGICAL ENGINEERING

SCHEME FOR B. TECH (Materials and Metallurgical Engineering)

(2021 admitted batch onwards)

First Year Credits (Cumulative) 45

THIRD SEMESTER:

Course Code	Course Name	Scheme of Studies Periods per week			Credits
		L	T	P	
MTH 231	Mathematics-3	3	1	-	4
HUM 251	Fundamentals of Entrepreneurship	3	-	-	3
MME 211	Fundamentals of Metal Extraction	3	-	-	3
MME 212	Thermodynamics of Materials	3	-	-	3
MME 213	Physics of Materials	3	-	-	3
MME 214	Physical Metallurgy	3	-	-	3
MME 215	Metal Extraction Lab	-	-	2	1
MME 216	Metallography Lab	-	-	2	1
MME 217	Physical Property Measurement Lab	-	-	2	1
MME 218	Professional Practices	-	2	-	2
Total Hours =27		**18**	**3**	**6**	**24**
Total Credits (Cumulative)					**69**
Additional Subject: - National Cadet Corps (NCC)					
NCC 251	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	
MTH 241	Mathematics-4	3	-	-	3
ME 252	Fundamentals of Design	2	1	-	3
MME 221	Iron & Steel Making	3	1	-	4
MME 222	Mechanical Behavior of Materials	3	-	-	3
MME 223	Casting and Solidification	3	-	-	3
MME 224	Transport Phenomena	3	-	-	3
MME 225	Materials Testing Lab	-	-	2	1
MME 226	Foundry Lab.	-	-	2	1
MME 227	Project Based Lab-1	-	-	2	1
Total Hours =25		**17**	**2**	**6**	**22**
Total Credits (Cumulative)					**91**
Additional Subject: - National Cadet Corps (NCC)					
NCC 252	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 351	Engineering Management	3	-	-	3
MME 311	Phase Transformation and Heat Treatment	3	1	-	4
MME 312	Materials Characterization	3	-	-	3
MME 313	Welding and Joining Technology	3	-	-	3
MME 314	Corrosion Science and Engineering	3	-	-	3
	Programme Elective -1(A)	3	-	-	3
MME 315	Metal Joining and Heat Treatment Lab	-	-	2	1
MME 316	Materials Characterization Lab	-	-	2	1
MME 317	Corrosion Lab	-	-	2	1
MME 318	Internship / Industrial Training	-	-	2	1
Total Hours =27		**18**	**1**	**8**	**23**
Total Credits (Cumulative)					**114**
Additional Subject: - National Cadet Corps (NCC)					
NCC 351	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 352	Data Structures and Algorithm	3	1	-	4
MME 321	Metal Forming	3	1	-	4
MME 322	Ceramic Science and Technology	3	-	-	3
MME 323	Non-Ferrous Metal Extraction	3	-	-	3
	Programme Elective-2(A)	3	-	-	3
MME 324	Metal Forming Lab	-	-	2	1
MME 325	Ceramics and Powder Metallurgy Lab	-	-	2	1
MME 326	Process Metallurgy Lab	-	-	2	1
MME 327	Project-1			4	2
Total Hours =27		**15**	**2**	**10**	**22**
Total Credits (Cumulative)					**136**
Additional Subject: - National Cadet Corps (NCC)					
NCC 352	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	
HUM 451	Engineering Economics and IPR	3	-	-	3
MME 411	Fracture and Failure Analysis	3	-	-	3
	Programme Elective-3 (A)	3	-	-	3
	Programme Elective-4 (A)	3	-	-	3
	Open Elective-1(C)	3	-	-	3
MME 412	Failure Analysis Lab	-	-	2	1
MME 413	Project Based Lab - 2	-	-	4	2
MME 414	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	
	Programme Elective-5 (A)	3	-	-	3
	Programme Elective-6 (A)	3	-	-	3
MME 421/ MME 422	Project-2 / Internship	-	-	16	8
MME 423	General Proficiency	-	-	-	1
Total Hours =22		**6**	**-**	**16**	**15**
Total Credits (Cumulative)					**170**

LIST OF PROGRAMME ELECTIVES (GROUP A)

Programme Electives 1A & 2A (3rd Year)

Course Code	Course Name
MME 351	Polymer Engineering
MME 352	Destructive and Non-Destructive Testing
MME 353	Advanced Steel Making
MME 354	Welding Metallurgy
MME 355	Selection and Design of Materials
MME 356	Composite Materials
MME 357	X-ray and Electron Microscopy

Programme Electives 3A to 7A (4th Year)

Course Code	Course Name
MME 451	Additive Manufacturing
MME 452	Biomaterials
MME 453	Nuclear Materials
MME 454	Extraction of Rare Earth Metals and Alloys
MME 455	Utilization of Industrial Wastes
MME 456	Powder Processing of Materials
MME 457	Semiconductor Devices
MME 458	Advanced Ceramic Materials
MME 459	Advanced Manufacturing Technology
MME 459	Advanced Casting and Solidification
MME 460	High Temperature Materials
MME 461	Nanomaterials
MME 462	Advanced Magnetic Materials and their Applications
MME 463	Advanced Metal Forming Techniques
MME 464	Functional Materials
MME 465	Advanced Joining Technologies
MME 466	Surface Engineering
MME 467	Light Weight Metallic Materials
MME 468	Tribology
MME 469	Non-equilibrium Processing of Materials
MME 470	Advanced Materials and Processes
MME 471	Advanced Characterization Techniques
MME 472	Energy storage materials
MME 473	Plasma processing of materials
MME 474	Fuel furnaces and refractoriness
MME 475	Weld design and inspection
MME 476	Optical, Electronics and Magnetic Materials
MME 477	Physical metallurgy of alloy steels