B.Tech. (Mechanical Engineering)
Component wise distribution

Main Curriculum Components	Sub Components	Approved Credits for B.Tech.	Approved Credits Range	Proposed Credits for B.Tech. by Department	Proposed Credits Range
Institute Core Course	HSSC	5	52-58	**5**	**53**
	HSSEC	6		**6**	
	MC	3		**3**	
	BSC	12-20		**16**	
	ESC	8-20		**12**	
	DSC	4		**4**	
	ESSC	3		**3**	
	TM	4		**4**	
Program Core Course	CCCC	40-48	87-91	**44**	**90**
	AI/ML	2		**2**	
	Engg. Analysis and design (design thinking based project)/Industry Oriented Problem Solving/ Lab based Project/ Practical Problem/ Case study	4		**4**	
	Technical Communication	2		**2**	
	BTP/Entrepreneurship/ Project-based internship/PEC	6-10		**8**	
	PEC	22-26		**24**	
	TEB	6-8		**6**	
	OEC	9-12	9-12	**9-12**	**9-12**
	CORE	2	2	**2**	**2**
	Total	**150-160**		**154-157**	
	MSC/DHC	**18/20**		**18/20**	
	Grand Total			**172-174**	

DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code : 117 B.Tech. (Mechanical Engineering)
Department : ME Mechanical & Industrial Engineering

Teaching Scheme

Year	Credits in Autumn Semester	Credits in Spring Semester	Credits (Year – wise)
1	23	21	44
2	23/24	23/24	46/48
3	19/20	21/25	40/45
4	12/20	12/20	24/40
Grand Total			**154/157**
Total with MSC/DHC	With addition 18-20 credits		**172/174**

Non-Credit Elements (NCE)	Components	Maximum Units	Minimum Units	Comments
	Discipline (DIS)	**16**	**8**	To be evaluated by DoSW
	NCC/NSS/NSO	**8**	**4**	To be evaluated by DoSW
	Internship (INT)	**24**	**8**	1-week internship= 1 unit (to be coordinated by the deptt. /Centres/School)
	Participation in professional development programs by Industry experts/ field experts (PPD-1 & PPD-2)	**8**	**4**	To be coordinated by the departments/Centres/school (2^{nd}& 3^{rd} Years)
Minimum non-credit units to be earned: 24				

DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING

Program Code : 117 - B.Tech.(Mechanical Engineering)
Department : Department of Mechanical and Industrial Engineering
Year : I

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs.)		Relative Weights(%)				
S. No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
(Autumn)														
1	HSI-101	Soft Skills	HSSC	3	2	0	2	2	0	10-25	25	15-25	30-40	-
2	MAI-101	Mathematics-I	BSC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	PHI-101	Physics-I	BSC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
4	MIC-101	Programming and Data Structure	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
5	TMI-101	Tinkering and Mentoring	TMI	4 T-2	-	-	-	-	-	70	30	-	-	-
				M-2	2	0	0	2	-	50	-	-	50	-
6	MTE-103	Materials Science	ESC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
		Total		**23**										
(Spring)														
1	HSI-102	Indian Knowledge System	HSSC	2	2	0	0	2	0	20-35	-	20-30	40-50	-
2	MAI-102	Mathematics-II	BSC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	ESS-104	Environmental Science and Sustainability	ESSC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
4	EEE-102	Basic Electrical Engineering	ESC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
5	CEE-102	Mechanics of Solids	ESC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6	MIC-102	Engineering Thermodynamics	PCC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
		Total		**21**										

DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING

Program Code : 117 - B.Tech.(Mechanical Engineering)
Department : Department of Mechanical and Industrial Engineering
Year : II

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs.)		Relative Weights (%)				
S. No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
(Autumn)														
1	OEC-I	Open Elective Course-I	OEC	3/4										
2	DAI-101	Data Science	DSC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	MAB-103	Numerical Methods	BSC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4	MIC-201	Mechanical Engineering Drawing	PCC	4	2	0	4 (2*2)	3	0	15-30	20	15-25	30-40	-
5	MIC-203	Manufacturing Technology	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
6	MIC-205	Fluid Mechanics	PCC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
		Total		**23/24**										
(Spring)														
1	OEC-II	Open Elective Course-II	OEC	3/4										
2	HSSEC-I	HSS Elective Course	HSSEC	3										
3	MSI-101	Fundamentals of Management	MC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
4	MIC-202	Theory of Machines	PCC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
5	MIC-204	Energy Conversion	PCC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
6	MIC-206	Theory of Production Processes	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
7	MIT-I	Talent Enhancement Course-I	TEB	2										
		Total		**23/24**										

DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING

Program Code : 117 - B.Tech.(Mechanical Engineering)
Department : Department of Mechanical and Industrial Engineering
Year : III

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs.)		Relative Weights (%)				
S. No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
(Autumn)														
1	OEC-III	Open Elective Course-III	OEC	3/4										
2	MIC-351	Fundamentals of AI/ML	PCC	2	2	0	0	2	0	20-35	-	20-30	40-50	-
3	MIC-303	Mechanics of Materials	PCC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
4	MIC-305	Heat and Mass Transfer	PCC	4	3	1	2/2	3	0	15-30	20	15-25	30-40	-
5	MIT-II	Talent Enhancement Course-II	TEB	2										
6	MIC-391	Technical Communication	PCC	2	0	2	0			100	-	-	-	-
7	MIC-399	Community Outreach	CORE	2						100				
		Total		**19/20**										
(Spring)														
1	HSSEC-II	HSS Elective Course	HSSEC	3										
2	MIC-300	Engineering Analysis and Design(Design Thinking based project)/ Industry Oriented Problem Solving/ Lab-based Projects/ Practical Problems/ Case Study	PCC	4	0	0	8	-	-	100	-	-	-	-
3	MIC-302	Machine Design	PCC	4	3	0	2	3	0	10-25	25	15-25	30-40	-
4	MIL-I	Program Elective Course-I	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5	MIL-II	Program Elective Course-II	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6	MIT-III	Talent Enhancement Course-III	TEB	2						-	-	-	100	-
7	MSC/DHC-I	Minor Specialization Course-I / Departmental Honours Course-I	MSC/DHC	3/4										
		Total		**21/24-25**										

DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING

Program Code : 117 - B.Tech.(Mechanical Engineering)
Department : Department of Mechanical and Industrial Engineering
Year : IV

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs.)		Relative Weights (%)				
S. No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
(Autumn)														
1	MIP-400A/MIL	Project/Entrepreneurship/ Project-based Internship/PEC*	PCC/PEC*	4						100				
2	MIL-III	Program Elective Course-III	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	MIL-IV	Program Elective Course-IV	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4	MSC/DHC-II	Minor Specialization Course-II / Departmental Honours Course-II	MSC/DHC	4										
5	MSC/DHC-III	Minor Specialization Course-III / Departmental Honours Course-III	MSC/DHC	4										
		Total		**12/20**										
(Spring)														
1	MIP-400B/MIL	Project/Entrepreneurship/ Project-based Internship/PEC*	PCC/PEC*	4						100				
2	MIL-V	Program Elective Course-V	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	MIL-VI	Program Elective Course-VI	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4	MSC/DHC-IV	Minor Specialization Course-IV / Departmental Honours Course-IV	MSC/DHC	4										
5	MSC/DHC-V	Minor Specialization Course-V / Departmental Honours Course-V	MSC/DHC	4										
		Total		**12/20**										

List of Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam. Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	MIL-320	Automobile Engineering	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
2.	MIL-321	Vibration and Noise	PEC	4	3	1	2/2	3	-	15-25	15-20	15-25	30-40	-
3.	MIL-322	Principles of Lubrication Technology	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
4.	MIL-323	Design of Pressure Vessels & Piping	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
5.	MIL-324	FEM applications in Mechanical Engg.	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
6.	MIL-325	Numerical Methods in Manufacturing	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
7.	MIL-326	Value Engineering	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
8.	MIL-327	Reverse Engineering	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
9.	MIL-328	Manufacturing System Analysis	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
10.	MIL-329	Computer Integrated Manufacturing	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
11.	MIL-330	Ergonomics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
12.	MIL-331	Total Quality Management	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
13.	MIL-332	Industrial Hazards and Safety	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
14.	MIL-333	Industrial Management	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
15.	MIL-334	Facilities Design	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
16.	MIL-335	Concurrent Engineering	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
17.	MIL-336	Financial Management	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
18.	MIL-337	Processing of Non-Metals	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
19.	MIL-338	Measurement & Instrumentation	PEC	4	3	1	2/2	3	-	15-25	15-20	15-25	30-40	-
20.	MIL-339	Design of Heat Exchangers	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
21.	MIL-340	Refrigeration and Air-Conditioning	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
22.	MIL-341	Thermal Systems Design	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-

23.	MIL-342	Environmental Pollution and Control	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
24.	MIL-343	Power Plants	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
25.	MIL-344	Industrial Combustion	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
26.	MIL-345	Compressible Flow	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
27.	MIL-346	Waste Heat recovery Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
28.	MIL-349	Fire Dynamics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
29.	MIL-350	Industrial Ventilation and Air Conditioning	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
30.	MIL-351	Gas Dynamics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
31.	MIL-352	Experimental Methods in Thermal Engineering	PEC	4	3	1	2/2	3	-	15-30	20	15-30	30-40	-
32.	MIL-354	Automatic Control	PEC	4	3	1	2/2	3	-	15-30	20	15-30	30-40	-
33.	MIL-3xx	Learning from Engineering Failures	PEC	4	2	0	4	3	-	20-35	-	20-30	40-50	-
34.	MIL-3xx	Production Planning and Control	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
35.	MIL-3xx	Engineering Economy	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
36.	MIL-311	Operations Research	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
37.	MIL-310	Quality Management	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
38.	MIL-313	Work System Design	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
39.	MIL-411	Maintenance Technology for Rotating Components	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
40.	MIL-412	Vehicle Dynamics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
41.	MIL-413	Micro Electro Mechanical Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
42.	MIL-415	Piping Technology	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
43.	MIL-416	Non Linear Dynamics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
44.	MIL-417	Energy and Variational Principles in Engineering Mechanics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
45.	MIL-500	Instrumentation and Experimental Methods	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
46.	MIL-502	Robotics and Control	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
47.	MIL-508	Advanced Automatic Control	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
48.	MIL-509	Extended Finite Element Methods	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
49.	MIL-515	Manufacturing System Analysis	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
50.	MIL-516	Artificial Intelligence	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-

51.	MIL-517	Automated Materials Handling Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
52.	MIL-523	Gas Turbines &Compressors	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
53.	MIL-524	Two Phase Flow &Heat Transfer	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
54.	MIL-525	Solar Energy	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
55.	MIL-526	Advanced Gas Dynamics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
56.	MIL-527	Computational Fluid Dynamics & Heat Transfer	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
57.	MIL-528	Boundary Layer Theory	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
58.	MIL-529	Turbulent Flows	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
59.	MIL-530	Cold Preservation of Foods	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
60.	MIL-531	Hydro-dynamic Machines	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
61.	MIL-532	Renewable Energy Systems	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
62.	MIL-533	Refrigeration & Air-Conditioning System Design	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
63.	MIL-534	Air Conditioning and Ventilation	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
64.	MIL-535	Cryogenic Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
65.	MIL-536	Convective Heat and Mass Transfer	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
66.	MIL-537	l. C. Engines	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
67.	MIL-538	I. C. Engine Combustion Processes Modelling	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
68.	MIL-539	Micro and Nano Scale Thermal Engineering	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
69.	MIL-540	Combustion	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
70.	MIL-541	Bio-Fluid Mechanics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
71.	MIL-542	Energy Management	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
72.	MIL-543	Fluid Power Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
73.	MIL-544	Design of Heat Exchangers	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
74.	MIL-545	Fuel Cells	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
75.	MIL-547	Product and Process Optimization	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
76.	MIL-550	Advanced Machine Design	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
77.	MIL-551	Dynamics of Mechanical Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
78.	MIL-552	Advanced Mechanics of Solids	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
79.	MIL-553	Industrial Tribology	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-

80.	MIL-554	Computer Aided Mechanism Design	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
81.	MIL-555	Experimental Stress Analysis	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
82.	MIL-556	Dynamics of Road Vehicles	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
83.	MIL-557	Finite Element Methods	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
84.	MIL-558	Fracture Mechanics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
85.	MIL-559	Computer Aided Design	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
86.	MIL-560	Mechanics of Composite Materials	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
87.	MIL-561	Advanced Mechanical Vibrations	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
88.	MIL-562	Noise Control in Mechanical Systems	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
89.	MIL-563	Mechatronics	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
90.	MIL-565	Smart Materials, Structures, and Devices	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
91.	MIL-566	Computer Aided Analysis of Mechanical Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
92.	MIL-567	Computer Graphics	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
93.	MIL-568	Advanced Robotics	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
94.	MIL-569	Expert System Design	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
95.	MIL-572	Advanced manufacturing Process	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
96.	MIL-573	Design for Manufacturability	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
97.	MIL-574	Maintenance Management	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
98.	MIL-575	Product Design and Development	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
99.	MIL-576	Machine Tool Design and Numerical Control	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
100.	MIL-577	Industrial Automation	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
101.	MIL-578	Computer Aided Process Planning	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
102.	MIL-579	Information Systems and Data Management	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
103.	MIL-580	Welding Science	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
104.	MIL-581	Manufacturing Resources Management	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
105.	MIL-582	Flexible Manufacturing Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
106.	MIL-583	Materials Management	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
107.	MIL-584	Operations Research	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
108.	MIL-585	Supply Chain Management	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-

109.	MIL-586	Metal Forming	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
110.	MIL-587	Metal Casting	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
111.	MIL-588	Non-Traditional Machining Processes	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
112.	MIL-593	Non-Conventional Welding Processes	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
113.	MIL-594	Safety Aspects of Welded Structures	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
114.	MIL-595	Failure Analysis of Welding Joints	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
115.	MIL-596	Automation & Application of Robots in Welding	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
116.	MIL-597	Welding Procedures for Specific Applications	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
117.	MIL-598	Weldability of Metals	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
118.	MIL-599	Surface Engineering	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
119.	MIL-601	Additive manufacturing	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
120.	MIL-602	Bond Graph Modelling of Engineering Systems	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
121.	MIL-603	Finite Element Method for Thermal Engineering	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
122.	MIL-604	Fire Dynamics	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
123.	MIL-605	Friction and wear	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
124.	MIL-606	Numerical Methods in Manufacturing	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
125.	MIL-607	Processing of non-metals	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
126.	MIL-608	Fatigue in Structures & Materials	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
127.	MIL-609	Solid state joining processes.	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
128.	MIL-610	Laser Material Processing	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
129.	MIL-611	Nanomechanics to Multiscale Modeling	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
130.	MIL-612	Hydrodynamic Stability	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
131.	MIL-613	Fusion Joining Technologies	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
132.	MIL-614	Solid State Joining Technologies	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
133.	MIL-615	Material Characterization & Testing	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
134.	MIL-621	Instrumentation and Experimental Methods	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
135.	MIL-622	Metallurgical Aspects in Joining and Additive Manufacturing	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
136.	MIL-623	Inspection and Testing for Quality Assurance	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
137.	MIL-624	Design and Analysis of Joints	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-

138.	MIL-625	Safety Analysis of Metallic Joints	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
139.	MIL-626	Failure Analysis and Prevention	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
140.	MIL-627	Hybrid Joining Technologies	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
141.	MIL-628	FEM for Manufacturing Processes	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
142.	MIL-629	Reverse Engineering and Rapid Tooling	PEC	4	3	1	2/2	3	-	15-30	20	15-25	30-40	-
143.	MIL-630	Residual Stress and Distortion	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
144.	MIL-631	Dissimilar Metal Joining	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
145.	MIL-6xx	Aircraft Propulsion	PEC	4	3	1	0	3	-	20-35	-	20-30	40-50	-
146.	MIL-6xx	Isogeometric Analysis	PEC	4	3	0	2	3	-	15-30	20	15-25	30-40	-

List of Talent Enhancement Course

(3 courses of 2 credits each: Total 06 credits)

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	**Course Code**	**Course Title**	**Area**	**Cr.**	**L**	**T**	**P**	**Th.**	**Pr.**	**CWS**	**PRS**	**MTE**	**ETE**	**PRE**
TEB-A (DESIGN)														
1	MIT-101	Solid Modelling	TEB	2	0	0	4	-	-	-	50	-	-	50
2	MIT-102	CAE	TEB	2	0	0	4	-	-	-	50	-	-	50
3	MIT-103	Design Optimization	TEB	2	0	0	4	-	-	-	50	-	-	50
TEB-B (ADDITIVE MANUFACTURING)														
1	MIT-104	Solid Modeling & Reverse Engineering	TEB	2	1	0	2	-	-	-	50	-	-	50
2	MIT-105	Data Processing for Additive Manufacturing	TEB	2	1	0	2	-	-	-	50	-	-	50
3	MIT-106	Rapid Prototyping	TEB	2	1	0	2	-	-	-	50	-	-	50
TEB-C (INDUSTRIAL AUTOMATION)														
1	MIT-107	Introduction to Automation	TEB	2	1	1	0		-	25	-	25	50	-
2	MIT-108	System Integration	TEB	2	1	0	2	-	-	-	50	-	-	50
3	MIT-109	Cloud Computing	TEB	2	1	0	2	-	-	-	50	-	-	50
TEB-D (WELDING ENGINEERING)														
1	MIT-110	Design Guidelines for Welding	TEB	2	1	0	2	-	-	-	50	-	-	50
2	MIT-111	Advanced Welding Processes	TEB	2	1	0	2	-	-	-	50	-	-	50
3	MIT-112	Quality Assurance in Weldments	TEB	2	1	0	2	-	-	-	50	-	-	50

TEB-E (COMPUTATIONAL THERMO-FLUIDS)														
1	MIT-113	Basics of Computational Thermo-fluids	TEB	2	2	0	0	-	-	20-35	-	20-30	40-50	-
2	MIT-114	Thermofluid Simulation Software	TEB	2	1	0	2	-	-	-	50	-	-	50
3	MIT-115	Problem based Learning with Simulation Tools	TEB	2	0	0	4	-	-	-	50	-	-	50
TEB-F (MEASUREMENT IN THERMAL SYSTEMS)														
1	MIT-116	Basics of Measurements	TEB	2	2	0	2/2	-	-	-	50	-	-	50
2	MIT-117	Data Acquisition and Analysis	TEB	2	1	0	2	-	-	-	50	-	-	50
3	MIT-118	Instrumentation and measurement techniques	TEB	2	2	0	2/2	-	-	-	50	-	-	50
TEB-G (FLUID MACHINERY & FLUID POWER)														
1	MIT-119	Introduction to Fluid Machines and Fluid Power	TEB	2	2	0	0	-	-	20-35	-	20-30	40-50	-
2	MIT-120	Hydrodynamic Machines	TEB	2	2	0	2/2	-	-	-	50	-	-	50
3	MIT-121	Fluid Power Systems	TEB	2	2	0	0	-	-	20-35	-	20-30	40-50	-
TEB-H (HVAC)														
1	MIT-122	Fundamentals of HVAC	TEB	2	2	0	2/2	-	-	-	50	-	-	50
2	MIT-123	HVAC Systems and Equipment	TEB	2	1	0	2	-	-	-	50	-	-	50
3	MIT-124	HVAC Applications	TEB	2	1	0	2	-	-	-	50	-	-	50

Minor Specialization Courses

SN	Course Code	Course Name	Credits	Semester
1.	MIC-102	Engineering Thermodynamics	4	Spring
2.	MIC-201	Mechanical Engineering Drawing	4	Autumn
3.	MIC-203	Manufacturing Technology	4	Autumn
4.	MIC-205	Fluid Mechanics	4	Autumn
5.	MIC-202	Theory of Machines	4	Spring
6.	MIC-204	Energy Conversion	4	Spring
7.	MIC-206	Theory of Production Processes	4	Spring
8.	MIC-303	Mechanics of Materials	4	Autumn
9.	MIC-305	Heat and Mass Transfer	4	Autumn
10.	MIC-302	Machine Design	4	Spring

Departmental Honors Courses

All PG/pre-Ph. D. courses of Department of Mechanical and Industrial Engineering