Course Structure for B.Tech. Mechanical Engineering Programme

FIRST YEAR

Total Credit (First Year): 49

S. No	Type	Course Code	Course Title	L	T	P	Contact Hrs/wk	Credits
SEMESTER I								
1	Theory	MTH11501	Engineering Mathematics-I	3	1	0	4	4
2	Theory	PHY11201	Applied Science	3	0	0	3	3
3	Theory	CSE11001/ GEE11001	Introduction to Programming /Electrical and Electronics Technology	3	0	0	3	3
4	Theory	ENG11053	HSSM –I (English Communication-I)	3	0	0	3	3
5	Theory	BIT11003	Life Sciences	3	0	0	3	3
6	Practical	PHY12202	Applied Science Lab	0	0	3	3	2
7	Practical	CSE12002/ GEE12002	Programming Lab/ Electrical and Electronics Technology Lab	0	0	3	3	2
8	Practical	CEE12001/ MEE12001	Engineering Drawing and CAD/ Engineering Workshop	0	0	3	3	2
9	Practical	ENG12043	Communication and Collaboration Skill -I	0	0	2	2	1
10	Practical	GEE14003	Capstone Project-I	0	0	2	2	1
11	Practical	DGS11001	Design Thinking	2	0	0	2	2
			Total	**17**	**1**	**13**	**31**	**26**

S. No	Type	Course Code	Course Title	L	T	P	Contact Hrs/wk	Credits
SEMESTER II								
1.	Theory	MTH11502	Engineering Mathematics– II	3	1	0	4	4
2.	Theory	GEE11001/ CSE11001	Electrical and Electronics Technology / Introduction to Programming	3	0	0	3	3
3.	Theory	MEE11002	Engineering Mechanics	3	1	0	4	4
4.	Theory	EVS11107	Environmental Science	3	0	0	3	3
5.	Practical	GEE12002/ CSE12002	Electrical and Electronics Technology Lab / Programming Lab	0	0	3	3	2
6.	Practical	MEE12001/ CEE12001	Engineering Workshop/ Engineering Drawing and CAD	0	0	3	3	2
7.	Practical	ENG12044	Communication and Collaboration Skill -II	0	0	2	2	1
8.	Practical	GEE14004	Capstone Project-II	0	0	2	2	1
9.	Practical	IDP14001	Interdisciplinary Project	0	0	5	5	3
			Total	**12**	**2**	**15**	**29**	**23**

SECOND YEAR

Total Credit (Second Year):   49

S. No	Type	Course Code	Subject Name	L	T	P	Contact Hrs/week	Credits
			Semester-III					
1.	Theory	**MTH11529**	Engineering Mathematics– IIIA	3	1	0	4	4
2.	Theory	**MEE11003**	Materials Engineering	3	0	0	3	3
3.	Theory	**ECO11505**	HSSM –IV (Economics for Engineers)	3	0	0	3	3
4.	Theory	**MEE11004**	Prof. Core- I: Mechanics of Materials	3	0	0	3	3
5.	Theory	**MEE11005**	Prof. Core- II: Fluid Mechanics	3	0	0	3	3
6.	Theory	**MEE11006**	Prof. Core- III: Engg. Thermodynamics	3	0	0	3	3
7.	Practical	**MEE12007**	Prof. Core Lab- Material Testing Lab	0	0	3	3	2
8.	Practical	**GEE14005**	Capstone Project-III	0	0	2	2	1
9.	Practical	**SOC14100**	Community Service[#]	--	--	-	--	1
10.	Practical	**EIC11001**	Venture Ideation	2	0	0	2	2
			Total	**20**	**1**	**5**	**26**	**25**

S. No	Type	Course Code	Subject Name	L	T	P	Contact Hrs/week	Credits
			Semester-IV					
1.	Theory	**MTH11530**	Numerical Techniques	2	1	0	3	3
2.	Theory	**MEE11008**	Prof. Core-IV: Fluid Machinery	3	0	0	3	3
3.	Theory	**MEE11009**	Prof. Core- V: Manufacturing Technology-I	3	0	0	3	3
4.	Theory	**MEE11010**	Prof. Core- VI: Kinematics of Machines	3	0	0	3	3
5.	Theory	**MEE11011**	Prof. Core- VII: Design of Machine Elements	3	0	0	3	3
6.	Theory	**PSG11021**	Human Values and Professional Ethics	2	0	0	2	2
7.	Practical	**MTH12531**	Numerical Techniques Lab	0	0	3	3	2
8.	Practical	**MEE12012**	Prof. Core Lab- Fluid Mechanics & Hydraulic Machinery Lab	0	0	3	3	2

9.	Practical	**MEE12013**	Prof. Core Lab- Manufacturing Technology-I Lab	0	0	3	3	2
10.	Practical	**GEE14006**	Capstone Project -IV	0	0	2	2	1
			Total	**16**	**1**	**11**	**28**	**24**

THIRD YEAR
Total Credit (Third Year): 36

			Semester-V					
S. No	Type	Course Code	Subject Name	L	T	P	Contact Hrs/week	Credits
1.	Theory	**MEE11014**	Prof. Core- VIII: Applied Thermodynamics	3	0	0	3	3
2.	Theory	**MEE11015**	Prof. Core- IX: Manufacturing Technology-II	3	0	0	3	3
3.	Theory	**MEE11016**	Prof. Core- X: Dynamics of Machines	3	0	0	3	3
4.	Theory		Prof. Elective- I (*Materials & Manufacturing Domain*)	3	0	0	3	3
5.	Practical	**MEE12023**	Prof. Core Lab- Manufacturing Technology-II Lab	0	0	3	3	2
6.	Practical	**MEE12024**	Prof. Core Lab- Kinematics & Dynamics of Machines Lab	0	0	3	3	2
7.	Practical	**MEE12025**	Prof. Core Lab- Machine Drawing with AutoCAD	0	0	3	3	2
8.	Practical	**GEE14007**	Capstone Project -V	0	0	2	2	1
			Total	**12**	**0**	**11**	**23**	**19**

			Semester-VI					
S. No	Type	Course Code	Subject Name	L	T	P	Contact Hrs/week	Credits
1.	Theory	**MEE11026**	Prof. Core- XI: Heat Transfer	3	0	0	3	3
2.	Theory	**MEE11027**	Prof. Core- XII: Metrology & Measurement	3	0	0	3	3
3.	Theory		Prof. Elective- II: (*Materials & Manufacturing/Thermal Domain*)	3	0	0	3	3
4.	Theory		Open Elective- I	2	0	0	2	2
5.	Practical	**MEE12034**	Prof. Core Lab- Applied Thermodynamics & Heat Transfer Lab	0	0	3	3	2

6.	Practical	**MEE12035**	Prof. Core Lab- Metrology & Measurement Lab	0	0	3	3	2
7.	Practical		Prof. Elective-II Lab	0	0	3	3	2
			Total	**11**	**0**	**09**	**20**	**17**

FOURTH YEAR
Total Credit (Third Year): 29

			Semester-VII					
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**
1.	Theory	**MGT11402**	HSSM –V (Industrial Management)	3	0	0	3	3
2.	Theory		Prof. Elective- III (*Design Domain*)	3	0	0	3	3
3.	Theory		Prof. Elective- IV (*Materials & Manufacturing/Thermal Domain*)	3	0	0	3	3
4.	Theory		Open Elective- II	3	0	0	3	3
5.	Theory		Open Elective- III	3	0	0	3	3
6.	Practical		Prof. Elective-IV Lab	0	0	3	3	2
7.	Practical	**MEE14056**	Summer Internship[#]	--	--	--	--	2
8.	Practical	**MEE14057**	Minor Project	0	0	6	6	3
			Total	**15**	**0**	**09**	**24**	**22**

			Semester-VIII					
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**

1.	Practical	**MEE14058 / MEE14059/ MEE14060**	Industry Work Experience / SIRE* / Major Project	0	0	9	09 (For Major Project work only)	5
2.	Practical	**MEE15061**	Comprehensive Viva Voce	------			------	2
			Total	**0**	**0**	**9**	**09**	**07**

*SIRE: Scientific Investigation & Research Experience
Total Credits (Over four years): 49+49+36+29 = 163 (Regular)

List of Professional Electives:

Open Electives Offered by Department of Mechanical Engineering
MEE11037: Robotics
MEE11040: Biomedical Design
MEE11048: Power Plant Engineering
MEE11028: Internal Combustion Engines
MEE11046: Automobile Engineering

Sem.	Elective	Course Code	Elective List
Sem-V	PROFESSIONAL ELECTIVE –I (*Materials & Manufacturing Domain*)	**MEE11017**	**Advanced Manufacturing Technology**
		MEE11018	**Machine Tool Design**
		MEE11019	**Composite Materials**
		MEE11020	**Micro and Nano Manufacturing**
		MEE11021	**Technology of Surface Coating**
		MEE11022	**Non Traditional Machining**
Sem-VI	PROFESSIONAL ELECTIVE-II + LAB (*Materials & Manufacturing/Thermal Domain*)	**MEE11028 / MEE12029**	**Internal Combustion Engines**
		MEE11030 / MEE12031	**Refrigeration & Air Conditioning**
		MEE11032 / MEE12033	**Welding Engineering**
Sem-VII	PROFESSIONAL ELECTIVE-III (*Design Domain*)	**MEE11036**	**Mechanical Vibration & Control**
		MEE11037	**Robotics**
		MEE11038	**Smart Materials**
		MEE11039	**Piping Design**
		MEE11040	**Biomedical Design**
		MEE11041	**Generative Design**
		MEE11042	**Competitive Manufacturing Design**
		MEE11043	**Design for Mobility**
		MEE11044	**HVAC Systems Design**
		MEE11045	**Fire-fighting Systems Design**
Sem-VII	PROFESSIONAL ELECTIVE-IV + LAB (*Materials & Manufacturing/Thermal Domain*)	**MEE11046 / MEE12047**	**Automobile Engineering**
		MEE11048 / MEE12049	**Power Plant Engineering**
		MEE11050 / MEE12051	**Corrosion Science & Engineering**
		MEE11052 / MEE12053	**Non-Destructive Testing & Evaluation**
		MEE11054 / MEE12055	**Computational Fluid Dynamics**

Career Avenues

- Mechanical Engineers have a broad spectrum of opportunities in Government Sector like Indian Railway, DRDO, BHEL, PWD etc.
- Mechanical companies are growing in terms of number, portfolio expansion, foreign collaborations, and employment rate.
- Mechanical Engineer finds a role in every industry including core and IT industries with better scopes for switching-over career roles.
- Mechanical Engineering graduates can look for opportunities in Design Industry, Automotive Industry, Manufacturing sector, Process Industry, HVAC Industry, Industrial Tools Industry etc.
- Lucrative job roles as Design Engineers, Technical Managers, Construction Engineers, Project Managers, Consultants, Quality Inspectors etc
- Graduates of the Program can choose to pursue M.Tech. leading roles in R&D or Mechanical functions of engineering industries, and alternatively, can opt to pursue MBA.