



Maulana Azad
NATIONAL INSTITUTE OF TECHNOLOGY, Bhopal-462003

DEPARTMENT OF MECHANICAL ENGINEERING
M. Tech. in Machine Design (Full-Time)

Scheme M. Tech. (Full Time) (w.e.f.: July-2025)

First Semester

Subject Code	Subject	Schemes of studies periods per week			Total Credits
		L	T	P	
ME MD 1101	Continuum Mechanics	3	-	-	3
ME MD 1102	Advanced Dynamics of Machines	3	-	-	3
ME MD 1103	CAD and Finite Element Analysis	3	-	-	3
ME MD 1151-1155	Dept Elective-1/ NPTEL Course 1	3	-	-	3
ME MD 1161-1165	Dept Elective-2/ NPTEL Course 2	3	-	-	3
ME MD 1104	CAD Analysis and Simulation Lab.	-	-	2	1
ME MD 1105	Experimental Stress Analysis (ESA) Lab.	-	-	2	1
ME MD 1106	Seminar-I	-	-	2	1
ME MD 1107	Minor Project-1 (Self Learning)	-	-	4	2
*HS 1101	Communication Skills (Audit Course)	2	-	-	0
Total Hours: 25 Total Credits: 20		Total Semester Credits			20
*HS 1101 Communication Skills 02 Credits (Not Counted in SGPA/CGPA calculations)					

Second Semester

Subject Code	Subject	Schemes of studies periods per week			Total Credits
		L	T	P	
ME MD 1201	Design and Optimizations	3	-	-	3
ME MD 1202	Tribology and Rotor Dynamics	3	-	-	3
ME MD 1251-1255	Dept Elective-3/ NPTEL Course 3	3	-	-	3
ME MD 1261-1264	Dept Elective-4/ NPTEL Course 4	3	-	-	3
ME MD 1281-1283	Open Elective / NPTEL Course 5	3	-	-	3
ME MD 1203	Numerical Simulation Lab.	-	-	2	1
ME MD 1204	Mechatronics Lab.	-	-	2	1
ME MD 1205	Seminar-II	-	-	2	1
ME MD 1206	Minor Project-2 (Self Learning)	-	-	4	2
Total Hours: 25 Total Cumulative Credits: 40		Total Semester Credits			20

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Third Semester

Subject Code	Subject	Periods per week			Total Credits
		L	T	P	
ME MD 2101	Dissertation Phase-I	-	-	40	20
Total Hours: 40 Total Cumulative Credits: 60		Total Semester Credits			20

Fourth Semester

Subject Code	Subject	Periods per week			Total Credits
		L	T	P	
ME MD 2201	Dissertation Phase-II	-	-	40	20
Total Hours: 40 Total Cumulative Credits: 80		Total Semester Credits			20

List of Electives Courses

Course No.	Subject	Course No.	Subject
Dept Elective-1		Dept Elective-4	
ME MD 1151	Nonlinear Dynamics and Chaos	ME MD 1261	Mechanical Drives
ME MD 1152	Theory of Plates and Shells	ME MD 1262	Machine Tool Design
ME MD 1153	Design of Pressure Vessels and Pipes	ME MD 1263	Mechatronics Systems Design
ME MD 1154	Applied Elasticity and Plasticity	ME MD 1264	Computational Fluid Dynamics
ME MD 1155	Aerodynamical Structural Designs		
Dept Elective-2		Open Elective (for other departments)	
ME MD 1161	Design against Fatigue and Fracture	ME MD 1281	Material Selection in Mechanical Designs
ME MD 1162	EV System Design and Architecture	ME MD 1282	Mechanics of Composite Materials
ME MD 1163	Biomechanics and Materials	ME MD 1283	Design of Mechanical Equipment
ME MD 1164	Condition Monitoring		
ME MD 1165	Friction and Wear in Machinery		
Dept Elective-3			
ME MD 1251	Dynamics of Multibody Systems		
ME MD 1252	Design of Advanced Mechanisms		
ME MD 1253	Industrial Instrumentation and Control		
ME MD 1254	Automotive Design		
ME MD 1255	Fracture Mechanics		

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