B.Tech - Mechanical Engineering (Automative Designs & Electrical Vehicle)

SOET — YEAR 2022-2026: SCHEME OF STUDIES AS PER CHOICE-BASED CREDIT SYSTEM (CBCS) AND LEARNING OUTCOME-BA — **B.Tech-ME**

Year	SNo	UC		Subject Code	Title	L	T	P	C
					Semester - I				
FIRST	1	SD	SE	ETMA105A	Applied Mathematics-I	3	1	-	4
	2	SD	SE	ETPH109A	Engineering Physics	3	1	-	4
	3		OE		Open Elective (Basic of Customer Behavior)	4			4
	4	SD	SE	UCES125A	Environmental Studies	3	-	-	3
	5	OE	SE	ETEC101A	Basics of Electrical & Electronics Engineerii	3	1	-	4
	6	SD	SE	ETME101A	Basics of Mechanical Engineering	3	1	-	4
	7	SD	SE	ETPH151A	Engineering Physics Lab	-	-	2	1
	8	OE	CC	ETEC151A	Basics of Electrical & Electronics Engineerii	-	-	2	1
	9	SD	SE	ETME151A	Basics of Mechanical Engineering Lab	-	-	2	1
	10	EMP	CC	ETME 159A	CAD Fundamental Processes Part-A	-		2	1
	TOTAL					19	4	8	27
					Semester - II				
	1	SD	SE	ETMA104A	Applied Mathematics-II	3	1	-	4
	2	SD	SE	ETCS104A	Introduction to Computer Science and Programming in Python	3	1	-	4
	3		OE		Open Elective	4			4
	4	SD	SE	ETCH119A	Engineering Chemistry	3	1	-	4
	5	SD	CC	ETEC124A	Introduction to Automation Robotics and Drone	4	-	-	4
	6	SD	SE	ETCS150A	Introduction to Computer Science and Programming in Python Lab	-	-	2	1
	7	SD	SE	ETCH159A	Engineering Chemistry Lab	-	-	2	1
	8	OE	CC	ETME 157A	Workshop Practices	-	-	3	1.5
	9	EMP	CC	ETME 156A	CAD Fundamental Processes Part-B			2	1
	TOTAL					13	3	9	24.5
					Semester - III				
SECOND	1	SD	SE	ETMA215A	Probability and Statistcs	3	1	-	4
	2	EMP	CC	ETME 205A	Thermodynamics	3	1	-	4
	3	EMP	CC	ETME 215A	Strength of Materials	3		-	3
	4	EMP	CC	ETME 217A	Fluid Mechanics	3	-	-	3
	5	EMP	SE	UCDM 301A	Disaster Management	3	-	-	3
	6	EMP	CC	ETME 213A	CAD Advanced Processes	3	-	-	3
	7	EMP	CC	ETME 228A	CAD Sheet Metal/Surface Modeling	3	-	-	3
	8	EMP	CC	ETME 253A	Strength of Materials Lab	-	-	2	1
	9	EMP	CC	ETME 255A	Fluid Mechanics Lab	-	-	2	1
	TOTAL					21	2	4	25
					Semester - IV				
	1	EMP	CC	ETME 317A	CAD Mold Wizard Fundamental Process	3	-	-	3
	2	EMP	CC	ETME 230A	Fluid Machines	3	-	-	3
	3	OE	CC	ETME 220A	Engineering Mechanics	3	-	-	3
	4	HSMC	OE	ETMC602A	Essentials of Organizational Behaviour	3	-	-	3
	5	EMP	CC	ETME 226A	Theory of Machines	3	1	-	4
	6	EMP	CC	ETME 328A	Electric Vehicle Engineering Design	3	-	-	3
		EMP	CC	ETME 252A	Fluid Machines Lab	-	-	2	1
	7	EMP	CC	ETME 258A	Theory of Machines Lab	-	-	2	1
	8	SD	SE	ETCS 228A	Communication and Analytical Skills-I	0	0	2	2
	9								
	TOTAL					18	1	6	23

Note: Practical training will be of minimum six weeks duration at the end of fourth semester during summer break and the evaluation will be done at the end of fifth semester.

Year	SNo	UC		Subject Code	Title	L	T	P	C
					Semester - V				
THIRD	1	EMP	CC	ETME 309A	Manufacturing Technology	3	-	-	3
	2	EMP	CC	ETME 319A	Internal Combustion Engine	3		-	3
	3	ED	SE	ETMC 421A	Entrepreneurship Development	3	-	-	3
	4	EMP	CC	ETME 315A	Design of Machine Elements	3	1	-	4
	5	EMP	SE	ETME 381A	Practical Training-I	-	-	-	1
	6	EMP	CC	ETME 357A	Manufacturing Technology Lab	-	-	2	1
	8	EMP	CC	ETME 363A	Internal Combustion Engine	-	-	2	1
	9	SD	SE	ETCS 325A	Communication and Analytical Skills-II	-	-	2	2
	TOTAL					18	1	6	18
					Semester - VI				
	1	EMP	CC	ETME 302A	Heat Transfer	3	1	-	4
	2	OE	CC	ETME 322A	Robotics & Automation	3	-	-	3
	3	OE	CC	ETME 326A	Automobile Engineering	3	-	-	3
	4	EMP	OE		Open Elective Courses (OEC)	3	-	-	3
	5	EMP	DE		Program Elective Course (PEC/DE)	3	-	-	3
	6	EMP	CC	ETME 352A	Heat Transfer Lab	-	-	2	1
	7	EMP	CC	ETME 354A	Robotics & Automation Lab	-	-	2	1
	8	EMP	CC	ETME 356A	Automobile Engineering Lab	-	-	2	1
	9	SD	SE	ETCS 330A	Communication and Analytical Skills-III	-	-	2	2
	TOTAL					15	1	8	21

Note: Practical training will be for minimum of four weeks duration at the end of Sixth Semester during summer break and evaluation will be done at the end of Seventh Semester.

Year	SNo	UC		Subject Code	Title	L	T	P	C
					Semester - VII				
FOURTH	1	EMP	CC	ETME 425A	Refrigeration And Air-Conditioning	3	-	-	3
	2	SD	OE		Open Electice Courses (OEC)	3			3
	3	EMP	DE	ETME 404A	Additive Manufacturing (PEC/DE)	3	-	-	3
	4	EMP	CC	ETME 451A	Refrigeration And Air-Conditioning Lab	-	-	2	1
	5	EMP	SE	ETME 481A	Practical Training-II	-	-	-	1
	6	EMP	CC	ETME 453A	Measurement & Metrology Lab	-	-	2	1
	7	EMP	CC	ETME 455A	Project	-	-	-	6
	TOTAL					9	-	4	18
					Semester - VIII				
	1	EMP	CC	ETME 452A	Industrial Internship	-	-	-	12
	Total					0	0	0	12

Total Credits [C]	**168.5**

				Programme Elective Courses (PEC)	L	T	P	C
1	EMP		ETME 410A	Inspections And Quality Control	3	-	-	3
2	EMP		ETME 412A	Industrial Engineering	3	-	-	3
3	EMP		ETME 408A	Computer Aided Manufacturing	3	-	-	3
4	EMP		ETME 406A	Mechatronics	3	-	-	3
5	EMP		ETME 212A	Flexible Manufacturing System	3	-	-	3
6	EMP		ETME 411A	Artificial Intelligence	3	-	-	3
7	EMP		ETME 413A	Waste Heat Recovery Systems	3	-	-	3
8	EMP		ETME 415A	Industrial Designs And Product	3	-	-	3
9	EMP		ETME 427A	Power Plant Engineering	3	-	-	3
10	EMP		ETME 417A	Solar Energy	3	-	-	3
11	EMP		ETME 419A	Microprocessors in Automation	3	-	-	3
12	EMP		ETME 216A	Computational Fluid Dynamics	3	-	-	3
13	EMP		ETME 414A	Composite Materials	3	-	-	3
14	EMP		ETME 416A	Electrical Vehicles	3	-	-	3
15	EMP		ETME 426A	Mechanical Vibrations	3	-	-	3
16	EMP		ETME 404A	Additive Manufacturing	3	-	-	3
17	EMP		ETME 324A	Non Conventional Energy Resources	3	-	-	3
18	EMP		ETME 420A	Finite Element Analysis	3	-	-	3
19	EMP		ETME 422A	Gas Dynamics and Jet Propulsion	3	-	-	3
20	EMP		ETME 421A	Process Planning and Cost Estimation	3	-	-	3
21	EMP		ETME 423A	Design of Transmission Systems	3	-	-	3
22	EMP		ETME 424A	Total Quality Management	3	-	-	3

				Open Elective Courses (OEC)	L	T	P	C
1	OE	OE	ETEC 308A	Instrumentation And Control Systems	3	-	-	3

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B.Tech - Mechanical Engineering (Automative Designs & Electrical Vehicle)

SDET — YEAR 2021-2025: SCHEME OF STUDIES AS PER CBCS AND LOCF — B.Tech-ME

Year	SNo	UC		Subject Code	Title	L	T	P	C
					Semester - I				
FIRST	1	SD	SE	ETMA105A	Applied Mathematics-I	3	1	-	4
	2	SD	SE	ETPH109A	Engineering Physics	3	1	-	4
	3	SD	SE	UCES125A	Environmental Studies	3	-	-	3
	4	OE	SE	ETEC101A	Basics of Electrical & Electronics Engineering	3	1	-	4
	5	SD	CC	ETME101A	Basics of Mechanical Engineering	3	1	-	4
	6	SD	SE	ETPH151A	Engineering Physics Lab	-	-	2	1
	7	OE	SE	ETEC151A	Basics of Electrical & Electronics Engineering Lab	-	-	2	1
	8	SD	CC	ETME151A	Basics of Mechanical Engineering Lab	-	-	2	1
	TOTAL					15	4	6	22
					Semester - II				
	1	SD	SE	ETMA104A	Applied Mathematics-II	3	1	-	4
	2	SD	SE	ETCS104A	Introduction to Computer Science and Programming in Python	3	1	-	4
	3	SD	SE	ETCH119A	Engineering Chemistry	3	1	-	4
	4	SD	SE	UCCS 155A	Communication Skills	4	-	-	4
	5	SD	SE	ETCS150A	Introduction to Computer Science and Programming in Python Lab	-	-	2	1
	6	SD	SE	ETCH159A	Engineering Chemistry Lab	-	-	2	1
	7	OE	CC	ETME 157A	Workshop Practices	-	-	3	1.5
	TOTAL					13	3	7	19.5
					Semester - III				
SECOND	1	SD	SE	ETME215A	Probability and Statistcs	3	1	-	4
	2	EMP	CC	ETME 205A	Thermodynamics	3	1	-	4
	3	EMP	CC	ETME 215A	Strength of Materials	3		-	3
	4	EMP	CC	ETME 217A	Fluid Mechanics	3	-	-	3
	5	EMP	CC	UCDM 301A	Disaster Management	3	-	-	3
	6	EMP	CC	ETME 253A	Strength of Materials Lab	-	-	2	1
	7	EMP	CC	ETME 255A	Fluid Mechanics Lab	-	-	2	1
	8	EMP	CC	ETME 159A	CAD Fundamental Processes Part-A	-	-	2	1
	9								
	TOTAL					18	2	8	20
					Semester - IV				
	1	EMP	CC	ETME 230A	Fluid Machines	3	-	-	3
	2	EMP	CC	ETME 214A	Turbomachines	3	-	-	3
	3	OE	CC	ETME 220A	Engineering Mechanics	3	-	-	3
	4	ED	SE	ETMC 226A	Fundamentals of Management	3	-	-	3
	5	EMP	CC	ETME 226A	Theory of Machines	3	1	-	4
	6			VAC 131	Employbility and Analytical Skills (Value Added Course)	2	-	-	0
	7	EMP	CC	ETME 252A	Fluid Machines Lab	-	-	2	1
	8	EMP	CC	ETME 258A	Theory of Machines Lab	-	-	2	1
	9	EMP	CC	ETME 156A	CAD Fundamental Process Part-B	-	-	2	1
	TOTAL					17	3	8	19

Note: Practical training will be of minimum six weeks duration at the end of fourth semester during summer break and the evaluation will be done at the end of fifth semester.

Year	SNo	UC		Subject Code	Title	L	T	P	C
					Semester - V				
THIRD	1	EMP	CC	ETME 309A	Manufacturing Technology	3	-	-	3
	2	EMP	CC	ETME 319A	Internal Combustion Engine	3		-	3
	3		CC	ETME 213A	CAD Advanced Processes	3	-	-	3
	4	EMP	CC	ETME 228A	CAD Sheet Metal/Surface Modeling	3	-	-	3
	5	ED	CC	ETME 324A	Non-Conventional Energy Resources	3	-	-	3
	6	EMP	CC	ETMC 421A	Entrepreneurship Development	3	-	-	3
	7	EMP	CC	ETME 315A	Design of Machine Elements	3	1	-	4
	8	EMP	CC	ETME 381A	Practical Training-I	-	-	2	1
	9	EMP	CC	ETME 357A	Manufacturing Technology Lab	-	-	2	1
	10	SD	CC	ETME 363A	Internal Combustion Engine Lab	-	-	2	1
	11	SD	SE	VAC 132	Employbility and Analytical Skills (Value Added Course)	2	-	-	0
	TOTAL					21	1	6	25
					Semester - VI				
	1	EMP	CC	ETME 302A	Heat Transfer	3	1	-	4
	2	OE	CC	ETME 322A	Robotics & Automation	3	-	-	3
	3	OE	CC	ETME 326A	Automobile Engineering	3	-	-	3
	4	EMP	CC	ETME 317A	CAD Mold Wizard Fundamental Process	3	-	-	3
	5	EMP	CC	ETME 328A	Electric Vehicle Engineering Design	3	-	-	3
	6	EMP	CC	ETME 352A	Heat Transfer Lab	-	-	2	1
	7	EMP	CC	ETME 354A	Robotics & Automation Lab	-	-	2	1
	8	EMP	CC	ETME 356A	Automobile Engineering Lab	-	-	2	1
	9	SD	SE	VAC 133	Employbility and Analytical Skills (Value Added Course)	2	-	-	0
	10	SD	SE		Professional Elective Course (PEC/DE)				3
	TOTAL					17	1	8	22

Note: Practical training will be for minimum of four weeks duration at the end of Sixth Semester during summer break and evaluation will be done at the end of Seventh Semester.

Year	SNo	UC		Subject Code	Title	L	T	P	C
					Semester - VII				
FOURTH	1	EMP	CC	ETME 425A	Refrigeration And Air-Conditioning	3	-	-	3
	2	EMP	CC	ETME 427A	Power Plant Engineering	3	-	-	3
	3	EMP	CC	ETME 417A	Solar Energy	3	-	-	3
	4	SD	SE		Open Electice Courses (OEC)	3			3
	5	EMP	CC		Professional Elective Course (PEC/DE)	3	-	-	3
	6	EMP	CC	ETME 451A	Refrigeration And Air-Conditioning Lab	-	-	2	1
	7	EMP	CC	ETME 481A	Practical Training-II	-	-	-	1
	8	EMP	CC	ETME 453A	Measurement & Metrology Lab	-	-	2	1
	9	EMP	CC	ETME 455A	Project	-	-	-	6
	TOTAL					15	-	4	24
					Semester - VIII				
	1	EMP	SE	ETME 452A	Internship	-	-	-	12
	Total					0	0	0	12

Total Credits [C]	**163.5**

					Programme Elective Courses (PEC)	L	T	P	C
1	EMP		ETME 410A	Inspections And Quality Control	3	-	-	3
2	EMP		ETME 412A	Industrial Engineering	3	-	-	3
3	EMP		ETME 408A	Computer Aided Manufacturing	3	-	-	3
4	EMP		ETME 406A	Mechatronics	3	-	-	3
5	EMP		ETME 212A	Flexible Manufacturing System	3	-	-	3
6	EMP		ETME 411A	Artificial Intelligence	3	-	-	3
7	EMP		ETME 413A	Waste Heat Recovery Systems	3	-	-	3
8	EMP		ETME 415A	Industrial Designs And Product Development	3	-	-	3
9	EMP		ETME 427A	Power Plant Engineering	3	-	-	3
10	EMP		ETME 417A	Solar Energy	3	-	-	3
11	EMP		ETME 419A	Microprocessors in Automation	3	-	-	3
12	EMP		ETME 216A	Computational Fluid Dynamics	3	-	-	3
13	EMP		ETME 414A	Composite Materials	3	-	-	3
14	EMP		ETME 416A	Electrical Vehicles	3	-	-	3
15	EMP		ETME 426A	Mechanical Vibrations	3	-	-	3
16	EMP		ETME 404A	Additive Manufacturing	3	-	-	3
17	EMP		ETME 324A	Non Conventional Energy Resources	3	-	-	3
18	EMP		ETME 420A	Finite Element Analysis	3	-	-	3
19	EMP		ETME 422A	Gas Dynamics and Jet Propulsion	3	-	-	3
20	EMP		ETME 421A	Process Planning and Cost Estimation	3	-	-	3
21	EMP		ETME 423A	Design of Transmission Systems	3	-	-	3
22	EMP		ETME 424A	Total Quality Management	3	-	-	3
23	EMP		ETME 214A	Turbomachines	3	-	-	3

					Open Elective Courses (OEC)	L	T	P	C
1	OE		ETEC 308A	Instrumentaion And Control Systems	3	-	-	3
2									

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Course Objectives

5. To make student innovative through the hands on / fabrication and practically sound.
6. Demonstrate a sound technical knowledge of their selected project topic.
7. Undertake problem identification, formulation and solution.
8. Conduct an engineering project

Course Outcomes

On completion of this course, the students will be able to

CO1. Undertake problem identification, formulation and solution.
C02. Design solutions to complex problems utilising a system approach.
CO3. Demonstrate the knowledge, skills and attitudes of a professional engineer
CO4. Communicate with engineers and the community at large in written an oral forms

ETME 455A	**PROJECT**	L	T	P	C
Version 1.0		0	0	0	6
Pre-requisites/Exposure					
Co-requisites	--				

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	**Quiz**	**Attendance**	**Mid Term Exam**	**Presentation/ Projects/ etc.**	**End Term Exam**
Weightage (%)	**10**	**10**	**20**	**10**	**50**

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Demonstrate a sound technical knowledge of their selected project topic	**PO1**

CO2	Undertake problem identification, formulation and solution.	**PO4**
CO3	Design engineering solutions to complex problems utilising a systems approach.	**PO5**
CO4	Demonstrate the knowledge, skills and attitudes of a professional engineer	**PO2**

Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
ETME 455 A	Project	2	2		3	3										

1=weakly mapped
2= moderately mapped
3=strongly mapped

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SEMESTER VIII

ETME 452A	**INTERNSHIP**	L	T	P	C
Version 1.0		0	0	0	12
Pre-requisites/Exposure	Basics of Mechanical Engineering.				
Co-requisites	--				

Course Objectives:

1. To provide an exposure to real life industry environment.
2. To help student learn about the projects.
3. To enhance students' knowledge in one particular technology.
4. To Increase self-confidence of students and helps in finding their own proficiency.
5. To cultivate student's leadership ability and responsibility to perform or execute the given task.
6. To provide learners hands on practice within a real job situation.

Course Outcomes:

On completion of this course, the students will be able to

CO1. Learn the practical aspects of the mechanical industry.
CO2. Learn to work over projects for the development of students.
CO3. Become updated with all the latest changes in technological world.
CO4. Ability to communicate efficiently.
CO5. Knack to be a multi-skilled engineer with good technical knowledge, management, leadership and entrepreneurship skills.
CO6. Capability to acquire and apply fundamental principles of engineering.

Catalog Description:

Minimum of six months Internship in industry or appropriate workplace/ academic and research institutions in India/abroad. The internship should give exposure to the practical aspects of the discipline. The outcome of the internship should be presented in the form of a report.

Modes of Evaluation: Quiz/Oral practical oral exam/presentation/projects/Practical Examination

Examination Scheme:

Components	Quiz	Attendance	Mid Term Exam	Presentation/ Projects/ etc.	End Term Exam
Weightage (%)	10	10	20	10	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and Pos		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Learn the practical aspects of the Mechanical industry.	**PO1**
CO2	Learn to work over projects for the development of students.	**PO2**
CO3	Become updated with all the latest changes in technological world.	**PO4**
CO4	Ability to communicate efficiently.	**PO5**
CO5	Knack to be a multi-skilled engineer with good technical knowledge,	**PO10**
CO6	management, leadership and entrepreneurship skills.	**PSO01**

Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO 12	PS O1	PS O2	PS O3
ETME452 A	Internship	2	2		3	3					2			3		

1=weakly mapped
2= moderately mapped
3=strongly mapped

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