

B.Tech. - Mechanical Engineering

Course Structure

FIRST SEMESTER

Sr. No.	Course Code	Department	Title	Contact Hours				Credits
				L	T	P	Total	
1.	MA102	MATHS	Engineering Mathematics - 1	3	1	-	4	4
2.	PH101	PHY	Engineering Physics-1	3	1	-	4	4
3.	HS101	HSS	English	2	1	-	3	3
4.	CS101	CSE	Computer Programming	3	1	-	4	4
5.	PH201	PHY	Engineering Physics Lab-1	-	-	2	2	1
6.	CS201	CSE	Computer Programming Lab	-	-	4	4	2
7.	ME201	ME	Workshop Practices	-	-	3	3	1.5
8.	HS001	HSS	Value Added Course (Human Values and Professional Ethics)	2	-	-	2	2 (Audit Qualifying)
			TOTAL				26	19.5

SECOND SEMESTER

Sr. No.	Course Code	Department	Title	Contact Hours				Credits
				L	T	P	Total	
1.	HS104	HSS	Life Skills and Effective Communication	1	1	-	2	2
2.	MA103	Maths	Engineering Mathematics-2	3	1	-	4	4
3.	CH101	Chemistry	Engineering Chemistry	3	1	-	4	4
4.	EC102	ECE	Electrical Circuit Analysis	3	1	-	4	4
5.	ME101	ME	Engineering Mechanics	3	1	-	4	4
6.	CH201	Chemistry	Engineering Chemistry Lab	-	-	2	2	1
7.	EC202	ECE	Electrical Circuit Analysis Lab	-	-	2	2	1
8.	ME202	ME	Engineering Mechanics Lab	-	-	2	2	1
9.	ME203	ME	Engineering Drawing and Design Lab			3	3	1.5
10.			Value Added Course	2	-	-	2	2 (Audit)
			TOTAL				29	22.5

***Students will undergo Summer Training of 4 weeks during vacation after IInd Semester (Optional).**

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THIRD SEMESTER

Sr. No.	Course Code	Department	Title	Contact Hours				Credits
				L	T	P	Total	
1.	ME102	ME	Basic Thermodynamics	3	1	-	4	4
2.	ME103	ME	Strength of Materials	3	1	-	4	4
3.	ME104	ME	Manufacturing Technology-1	3	1	-	4	4
4.	ME105	ME	Theory of Machines	3	1	-	4	4
5.	HS102	HSS	Managerial Economics	2	1	-	3	3
6.	ME204	ME	Basic Thermodynamics Lab	-	-	2	2	1
7.	ME205	ME	Strength of Materials Lab	-	-	2	2	1
8.	ME206	ME	Manufacturing Technology Lab-1	-	-	2	2	1
9.	ME207	ME	Theory of Machines Lab	-	-	2	2	1
10.	ME001	ME	Introduction to Materials and Metallurgy	2	0	0	2	2 (Audit)
11.	CS001	CSE	Python Programming	0	0	2	2	2 (Audit)
12.		HSS	Value Added Course	2	-	-	2	2 (Audit)
		ME	Internship/Summer Training (4 weeks - 160-180 hours)	-	-	-	-	4 (Audit, Optional)
			TOTAL				33	23

FOURTH SEMESTER

Sr.No.	Course Code	Department	Title	Contact Hours				Credits
				L	T	P	Total	
1.		HSS	HSS Elective - 1	2	1	-	3	3
2.	MA105	Maths	Numerical Methods	3	1	-	4	4
3.	ME106	ME	Fluid Mechanics	3	1	-	4	4
4.	ME107	ME	Manufacturing Technology-2	3	1	-	4	4
5.	GE101	GE	Environmental Science	2	-	-	2	2 (Audit Qualifying)
6.	ME208	ME	Fluid Mechanics Lab	-	-	2	2	1
7.	ME209	ME	Manufacturing Technology Lab-2	-	-	2	2	1
			TOTAL				21	17

***Students will undergo Summer Training of 4 weeks during vacation after IVth Semester (compulsory).**

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FIFTH SEMESTER

Sr. No.	Course Code	Department	Title	Contact Hours				Credits
				L	T	P	Total	
1.		HSS	HSS Elective-2	3		-	3	3
2.	ME108	ME	Applied Thermodynamics	3		-	3	3
3.	ME109	MEC	Computer Aided Design (CAD)/ Computer Aided Manufacturing (CAM)	3	1	-	4	4
4.	ME210	ME	Applied Thermodynamics Lab	-	-	2	2	1
5.	ME211	MEC	Computer Aided Design (CAD)/ Computer Aided Manufacturing (CAM) Lab	-	-	2	2	1
6.	ME212	ME	Machine Drawing and Drafting Lab	-	-	2	2	1
7.	ME213	ME	Minor Project – 1			4	4	2
8.			Science Elective	3	-	-	3	3
9.		ME	Discipline Elective -1	3	-	-	3	3
10.		ME	Value Added Course	2	-	-	2	2 (Audit)
11.		ME	Internship/Summer Training (4 weeks - 160-180 hours)	-	-	-	-	4 (Audit, Qualifying)
			TOTAL				28	21

SIXTH SEMESTER

Sr. No.	Course Code	Department	Title	Contact Hours				Credits
				L	T	P	Total	
1.	ME110	ME	Design of Machine Elements	3		-	3	3
2.	ME111	ME	Industrial Engineering	3			3	3
3.	ME112	ME	IC Engine and Electrical Power Plants for Automobiles	3	1	-	4	4
4.	ME214	ME	Design of Machine Elements Lab	-	-	2	2	1
5.	ME215	ME	Internal Combustion Engine Lab	-	-	2	2	1
6.	ME216	ME	Minor Project-2	-	-	6	6	3
7.		ME	Discipline Elective – 2	3	-	-	3	3
8.		ME	Discipline Elective - 3	3	-	-	3	3
9.		ME	Value Added Course	2	-	-	2	2 (Audit)
10.	HS004	HSS	Value Added Course (Indian Constitution and Traditional Knowledge)	2	0	0	2	2 (Audit) Qualifying
			TOTAL				30	21

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Note: Students will undergo 6 weeks Industrial Training during Summer Vacation after 6th Semester (Compulsory).

SEVENTH SEMESTER

Sr.No.	Course Code	Department	Title	Contact Hours				Credits
				L	T	P	Total	
1.		ME	Discipline Elective – 4	3			3	3
2.		ME	Discipline Elective – 5	3			3	3
3.		ME	Discipline Elective - 6	3	-	-	3	3
4.			Open Elective - 1	3		-	3	3
5.	ME217	ME	Major Project Part-1	-	-	8	8	4
6.		ME	Internship/Summer Training (6 weeks - 240-270 hours)	-	-	-	-	6 (Audit Qualifying)
			TOTAL				20	16

EIGHTH SEMESTER

Sr.No.	Course Code	Department	Title	Contact Hours				Credits
				L	T	P	Total	
1.		ME	Discipline Elective – 7	3			3	3
2.		ME	Discipline Elective - 8	3			3	3
3.		Engg Branch	Open Elective -2	3		-	3	3
4.	ME218	ME	Major Project Part-2	-	-	16	16	8
			TOTAL				25	17

Total Credits for B. Tech. –160 (Value Added Courses/Audit courses will not be counted for CGPA calculations).

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Type of Elective	Subject code	Subject name
Science Elective	ME301	Material Science
	ME302	Metal Forming Science
Discipline Elective (DE)- 1	ME303	Advanced Manufacturing Processes
	ME304	Advanced Metal Casting and NDT
	ME305	Maintenance Engineering
	ME306	Engineering Data Analytics
Discipline Elective (DE)- 2	ME307	Advanced Mechanics of Solids
	ME308	Measurement and Metrology
	ME309	Turbomachinery
	ME310	Computational Fluid Dynamics
Discipline Elective (DE)- 3	ME311	Operations Research
	ME312	Laser Material Processing
	ME313	Power Plant Engineering
Discipline Elective (DE)- 4	ME314	Finite Element Technique
	ME315	Production Planning and Control
	ME316	Additive Manufacturing
Discipline Elective (DE)- 5	ME317	Statistical Quality Control
	ME318	Gas Turbines and Jet Propulsion
	ME319	Introduction to Design of Experiments
	ME320	Production and Operation Management
	ME321	Fracture Mechanics
	ME322	Smart Manufacturing
Discipline Elective (DE)- 6	ME323	Composite Materials
	ME324	Vibration and Noise Control
	ME325	Automobile Engineering
	ME326	Biofluid Mechanics
Discipline Elective (DE)- 7	ME327	Design of Heat Exchangers
	ME328	Flexible Manufacturing Systems
	ME329	Mechatronics and Automation
	ME330	Optimization Methods in Engineering
	ME331	Supply Chain Management
	ME332	Experimental Stress Analysis
	ME333	Energy Management and Audit
	ME334	Processing of Non-Metals
	ME335	Plant Layout and Material Handling

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Discipline Elective (DE)- 8	ME336	Unconventional Energy Resources
	ME337	Machine Tool Design
	ME338	Reliability Engineering
	ME339	Microrobotics
Open Electives		
Open Elective (OE)- 1	ME340	Smart Materials
	ME341	Desalination Techniques
	ME342	Agile and Lean Manufacturing
	ME343	Rapid Cooling Systems
	ME344	Micro Electro Mechanical Systems (MEMS)
Open Elective (OE)- 2	ME345	Energy Management Principles
	ME346	Six Sigma
	ME347	Fault Diagnosis using Signal Processing
	ME348	Applications of Composite Materials
	ME349	Engineering System Modeling and Simulation
	ME350	3D Printing

HSS Electives:

1. Concept of Financial Management: HS302
2. Knowledge Management: HS303
3. Concept of Digital Marketing: HS304
4. Concept of Marketing Management: HS306

Value Added Course

1. Human Values and Professional Ethics: HS001
2. Professional communication Practice: HS002
3. Concept of Project Management: HS003
4. Indian Constitution & Traditional Knowledge: HS004
5. Verbal and non-verbal reasoning-1: ME002
6. Verbal and non-verbal reasoning-2: ME003
7. Introduction to Engineering Simulations : ME005
8. Introduction to Automation : ME006
9. Introduction to Mechatronics: ME007
10. Introduction to 3d Printing : ME008

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Specialization offered by Mechanical Engg. dept. with ECE dept. (for ECE and MEC students):

Industrial Automation

S. No.	Course Code	Dept.	Title of Course	Contact Hours				Credits	Sem.
				L	T	P	Total		
1	EC334	ECE	Transducers Engineering	3	0	0	3	3	IV
2	EC401	ECE	Transducers Engineering Lab	0	0	2	2	1	IV
3	MEC350	MEC	Robotics	3	0	0	3	3	V
4	EC335/ EC340	ECE	Digital Control System (for ECE students) /Microprocessors based Control System (For MEC students)	3	0	0	3	3	V
5	ME401	MEC	Robotics/CIM Lab	0	0	2	2	1	V
6	ME351	MEC	Industrial Automation	3	0	0	3	3	VI
7	ME352	MEC	Control of Industrial Automation	3	0	0	3	3	VI
8	ME353	MEC	Special Purpose Vehicle	3	0	0	3	3	VII
			Total				22	20	

Specialization offered by Mechanical Engg. Dept. with ECE dept. (for ECE and MEC students):

Mechatronics

S. No.	Course Code	Dept.	Title of Course	Contact Hours				Credits	Sem.
				L	T	P	Total		
1	EC334	ECE	Transducers Engineering	3	0	0	3	3	IV
2	EC401	ECE	Transducers Engineering Lab	0	0	2	2	1	IV
3	ME354	MEC	Vehicle Dynamics	3	0	0	3	3	V
4	ME355	MEC	Computer Integrated Manufacturing	3	0	0	3	3	V
5	ME402	MEC	CIM Lab	0	0	2	2	1	V
6	ME356	MEC	Control of Mechanical System	3	0	0	3	3	VI
7	EC335	ECE	Micro-controller and Embedded System	3	0	0	3	3	VI
8	ME357	MEC	Automated Guided Vehicles	3	0	0	3	3	VII
			Total				22	20	