



IEM Salt Lake Campus, IEM Newtown Campus & IEM Jaipur Campus

New Syllabus Outline Structure

For

B.Tech in Mechanical Engineering

Effective from Academic Year 2025-2026

DEPARTMENT OF MECHANICAL ENGINEERING

B.Tech ME 3rd SEMESTER

Sl. No.	Category	Code	Course Title	Hours per week			Total contact hours	Credits
				L	T	P		
Theory Papers				L	T	P		
1	BSC	BSM301	Mathematics - III	3	0	0	3	3
2	ESC	ESCME302	Engineering Thermodynamics	3	1	0	4	4
3	PCC	PCCME301	Engineering Materials & Applications	2	1	0	3	3
4	PCC	PCCME302	Mechanics of Deformable Solids	2	1	0	3	3
5	PCC	PCCME303	Manufacturing Process- I	2	1	0	3	3
6	HSMC	ESP301	Essentials Studies for Professionals – III	2	0	0	2	0.5
Practical / Sessional Papers								
7	ESC	ESCME381	Basic Electronics Engineering	0	1	2	3	2
8	PCC	PCCME391	Mechanical Engg Lab IA (Materials Testing)	0	0	2	2	1
9	PCC	PCCME392	Mechanical Engg Lab IIA (Manufacturing Process)	0	0	2	2	1
10	PRJ	PRJME381	Project I (CAD-Based)	0	0	2	2	1
11	HSMC	SDP381	Skill Development for Professionals –III	0	0	2	2	0.5
TOTAL							29	22
For B.Tech Honours Degree								
12	MOOCs	MOOCS	MOOCs Certificate Courses (NPTEL/SWAYAM)	-	-	-	-	-
For B.Tech with Minor Degree in Robotics								
13	MD	MINOR301R	Introduction to Robotics	3	1	0	4	4
For B.Tech with Minor Degree in Sustainable Energy Engineering								
14	MD	MINOR301S	Energy and Its Resources	1	1	2	3	3
For B.Tech with Minor Degree in Artificial intelligence and Machine learning								
15	Minor	MINOR301A	Introduction to AI & Machine Learning	3	0	2	5	4
Mandatory Courses								
16	MC	IFC	Industry and Foreign Certification (IFC)	-	-	-	-	-
17	MC	MAR	Mandatory Additional Requirements (MAR)	-	-	-	-	-
20	MC	SAR	Skill Activity Report (SAR)	-	-	-	-	-

B.Tech ME 4th SEMESTER.

Sl. No.	Category	Code	Course Title	Hours per week			Total contact hours	Credits
				L	T	P		
Theory Papers								
1	BSC	BSM401	Mathematics- IV	3	0	0	3	3
2	PCC	PCCME401	Fluid Mechanics & Fluid Machines	3	1	0	4	4
3	PCC	PCCME402	Kinematics & Dynamics of Machines	2	1	0	3	3
4	PCC	PCCME403	Internal Combustion Engine & Gas Turbine	2	1	0	3	3
5	PCC	PCCME404	Measurements & Metrology	2	1	0	3	3
6	HSMC	ESP401	Essentials Studies for Professionals – IV	2	0	0	2	0.5
Practical / Sessional Papers								
7	MC	MCC471	Sustainability, Climate Action & Environmental Science	1	1	0	2	2
8	PCC	PCCME491	Mechanical Engg Lab IIIA (Fluid Mechanics)	0	0	2	2	1
9	PCC	PCCME492	Mechanical Engg Lab IIIB (IC Engine)	0	0	2	2	1
10	PCC	PCCME493	Mechanical Engg Lab IIB (Measurements & Metrology)	0	0	2	2	1
11	ESC	ESCME481	Data Structure & Algorithms	0	0	2	2	1
12	PRJ	PRJME481	Project II (Research Methodology)	0	0	2	2	1
13	HSMC	SDP481	Skill Development for Professionals -IV	0	0	2	2	0.5
TOTAL							32	24
For B.Tech Honours Degree								
14	Minor	MOOCS	MOOCs Certificate Courses (NPTEL/SWAYAM)	-	-	-	-	-
For B.Tech with Minor Degree in Robotics								
15	Minor	MINOR401R	Mechanics of Robots	3	0	0	3	3
For B.Tech with Minor Degree in Sustainable Energy Engineering								
16	Minor	MINOR401S	Climate Change Understanding & Observations	1	1	2	3	3
For B.Tech with Minor Degree in Artificial intelligence and Machine learning								
17	Minor	MINOR401A	Introduction to Data Analytics	3	0	2	5	4
Mandatory Courses								
18	IFC	IFC	Industry and Foreign Certification (IFC)	-	-	-	-	-
19	MAR	MAR	Mandatory Additional Requirements (MAR)	-	-	-	-	-
20	MC	SAR	Skill Activity Report (SAR)	-	-	-	-	-

B.Tech ME 5th SEMESTER

SL NO	Category	Paper Code	Paper Name	L	T	P	Contact Hrs	Credits
Theory Papers								
1	PCC	PCCME501	Heat Transfer & Thermal Machines	3	1	0	4	4
2	PCC	PCCME502	Machine Element & System Design	3	1	0	4	4
3	PCC	PCCME503	Manufacturing Process- II	3	0	0	3	3
4	PCC	PCCME504	Mechatronics, Robotics & Control	2	0	0	2	2
5	PEC	PEME501	Professional Elective - I	3	0	0	3	3
6	HSMC	ESPME501	Essential Studies for Professionals (ME) - V	2	0	0	2	0.5
Practical / Sessional Papers								
7	PCC	PCCME591	Mechanical Engg Lab IIIC (Applied Thermodynamics & Heat Transfer)	0	0	2	2	1
8	PCC	PCCME592	Mechanical Engg Lab IB (Machine Drawing)	0	0	2	2	1
9	PCC	PCCME593	Mechanical Engg Lab IC (Kinematics & Dynamics of Machines)	0	0	2	2	1
10	PCC	PCCME594	Mechatronics, Robotics & Control Lab	0	0	2	2	1
11	PRJ	PRJME581	Project-III	0	0	2	2	1
12	HSMC	SDP581	Skill Development for Professionals - V	0	0	2	2	0.5
13	HSMC	HSMME582	Seminar & Communication	0	0	2	2	1
TOTAL							32	23
For B.Tech Honours Degree								
15	MOOCs	MOOCS	MOOCs Certificate Courses (NPTEL/SWAYAM)	-	-	-	-	-
For B.Tech with Minor Degree in Robotics								
16	MD	MINOR501R	Microprocessors & Embedded Systems	3	0	2	5	4
For B.Tech with Minor Degree in Sustainable Energy Engineering								
17	MD	MINOR501S	Energy storage systems for renewables	1	1	2	3	3
For B.Tech with Minor Degree in Artificial intelligence and Machine learning								
18	Minor	MINOR501A	Deep Learning and Neural Network	3	0	2	5	4

Mandatory Courses								
19	MC	IFC	Industry and Foreign Certification (IFC)	-	-	-	-	-
20	MC	MAR581	Mandatory Additional Requirements (MAR)	-	-	-	-	-
21	MC	SAR	Skill Activity Report (SAR)	-	-	-	-	-

List of Professional Electives for Elective-I (PEME501)

- A. Mechanical Vibration
- B. Advanced Welding Technology
- C. Micro and Nano Manufacturing
- D. Power Plant Engineering
- E. Die, Mould and Tool Engineering
- F. Computational Fluid Dynamics

B.Tech ME 6th Semester

SL NO	Category	Paper Code	Paper Name	L	T	P	Total Contact (Hrs)	Credits
Theory Papers								
1	PCC	PCCME601	Computer-Aided Design & Analysis	2	0	0	2	2
2	PCC	PCCME602	Manufacturing Automation	3	0	0	3	3
3	PCC	PCCME603	Production & Operation Management	2	1	0	3	3
4	PEC	PECME601	Professional Elective- II	3	0	0	3	3
5	HSMC	HSMME601	HSS/Management Elective-1 (A. Project Management/ B. Finance & Accounting)	3	0	0	3	3
6	HSMC	ESP(ME)601	Essentials Studies for Professionals – VI	2	0	0	2	0.5
Practical / Sessional Papers								
7	PCC	PCCME681	Product Innovation & Entrepreneurship	0	1	1	2	1.5
8	PCC	PCCME691	Mechanical Engg Lab IIC (Advanced Manufacturing & Automation)	0	0	2	2	1
9	PCC	PCCME692	Mechanical Engg Lab ID (Computer Aided Design & Analysis)	0	0	2	2	1
10	PCC	PCCME693	Mechanical Engg Lab IIID (Refrigeration and Air Conditioning)	0	0	2	2	1
11	ESC	ESCME681	Database Management System	0	0	2	2	1
12	PRJ	PRJME681	Project-IV (Minor)	0	0	2	2	1
13	HSMC	SDP681	Skill Development for Professionals -VI	0	0	2	2	0.5
TOTAL							32	21.5
For B.Tech Honours Degree								
14	MOOCs	MOOCS	MOOCs Certificate Courses (NPTEL/SWAYAM)	-	-	-	-	-
For B.Tech with Minor Degree in Robotics								
15	MD	MINOR601R	Control of Robotic Systems	3	0	0	3	3
For B.Tech with Minor Degree in Sustainable Energy Engineering								
16	MD	MINOR601S	Electronics for Renewables	1	1	2	3	3

For B.Tech with Minor Degree in Artificial intelligence and Machine learning								
17	Minor	MINOR601A	Special topics in Artificial Intelligence	3	0	0	3	3
Mandatory Courses								
18	MC	IFC	Industry and Foreign Certification (IFC)	-	-	-	-	-
19	MC	MAR	Mandatory Additional Requirements (MAR)	-	-	-	-	-
20	MC	SAR	Skill Activity Report (SAR)	-	-	-	-	-

List of Professional Electives for Elective-II

- A. Refrigeration and Air Conditioning
- B. Additive Manufacturing
- C. Turbo Machinery
- D. Finite Element Analysis
- E. Tribology
- F. Composite Materials
- G. Design for Manufacturing & Assembly

B.Tech ME 7th SEMESTER

SL NO	Category	Paper Code	Paper Name	L	T	P	Total Contact Hrs	Credits
Theory Papers								
1	PEC	PEME701	Professional Elective -III	3	0	0	3	3
2	OEC	OEME701	Open Elective-I	3	0	0	3	3
3	OEC	OEME702	Open Elective-II	3	0	0	3	3
4	HSMC	HSME701	HSS/Management Elective-2 (A. Operations Research/ B. Industrial Psychology)	3	0	0	3	3
5	HSMC	ESPME701	Essential Studies for Professionals (ME) - VII	2	0	0	2	0.5
Practical / Sessional Papers								
6	PRJ	PRJME781	Project-V	0	0	5	5	2.5
7	PRJ	PRJME782	Internship I	0	0	0	0	4
8	HSMC	SDP781	Skill Development for Professionals - VII	0	0	2	2	0.5
TOTAL							23	19.5
For B.Tech Honours Degree								
9	MOOCS	MOOCS	MOOCs Certificate Courses (NPTEL/SWAYAM)	-	-	-	-	-
For B.Tech with Minor Degree in Robotics								
10	MD	MINOR781R	Project in Robotics I	1	0	2	3	2
For B.Tech with Minor Degree in Sustainable Energy Engineering								
11	MD	MINOR701S	Solar Energy Technologies and System Design	1	1	2	3	3
For B.Tech with Minor Degree in Artificial Intelligence and Machine Learning								
12	MD	MINOR701A	Applications of AI	3	0	0	3	3
Mandatory Courses								
13	MC	IFC	Industry and Foreign Certification (IFC)	-	-	-	-	-
14	MC	MAR	Mandatory Additional Requirements (MAR)	-	-	-	-	-
15	MC	SAR	Skill Activity Report (SAR)	-	-	-	-	-

List of Professional Elective -III (PEME701)

- A. PEME701A Automobile Engineering
- B. PEME701B Material Handling
- C. PEME701C Industrial Engineering
- D. PEME701D Industrial Robotics
- E. PEME701E Aerospace Engineering
- F. PEME701F Agricultural Engineering
- G. PEME701G Biomedical Engineering
- H. PEME701H Food Technology
- I. PEME701I Nuclear Engineering

List of Open Electives for Open Elective-I (OECME701)

- A. OEME701A Principles & Practices of Management
- B. OEME701B Process Planning and Cost Estimation
- C. OEME701C Renewable Energy Engineering

List of Open Electives for Open Elective-II (OECME702)

- A. OEME702A Industry 4.0
- B. OEME702B Optimization Techniques
- C. OEME702C Data Analytics

B.Tech ME 8th SEMESTER

SL NO	Category	Paper Code	Paper Name	L	T	P	Total Contact Hrs	Credits
Theory Papers								
1	HSMC	HSMME801	Universal Human Values	2	0	0	2	2
2	OEC	OECME801	Open Elective-III	3	0	0	3	3
3	HSMC	ESP802	Essential Studies for Professionals - VIII	2	0	0	2	0.5
Practical / Sessional Papers								
4	PRJ	PRJME881	Project-VI (Prototype & Testing)	0	0	8	8	4
5	PRJ	PRJME882	Internship II	0	0	0	0	4
6	PRJ	PRJME883	Comprehensive viva	0	0	0	0	1
7	HSMC	SDP881	Skill Development for Professionals - VIII	0	0	2	2	0.5
TOTAL							19	15
For B.Tech Honours Degree								
8	MOOCS	MOOCS	MOOCs Certificate Courses (NPTEL/SWAYAM)	-	-	-	-	-
For B.Tech with Minor Degree in Artificial Intelligence and Machine Learning								
9	MD	MINOR881A	Project in AIML	0	0	4	4	2
For B.Tech with Minor Degree in Robotics								
10	MD	MINOR881R	Project in Robotics II	0	0	4	4	2
For B.Tech with Minor Degree in Sustainable Energy Engineering								
11	MD	MINOR801S	Solar Energy System Installations and Maintenance	1	1	2	3	3
Mandatory Courses								
12	IFC	IFC	Industry and Foreign Certification (IFC)	0	0	0	0	0
13	MAR	MAR	Mandatory Additional Requirements (MAR)	0	0	0	0	0
14	MC	SAR	Skill Activity Report (SAR)	-	-	-	-	-

List of Open Electives for Elective-III

- A. Total Quality Management
- B. Maintenance Engineering
- C. Quality & Reliability Engineering
- D. Machine Learning
- E. Biomechanics & Biomaterials