



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

New Syllabus Outline Structure

For

B.Tech in Mechanical Engineering

Effective from Academic Year 2023-2024

DEPARTMENT OF MECHANICAL ENGINEERING

3rd SEMESTER

Sl. No.	Category	Code	Course Title	Hours per week			Total contact hours	Credits
Theory Papers				L	T	P		
1	BSC	BSCM301	Mathematics - III	3	0	0	3	3
2	ESC	ESCME301	Basic Electronics Engineering	2	0	0	2	2
3	ESC	ESCME302	Engineering Thermodynamics	3	1	0	4	4
4	PCC	PCCME301	Engineering Materials & Applications	2	0	0	2	2
5	PCC	PCCME302	Mechanics of Deformable Solids	2	1	0	3	3
6	PCC	PCCME303	Manufacturing Process- I	2	1	0	3	3
7	HSMC	ESP301	Essentials Studies for Professionals – III	2	0	0	2	0.5
Practical / Sessional Papers								
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							27	21
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	IFC	IFC	Industry and Foreign Certification (IFC)	-	-	-	-	-
16	MAR	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				L	T	P		
1	BSC	BSCM401	Mathematics- IV	3	0	0	3	3
2	MC	MCME401	Environmental Science (Audit)	2	0	0	2	0
3	PCC	PCCME401	Fluid Mechanics & Fluid Machines	3	1	0	4	4
4	PCC	PCCME402	Kinematics & Dynamics of Machines	2	1	0	3	3
5	PCC	PCCME403	Internal Combustion Engine & Gas Turbine	2	1	0	3	3
6	PCC	PCCME404	Measurements & Metrology	2	1	0	3	3
7	HSMC	ESP401	Essentials Studies for Professionals – IV	2	0	0	2	0.5
Practical / Sessional Papers								
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							30	21
For B.Tech Honours Degree								
13	MOOCs	MOOCS	MOOCs Certificate Courses (NPTEL/SWAYAM)	-	-	-	-	-
For B.Tech with Minor Degree in Robotics								
14	MD	RBME401	Mechanics of Robots	3	0	0	3	3
For B.Tech with Minor Degree in Sustainable Energy Engineering								
15	MD	SEEME401	Climate Change Understanding & Observations	1	1	2	3	3
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	IFC	IFC	Industry and Foreign Certification (IFC)	0	0	0	0	0
19	MAR	MAR581	Mandatory Additional Requirements (MAR)	0	0	0	0	0

List of Professional Electives for Elective-I

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

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	PCC	PCCME604	Product Innovation & Entrepreneurship	3	0	0	3	3
5	PEC	PECME601	Professional Elective- II	3	0	0	3	3
6	HSMC	HSMME601	HSS/Management Elective-1 (1. Project Management/ 2. Finance & Accounting)	3	0	0	3	3
7	HSMC	ESPME601	Essentials Studies for Professionals – VI	2	0	0	2	0.5
Practical / Sessional Papers								
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	SDP	SDP681	Skill Development for Professionals -VI	0	0	2	2	0.5
TOTAL							33	24
For B.Tech Honours Degree								
14	MOOCs	MOOCS	MOOCs Certificate Courses (NPTEL/SWAYAM)	-	-	-	-	-
For B.Tech with Minor Degree in Robotics								
15	MD	RBME601	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	IFC	IFC	Industry and Foreign Certification (IFC)	0	0	0	0	0
18	MAR	MAR	Mandatory Additional Requirements (MAR)	0	0	0	0	0

List of Professional Electives for Elective-II

- A. Computational Fluid Dynamics
- B. Refrigeration and Air Conditioning
- C. Turbo Machinery
- D. Finite Element Analysis
- E. Composite Materials
- F. Design for Manufacturing & Assembly
- G. Advanced Welding technology
- H. Tribology

7th SEMESTER

SL NO	Category	Paper Code	Paper Name	L	T	P	Total Contact Hrs	Credits
Theory Papers								
1	PEC	PECME701	Professional Elective -III	3	0	0	3	3
2	OEC	OECME701	Open Elective-I	3	0	0	3	3
3	OEC	OECME702	Open Elective-II	3	0	0	3	3
6	HSMC	HSMME701	HSS/Management Elective-2 (1. Industrial Psychology/ 2. Operation Research)	3	0	0	3	3
4	HSMC	ESPME701	Essential Studies for Professionals(ME) - VII	2	0	0	2	0.5
Practical / Sessional Papers								
5	PRJ	PRJME781	Project-V	0	0	8	8	4
6	HSMC	SDP781	Skill Development for Professionals - VII	0	0	2	2	0.5
TOTAL							24	17
For B.Tech Honours Degree								
7	MOOCS	MOOCS	MOOCs Certificate Courses (NPTEL/SWAYAM)	-	-	-	-	-
For B.Tech with Minor Degree in Robotics								
8		RBME781	Project in Robotics I	1	0	2	3	2
For B.Tech with Minor Degree in Sustainable Energy Engineering								
9	MD	SEEME701	Solar Energy Technologies and System Design	1	1	2	3	3
Mandatory Courses								
10	IFC	IFC	Industry and Foreign Certification (IFC)	0	0	0	0	0
11	MAR	MAR	Mandatory Additional Requirements (MAR)	0	0	0	0	0

List of Professional Electives for Elective-III (Industry)

- A. Automobile Engineering
- B. Material Handling
- C. Industrial Engineering
- D. Industrial Robotics
- E. Aerospace Engineering
- F. Agricultural Engineering
- G. Biomedical Engineering
- H. Food Technology
- I. Nuclear Engineering

List of Open Electives for Open Elective-I

- A. Principal & Practice of management
- B. Process Planning and Cost Estimation
- C. Data Analytics
- D. Renewable Energy Engineering

List of Open Electives for Open Elective-II

- A. Industry 4.0
- B. Optimization Techniques

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	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	Comprehensive viva	0	0	0	0	1
6	HSMC	SDP881	Skill Development for Professionals - VIII	0	0	2	2	0.5
TOTAL							17	11
For B.Tech Honours Degree								
7	MOOCS	MOOCS	MOOCS Certificate Courses (NPTEL/SWAYAM)	-	-	-	-	-
For B.Tech with Minor Degree in Robotics								
8	MD	RBME881	Project in Robotics II	0	0	4	4	2
For B.Tech with Minor Degree in Sustainable Energy Engineering								
9	MD	SEEME801	Solar Energy System Installations and Maintenance	1	1	2	3	3
Mandatory Courses								
10	IFC	IFC	Industry and Foreign Certification (IFC)	0	0	0	0	0
11	MAR	MAR	Mandatory Additional Requirements (MAR)	0	0	0	0	0

List of Open Electives for Elective-III

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