

project



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

New Syllabus Outline Structure

For

B.Tech in Mechanical Engineering

Effective from Academic Year 2024-2025

DEPARTMENT OF MECHANICAL ENGINEERING

3rd SEMESTER

Sl. No.	Category	Code	Course Title	Hours per week			Total contact hours	Credits
				L	T	P		
Theory Papers								
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	RBME301	Introduction to Robotics	3	1	0	4	4
For B.Tech with Minor Degree in Sustainable Energy Engineering								
14	MD	SEEME301	Energy and its Resources	1	1	2	3	3
Mandatory Courses								
15	MC	IFC	Industry and Foreign Certification (IFC)	-	-	-	-	-
16	MC	MAR	Mandatory Additional Requirements (MAR)	-	-	-	-	-

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	0	1	2	3	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	PRJ	PRJME481	Project II (Research Methodology)	0	0	2	2	1
12	HSMC	SDP481	Skill Development for Professionals -IV	0	0	2	2	0.5
TOTAL							31	23
For B.Tech Honours Degree								
13	Minor	MOOCS	MOOCs Certificate Courses (NPTEL/SWAYAM)	-	-	-	-	-
For B.Tech with Minor Degree in Robotics								
14	Minor	MINOR401R	Mechanics of Robots	3	0	0	3	3
For B.Tech with Minor Degree in Sustainable Energy Engineering								
15	Minor	MINOR401S	Climate Change Understanding & Observations	1	1	2	3	3
For B.Tech with Minor Degree in Artificial intelligence and Machine learning								
16	Minor	MINOR401A	Introduction to Data Analytics	3	0	2	5	4
Mandatory Courses								
16	IFC	IFC	Industry and Foreign Certification (IFC)	0	0	0	0	0
17	MAR	MAR	Mandatory Additional Requirements (MAR)	0	0	0	0	0

5th SEMESTER

SL NO	Category	Paper Code	Paper Name	L	T	P	Total 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	PECME501	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 2	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	RBME501	Microprocessors & Embedded Systems	3	0	2	5	4
For B.Tech with Minor Degree in Sustainable Energy Engineering								
17	MD	SEEME501	Energy storage systems for renewables	1	1	2	3	3
Mandatory Courses								
18	MC	IFC	Industry and Foreign Certification (IFC)	0	0	0	0	0
19	MC	MAR581	Mandatory Additional Requirements (MAR)	0	0	0	0	0

List of Professional Electives for Elective-I

- A. Mechanical Vibration
- B. Advanced Welding technology
- C. Micro and Nano Manufacturing
- D. Power Plant Engineering
- E. Die, Mould and Tool Engineering

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	2	2	4	3
8	PCC	PCCME691	Mechanical Engg Lab IIC (Advanced Manufacturing & Automation)	0	0	3	3	1.5
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	PRJ	PRJME681	Project-IV (Minor)	0	0	5	5	2.5
12	HSMC	SDP681	Skill Development for Professionals -VI	0	0	2	2	0.5
TOTAL							34	24
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	SEEME601	Electronics for Renewables	1	1	2	3	3
Mandatory Courses								
17	MC	IFC	Industry and Foreign Certification (IFC)	0	0	0	0	0

18	MC	MAR	Mandatory Additional Requirements (MAR)	0	0	0	0	0
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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. Computational Fluid Dynamics
- H. Design for Manufacturing & Assembly

B.Tech M.E. Old Syllabus

B.Tech M.E. 4th Year 7th Semester

SL No	Category	Paper Code	Paper Name	Hours per Week			Total Contact Hrs	Credits
				L	T	P		
Theory Papers								
1	PCC	PCC(ME)401	Automation in Manufacturing	3	0	0	3	3
2	HSMC	HSMC401	Economics for Engineers	2	0	0	2	0
3	PEC	PEC(ME)L421	Elective- III	3	0	0	3	3
4	PEC	PEC(ME)L422	Elective - IV	3	0	0	3	3
5	OEC	OEC401	Open Elective-III	3	0	0	3	3
6	HSMC	HSMC(ME)702	Essential Studies for Professionals (ME) - VII	2	0	0	2	0.5
Practical/Sessional								
7	PCC	PCC(ME)491	Mechanical Engineering Laboratory IV (Manufacturing)	0	0	3	3	1.5
8	PRJ	PROJ(ME)481	Project-V	0	0	8	8	4
9	HSMC	HSMC782	Skill Development for Professionals - VII	0	0	2	2	0.5
TOTAL							29	18.5
For B.Tech Honours Degree								
10	MOOCs	MOOCs	MOOCs Certificate Courses (NPTEL/SWAYAM)	-	-	-	-	-
Mandatory Courses								
11	IFC	IFC	Industry and Foreign Certification (IFC)	0	0	0	0	0
12	MAR	MAR	Mandatory Additional Requirements (MAR)	0	0	0	0	0

Electives in Semester VII

List of Professional Electives for Elective-III (PEC-(ME)L 421)

PEC(ME)L421A Internal Combustion Engine & gas Turbine

PEC(ME)L421B Power Plant Engineering

List of Professional Electives for Elective-IV (PEC-(ME)L 422)

PEC(ME)L422A Finite Element Analysis

PEC(ME)L422B Composite Materials

PEC(ME)L422C CAD & CAM

List of Open Electives for Open Elective-II (Humanities) (OEC-401)

OEC401A Industrial Engineering

OEC401B Non-conventional Energy Sources

OEC401C Industrial Robotics

8th SEMESTER

Theory								
SL NO	Category	Paper Code	Paper Name	L	T	P	Total Contact Hrs	Credits
1	Professional Elective Subject	PEC(ME)L431	Elective - V	3	0	0	3	3
2	Professional Elective Subject	PEC(ME)L432	Elective - VI	3	0	0	3	3
3	Open Elective Subject	OEC402	Open Elective-IV	3	0	0	3	3
4	Open Elective Subject	OEC403	Open Elective-V	3	0	0	3	3
5	Essential Studies for Professionals	HSMC802	Essential Studies for Professionals - VIII	2	0	0	2	0.5
Total of Theory				14	0	0	14	12.5
Practical/Sessional								
SL NO		Paper Code	Paper Name	L	T	P	Total Contact Hrs	Credits
6	Project, Seminar and Industrial Training	PROJME482	Project-VI	0	0	8	8	4
7	Project, Seminar and Industrial Training	PROJ GV(ME)482	Comprehensive viva	0	0	0	0	1
8	Skill Development for Professionals	HSMC882	Skill Development for Professionals - VIII	0	0	2	2	0.5
10	Industry and Foreign Certification	IFC	Industry and Foreign Certification (IFC)	0	0	0	0	0
11	Massive Open Online Courses	MOOCs(ME) 801	MOOCs	-	-	-	-	-
12	Mandatory Additional Requirements	MAR881	Mandatory Additional Requirements (MAR)	0	0	0	0	0
Total of Practical				0	0	10	10	5.5
Total				14	0	10	24	18

Electives in Semester VIII

List of Professional Electives for Elective-V (PEC-MEL 431)

PEC(ME)L431A	Automobile Engineering
PEC(ME)L431B	Computational Fluid Dynamics

List of Professional Electives for Elective-VI (PEC-MEL 432)

PEC(ME)L432A	Mechanical Vibration
PEC(ME)L432B	Advanced Welding technology
PEC(ME)L432C	Micro and Nano Manufacturing

List of Open Electives for Elective-IV (OEC-MEL 402)

OEC402A	Total Quality Management
OEC402B	Maintenance Engineering
OEC402C	Quality & Reliability Engineering

List of Open Electives for Elective-V (OEC-MEL 403)

OEC403A	Additive Manufacturing
OEC403B	Machine Learning
OEC403C	Biomechanics & Biomaterials