

B. Tech in Mechanical Engineering (Som Committee)

Semester – 1

#	Course Code	Number	Name	L	T	P	Credit
1.	IC-1		Mathematics – I	3	1	0	4
2.	IC-2		Physics	3	1	0	4
3.	IC-3	ME10701	Mechanics	3	1	0	4
4.	IC-4		Electrical Technology	3	1	0	4
5.	IL-1	ME19701	Introduction to Engineering Practice/ Introduction to Manufacturing Processes	0	0	3	2
6.	IL-2		Physics Lab	0	0	3	2
7.	IL-3		Electrical Tech Lab	0	0	3	2
8.	IP-1		EAA – 1	0	0	3	0
9.			Total	12	4	12	22

Semester – 2

#	Course Code	Number	Name	L	T	P	Credit
1.	IC-5		Mathematics – 2	3	1	0	4
2.	IC-6		Chemistry	3	1	0	4
3.	IC-7		English	3	0	2	4
4.	IC-8		Programming & Data Structure	3	1	0	4
5.	IL-4		Chemistry Lab	0	0	3	2
6.	IL-5		PDS Lab	0	0	3	2
7.	IL-6		Engineering Drawing & Computer Graphics	1	0	3	3
8.	IP-2		EAA – 2	0	0	3	0
9.			Total	13	3	14	23

Semester – 3

#	Course Code	Number	Name	L	T	P	Credit
1.	IC - 9		Mathematics – Transform Calculus	3	0	0	3
2.	D1		Economics (HSS as Dept Core)	3	1	0	4
3.	D2	ME20703	Dynamics	3	1	0	4
4.	D3	ME20701	Fluid Mechanics	3	1	0	4
5.	B1/IC12		Bio-Science	2	0	0	2
6.	B1/IC13		Environmental Science	2	0	0	2
7.	L1	ME29701	Workshop Process – II	0	0	3	2
8.	IP-3		EAA – 3	0	0	3	0
9.			Total	16	3	6	21

Semester – 4

#	Course Code	Number	Name	L	T	P	Credit
1.	IC – 10		Mathematics – PDE	3	0	0	3
2.	IC – 11		Basic Electronics	3	1	0	4
3.	D4	ME20702	Thermodynamics	3	1	0	4
4.	D5	ME20704	Kinematics of Machines	3	0	0	3
5.	B2		Breadth – 1 (IT/Sc./Ent/IPL)	3	0	0	3
6.	IL-7		Basic Electronics Lab	0	0	3	2
7.	L2	ME29702	Mechanism Sessional	0	0	3	2

8.	IP-4		EAA – 4	0	0	3	0
9.			Total	15	2	9	21

Semester – 5

#	Course Code	Number	Name	L	T	P	Credit
1.	D6	ME30701	Mechanics of Solids	3	1	0	4
2.	D7		Materials Engineering	3	0	0	3
3.	D8	ME30705	Heat Transfer	3	1	0	4
4.	D9	ME30703	Casting, Forming & Welding	3	1	0	4
5.	B3		Breadth – 2 (HSS)	3	0	0	3
6.	L3	ME39701	Mechanics of Solids Lab	0	0	3	2
7.	L4	ME39703	Casting, Welding & Forming Lab	0	0	3	2
8.			Total	15	3	6	22

Semester – 6

#	Course Code	Number	Name	L	T	P	Credit
1.	D10	ME30708	Dynamics of Machines	3	1	0	4
2.	D11	ME30702	Applied Thermo- Fluids – I	3	1	0	4
3.	D12	ME30706	Design of Machine Elements	3	1	0	4
4.	D13	ME30704	Machine Tool & Machining	3	1	0	4
5.	L5	ME39702	Thermo-Fluids Lab – 1	0	0	3	2
6.	L6	ME39704	Machine Tool & Machining Lab (MTM + Metrology)	0	0	3	2
7.	L7	ME39706	Machine Design Practice	0	0	3	2
8.			Total	12	4	9	22
9.							

Semester – 7

#	Course Code	Number	Name	L	T	P	Credit
1.	D14	ME40701	Applied Thermo-Fluids – 2	3	2	0	5
2.	D15	ME40703	Systems & Controls	3	1	0	4
3.	E1		Elective – 1	3	0	0	3
4.	E2		Elective – 2 (Open)	3	0	0	3
5.	L8	ME49701	Thermo-Fluids Lab – 2	0	0	3	2
6.	ST	ME48701	Summer Training	0	0	0	2
7.	P1	ME47701	Project – Part 1	0	0	6	4
8.			Total	12	3	9	23

Semester – 8

#	Course Code	Number	Name	L	T	P	Credit
1.	E3		Elective – 3	3	0	0	3
2.	E4		Elective – 4	3	0	0	3
3.	E5		Elective – 5	3	0	0	3
4.	E6		Elective – 6 (Open)	3	0	0	3
5.	B4		Breadth – 3 (MNGT)	3	0	0	3
6.	CV	ME46701	Comprehensive Viva	0	0	0	2

7.	P2	ME47702	Project – Part 2	0	0	9	6
8.			Total	15	0	9	23

Semester	Credit	Contact Hours
1	22	28
2	23	30
3	21	25
4	21	26
5	22	24
6	22	25
7	23	24
8	23	24
Total	177	206

Open Elective can be taken, **only if** CGPA \geq 8.0 **and if** one is registered for Minor **else** from the departmental list

Last Open Elective can be taken, **only if** CGPA \geq 8.0 **else** from the departmental list

Minor Requirements in Mechanical Engineering

Six subjects and one lab are to be chosen from the following three groups to earn a minor in Mechanical Engineering with at least one subject from each group.

- Total Credit Requirement – Minimum 25

Number	Subject	L-T-P	CREDIT
GROUP A			
ME30703	Casting Forming & Welding	3-1-0	4
ME30704	Machine Tool & Machining	3-1-0	4
ME39703	Casting Forming & Welding Lab	0-0-3	2
GROUP B			
ME20701	Fluid Mechanics	3-1-0	4
ME20702	Thermodynamics	3-1-0	4
ME30705	Heat Transfer	3-1-0	4
ME30702	Applied Thermo-Fluids – I	3-1-0	4
ME40701	Applied Thermo-Fluids – II	3-1-0	4
ME39702	Thermo-Fluids Lab – 1	0-0-3	2
ME49701	Thermo-Fluids Lab – 2	0-0-3	2
GROUP C			
ME20703	Dynamics	3-1-0	4
ME20704	Kinematics of Machines	3-0-0	3
ME30701	Mechanics of Solids	3-1-0	4
ME30708	Dynamics of Machines	3-1-0	4
ME30706	Design of Machine Elements	3-1-0	4
ME40703	Systems & Controls	3-1-0	4
ME39701	Mechanics of Solids Lab	0-0-3	2
ME30706	Machine Design Practice	0-0-3	2

Minor Requirements in Mechanical Engineering
for Students of Manufacturing Science and Engineering

Any three subjects from Group – A, any three subjects from Group - B and one lab from Group – C are to be chosen to earn a minor in Mechanical Engineering

- Total Credit Requirement – Minimum 23

Number	Subject	L-T-P	CREDIT
	GROUP A		
ME20706	Thermo-Fluid Science	3-1-0	4
ME30708	Dynamics of Machines	3-1-0	4
ME30702	Applied Thermo-Fluids – I	3-1-0	4
ME40701	Applied Thermo-Fluids – II	3-1-0	4
	GROUP B		
ME41701	Design Optimisation	3-0-0	3
ME60110	Mechanical Drives	3-1-0	4
ME41705	Soft Computing	3-0-0	3
ME41707	Vibration and Noise Control	3-0-0	3
ME41719	Simulation of Mechanical Systems	3-0-0	3
ME41711	Air Conditioning	3-0-0	3
ME60138	CFD in Manufacturing Processes	3-1-0	4
ME41718	Micro-scale fluid flow and heat transfer	3-0-0	3
ME41714	Turbo Machinery	3-0-0	3
ME41706	Finite Element Methods in Engineering	3-0-0	3
ME60102	Fluid Drive and Control	3-1-0	4
ME41704	Modern Control Theory	3-0-0	3
	GROUP C		
	Thermo-Fluids Lab – 1	0-0-3	2
	Thermo-Fluids Lab – 2	0-0-3	2

Elective List

Elective – 1 – 7 th Semester			Prerequisite
ME60201	Advanced Fluid Mechanics	3-1-0	Heat Transfer
ME60073	Computational Methods in Thermal Engineering	3-1-0	Heat Transfer
ME41701	Design Optimisation	3-0-0	Design of M/c Elements
ME41703	Quality Assurance and Reliability	3-0-0	Machine Tool & Machining
ME60146	Environmental Pollution and Abatement	3-1-0	Heat Transfer
ME60102	Fluid Drive and Control	3-1-0	
ME41705	Soft Computing	3-0-0	Open
ME41707	Vibration and Noise Control	3-0-0	Design of M/c Elements
ME60021	Advanced Mechanics of Solids	3-1-0	Design of M/c Elements
IM	<i>Production Planning & Control</i>		<i>Ref. to parent dept.</i>
IM	<i>Management of Inventory Systems</i>		<i>Ref. to parent dept.</i>
	Special Topics in Thermal Sciences		
	Special Topics in Applied Mechanics		
	Special Topics in Manufacturing Sciences		
MT	<i>Phase Transformation & Heat Treatment of Materials</i>	3-1-0	<i>Materials Engineering</i>
MT	<i>POWDER METALLURGY</i>	3-0-0	<i>Ref. to parent dept.</i>

Elective – 2 – 7 th Semester			Prerequisite
ME41711	Air Conditioning	3-0-0	Heat Transfer
ME41713	Computer Graphics & Solids Modelling	3-0-0	Open
ME60071	Fatigue, Creep & Fracture	3-1-0	Design of M/c Elements
ME41715	Mechanical Handling Systems & Equipments	3-0-0	Design of M/c Elements
ME41719	Simulation of Mechanical Systems	3-0-0	Design of M/c Elements
ME60023	Applied Elasticity and Plasticity	3-1-0	Design of M/c Elements
ME60075	Machinery Fault Diagnostics & Signal Processing	3-1-0	Design of M/c Elements
IM	<i>OR – I</i>		<i>Ref. to parent dept.</i>
IM	<i>Engineering Economy Costing & Accounting</i>		<i>Ref. to parent dept.</i>
ME60209	Nuclear Power Generations & Safety	3-1-0	Heat Transfer
	<i>+ Open Electives</i>		
	Special Topics in Thermal Sciences		
	Special Topics in Applied Mechanics		
	Special Topics in Manufacturing Sciences		
MT	Mechanical working of Materials	3-0-0	<i>Ref. to parent dept.</i>
MT	Corrosion & environmental degradation	3-1-0	<i>Materials Engineering</i>

Elective – 3 – 8 th Semester			Prerequisite
ME60088	Compressible Flow	3-1-0	Heat Transfer
ME60110	Mechanical Drives	3-1-0	
ME41702	Metal Casting Technology	3-0-0	Casting Welding & Forming
MF30704	Non-Traditional Manufacturing Processes	3-0-0	Machine Tool & Machining
ME41704	Modern Control Theory	3-0-0	Systems & Control
ME60300	Introduction to Human Body Mechanics	3-1-0	Mechanics + (Fluid Mechanics or Thermo-fluid Sc.)
ME60024	Tribology	3-1-0	Design of M/c Elements
<i>IM</i>	<i>Production Design & Process Planning</i>		<i>Ref. to parent dept.</i>
<i>IM</i>	<i>Simulation</i>		<i>Ref. to parent dept.</i>
	Special Topics in Thermal Sciences		
	Special Topics in Applied Mechanics		
	Special Topics in Manufacturing Sciences		
<i>MT</i>	Materials Characterisation	3-0-0	<i>Ref. to parent dept.</i>
<i>MT</i>	<i>Deformation Behaviour of Materials</i>	3-0-0	<i>Materials Engineering</i>

Elective – 4 – 8 th Semester			Prerequisite
ME60104	Composite Materials	3-1-0	Design of M/c Elements
ME41706	Finite Element Methods in Engineering	3-0-0	Solid Mechanics
ME41708	Laser Applications in Manufacturing	3-0-0	Non-Trad. Manuf. Process
ME41710	Non-destructive Evaluation and Imaging	3-0-0	Machine Tool & Machining
ME41712	Quantity Production Methods	3-0-0	Machine Tool & Machining
ME60208	Solar Energy Technology	3-1-0	Heat Transfer
ME41714	Turbo Machinery	3-0-0	Heat Transfer
<i>IM</i>	<i>Work Systems Design</i>		<i>Ref. to parent dept.</i>
	Special Topics in Thermal Sciences		
	Special Topics in Applied Mechanics		
	Special Topics in Manufacturing Sciences		
<i>MT</i>	X-Ray & Electron Microscopy	3-1-0	<i>Ref. to parent dept.</i>

Elective – 5 – 8 th Semester			Prerequisite
ME60206	Advanced Engineering Thermodynamics	3-1-0	Heat Transfer
ME41716	Automobile Engineering	3-0-0	Design of M/c Element
ME60204	Computational Fluid Dynamics	3-1-0	Heat Transfer
ME41718	Micro-scale fluid flow and heat transfer	3-0-0	Heat Transfer
MF30702	Robots and Computer-Controlled Machines	4-0-0	Machine Tool & Machining
ME60210	Theory of Combustion and Emissions	3-1-0	Heat Transfer
ME41720	Welding Technology	3-0-0	Casting Welding & Forming
	Special Topics in Thermal Sciences		
	Special Topics in Applied Mechanics		
	Special Topics in Manufacturing Sciences		
<i>MT</i>	NANOSTRUCTURED MATERIALS	3-0-0	<i>Ref. to parent dept.</i>

Elective – 6 – 8 th Semester			Prerequisite
ME60138	CFD in Manufacturing Processes	3-1-0	Heat Transfer+ Casting Welding & Forming+ Machine Tool & Machining
ME60014	Convective Heat and Mass Transfer	3-1-0	Heat Transfer
ME60214	Energy Conservation and Waste Heat Recovery	3-1-0	Heat Transfer
ME41722	Engineering Metrology	3-0-0	Machine Tool & Machining
ME41724	Experimental Stress Analysis	3-0-0	Design of Machine Elements
ME41726	Machine Tool Engineering	3-0-0	Machine Tool & Machining
ME41728	Technology of Surface Coating	3-0-0	Machine Tool & Machining
ME60212	Turbulent Flows	3-1-0	FLUID MECHANICS
<i>IM</i>	<i>OR – II</i>		<i>Ref. to parent dept.</i>
	<i>+ Open Electives</i>		
	Special Topics in Thermal Sciences		
	Special Topics in Applied Mechanics		
	Special Topics in Manufacturing Sciences		
<i>MT</i>	CERAMIC MATERIALS	3-0-0	<i>Ref. to parent dept.</i>
<i>MT</i>	METALLURGICAL FAILURE ANALYSIS	3-0-0	<i>Ref. to parent dept.</i>