

COEP Technological University Pune

(A Unitary Public University of Govt. of Maharashtra)

School of Engineering and Technology

Curriculum Structure

<Mechanical Engineering>

(Effective from: A.Y. 2026-27)

Dr. Chougale N. K.
23.6.26

Program Educational Objectives (PEOs)

After the completion of the program,

- I. Student will be employable in the diversified sectors of the industry, government organizations, public sector and research organizations.
- II. Student will pursue higher education in engineering or other fields of their interests, at institutes of repute and high ranking.
- III. Student will demonstrate effective communication, lifelong learning ability, integrity, teamwork, leadership qualities, concern to environment and commitment to safety, health, legal and cultural issues in the fields they choose to pursue.

Program Outcomes (POs):

Engineering Graduate will be able to:

PO1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problem.

PO2: Problem Analysis: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural science, and engineering sciences.

PO3: Design/Development Solution: Design solution for complex engineering problems and design system component or process that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, social and environmental conditions.

PO4: Conduct Investigation of Complex Problem: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusion.

PO5: Method, Tool Usage: Create, select and apply appropriately technique, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with understanding the limitation.

PO6: The Engineer and Society: Apply reasoning informed by the contextual knowledge to access societal health, safety, legal and cultural and consequent responsibility relevant to the professional engineering practice.

PO7: Environment and Sustainability: Understand the impact of the professional engineering solution in societal and environmental context, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principle and commitment to professional ethics and responsibilities and norms of the engineering practices.

PO9: Individual and Team Work: Function effectively as an individual, and as the member or leader in diverse team and multidisciplinary setting.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, and being able to comprehend and write effective reports and design documentation and effective presentation and give and receive clear instructions.

PO11: Project management and Finance: Demonstrate knowledge & understanding of the engineering and management principles and apply these to one's work, as the member and the leader in a team to manage projects and in multidisciplinary environment.

PO12: Lifelong Learning: Recognize the need for and have the preparation and ability to engage in independent and lifelong learning in broadest context of technological change.

S.Y. B. Tech.
<Mechanical Engineering>

List of Abbreviations

Abbreviation	Title	No of Courses	Credits	% of Credits
BS	Basic Science Course	--	--	--
ESC	Engineering Science Course	--	--	--
PCC	Programme Core Course (PCC)	07	22	53.65
PEC	Programme Elective Course (PEC)	--	--	--
OE/SE	Open/School Elective (OE/SE) other than particular program	02	04	9.75
MDM	Multidisciplinary Minor (MDM)	01	03	7.31
VSEC	Vocational and Skill Enhancement Course (VSEC)	01	02	4.87
HSMC	Humanities Social Science and Management	03	04	9.75
IKS	Indian Knowledge System (IKS)	--	--	--
VEC	Value Education Course (VEC)	02	02	4.87
RM	Research Methodology (RM)	--	--	--
--	Internship	--	--	--
--	Project	--	--	--
CEA	Community Engagement Activity (CEA)/Field Project	01	02	4.87
CCA	Co-curricular & Extracurricular Activities (CCA)	--	--	--
AEC	Ability Enhancement Course	01	02	4.87
Total		16	41	100

S.Y. B. Tech.
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Semester -III

Sr. No	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
1	PCC	ME-24001	Engineering Thermodynamics	3	1	0	0	4	30	20	50	---	---
2	PCC	ME-24002	Solid Mechanics	2	0	0	1	2	30	20	50	---	---
3	PCC	ME-24003	Machine Drawing & Geometric Modeling	1	0	2	1	2	30	20	50	50	50
4	PCC	ME-24004	Manufacturing Technology	2	0	2	1	3	30	20	50	50	50
5	OE-03		Open Elective – I	2	0	0	0	2	30	20	50	---	---
6	HSMC	<tb>	Design Thinking	0	0	2	0	1	---			CIE:100	
7	VEC-I	<tb>	Environmental Studies	1	0	0	0	1	CIE:100			---	---
8	HSMC	HS-24004	Principles of Economics	2	0	0	0	2	30	20	50	---	---
9	CEA	AS-24004	Community Engagement Activity/ Field Project *	0	0	4	0	2				CIE 100	
Total				14	01	08	03	19					

*After SEM II during summer vacation and evaluation will be done in the start of SEM III with a duration minimum one and a maximum three month

Honors: Design Engineering

Sem	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
III	HON-01	<tb>	Design for Manufacturing and Assembly	3	-	-	1	3	30	20	50	--	--

Honors: Thermal Engineering

Sem	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
III	HON-02	<tb>	Renewable energy systems	3	-	-	1	3	30	20	50	--	--

Interdisciplinary Minor: Smart Mobility and Green Energy Systems

Sem	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
III	IDP-01	<td>	Energy Storage System for EV	3	-	-	1	3	30	20	50	--	--

Open Electives- Mechanical Engineering

Semester	Course Code	Course Name	L	T	P	Hrs	Cr	Evaluation Scheme				
								(Weightage in %)				
								Theory			Laboratory	
								MSE	TA	ESE	ISE	ESE
III	<td>	Computer Aided 3D Geometric Modelling	1	-	2	3	2	30	20	50		

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Semester -IV

Sr. No	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
1	PCC	ME-24006	Fluid Mechanics	3	0	2	1	4	30	20	50	50	50
2	PCC	ME-24007	Design of Machine Elements	2	1	0	1	3	30	20	50	--	--
3	PCC	ME-24008	Kinematics of Machines	3	0	2	1	4	30	20	50	50	50
5	OE		Open Elective - II	2	0	0	0	2	30	20	50	--	--
6	MDM 01		Multidisciplinary Minor I	3	0	0	1	3	30	20	50	--	--
7	VSEC-01	ME-24009	Numerical Methods and Programming Language	1	0	2	1	2	CIE:100			50	50
8	AEC-II	<td>	Indian Language: Sanskrit/Pali	2	0	0	0	2	30	20	50	--	--
09	HSMC	HS-24001	Entrepreneurship	1	0	0	1	1	CIE:100			--	--
07	VEC-II	<td>	Constitution of India and Universal Human Values	1	0	0	0	1	CIE:100			--	--
Total				18	01	06	06	22					

Honors: Design Engineering

Sem	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
IV	HON-02	<td>	Stress Analysis	4	-	-	1	4	30	20	50	--	--

Interdisciplinary Minor

Title: Smart Mobility and Green Energy Systems

Sem	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
IV	IDP -02	<td>	IOT for Electric Vehicle	4	-	-	1	4	30	20	50	--	--

Interdisciplinary Minor

Title: Smart Mobility and Green Energy Systems

Sem	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
IV	IDP -02	<td>	IOT for Electric Vehicle	4	-	-	1	4	30	20	50	--	--

Open Electives- Mechanical Engineering

Semester	Course Code	Course Name	L	T	P	Hrs	Cr	Evaluation Scheme (Weightage in %)				
								Theory			Laboratory	
								MSE	TA	ESE	ISE	ESE
IV	<td>	Engineering Thermodynamics and heat Transfer	2	-	-	2	2	30	20	50		

Multidisciplinary Minor in Simulation Engineering

Semester	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme (Weightage in %)				
								Theory			Laboratory	
								MSE	TA	ESE	ISE	ESE
IV	MDM I	Foundation to Mechanical Engineering	3	0	0	1	3	30	20	50	-	

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T.Y. B. Tech.
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Semester -V

Sr. No	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
1	PCC	ME-25001	Heat Transfer	3	0	2	1	4	30	20	50	50	50
2	PCC	ME-25002	Dynamics of Machine	3	0	2	0	4	30	20	50	50	50
3	PCC	ME-25003	Metrology & Measurement	2	0	2	1	3	30	20	50	50	50
4	PEC		Program Elective Course -I (Specify List) *	3	0	0	1	3	30	20	50	---	---
5	MDM		Multidisciplinary Minor II	3	1	0	1	4	30	20	50	---	---
6	OE		Open elective III	2	0	0	2	2	30	20	50	---	---
7	ELC		Internship 1#	0	0	2	0	1	--	--	--	CIE:100	
8	ELC		Project-I	0	0	4	0	2	--	--	--	CIE:100	
Total				16	01	12	06	23					

Summer Internship (Industry /R&D / Academic Institute) after IV semester during summer vacation and evaluation will be done at the start of V semester. Duration minimum One and a maximum Two months.

*Program Elective Course I – Discipline-wise List			
Design Engineering	Thermal Engineering/Fluid Science	Manufacturing Science and Engineering	Interdisciplinary
Finite Element Methods (FEM)	Fluid Dynamics	Advanced Manufacturing Technology	Fundamentals of Green Hydrogen Technology
Experimental Stress Analysis	Modern IC Engines	Operations Research	Machine Learning
Innovative Design and Optimization	Steam and Gas Turbine	Design of Polymer composites	Renewable Energy Resources

Honors: Design Engineering

Sem	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
V	HON-03	<tbd>	MATLAB Programming and Simulink Modeling	3	-	2	1	4	30	20	50	50	50

Honors: Thermal Engineering

Sem	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
V	HON-03	<tbd>	Computational Fluid Dynamics	3	-	2	1	4	30	20	50	50	50

Interdisciplinary Minor

Title: Smart Mobility and Green Energy Systems

Sem	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
V	IDP -03	<tbd>	Introduction to hydrogen technology	4	-	-	1	4	30	20	50	--	--

Open Electives- Mechanical Engineering

Semester	Course Code	Course Name	L	T	P	Hrs	Cr	Evaluation Scheme				
								(Weightage in %)				
								Theory			Laboratory	
								MSE	TA	ESE	ISE	ESE
V	<tbd>	Introduction to aircraft system	2	-	-	2	2	30	20	50		
V	<tbd>	Automotive Technology	2	-	-	2	2	30	20	50		

Multidisciplinary Minor in Simulation Engineering

Semester	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
								(Weightage in %)				
								Theory			Laboratory	
								MSE	TA	ESE	ISE	ESE
V	MDM II	Finite Element Method	3	0	2	1	4	30	20	50	50	50

Semester -VI

Sr. No	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
1	PCC		Mechanical System Design	3	0	2	1	4	30	20	50	50	50
2	PCC		Computer Aided Design and Manufacturin g	3	0	2	1	4	30	20	50	50	50
3	PCC		Fluid Machinery	3	0	2	0	4	30	20	50	50	50
4	PEC		Program Elective Course -II (Specify List) *	3	1	0	0	4	30	20	50	--	--
6	MDM		Multidiscipli nary Minor III	3	1	0	1	4	30	20	50	--	--
07	ELC		Project-II	0	0	4	0	2				CIE:100	
Total				15	02	10	03	22					

Honors : Design Engineering

Sem	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
VI	HON-04	<tbid>	Advanced Vibration and Acoustics	3	-	2	1	4	30	20	50	50	50

Honors : Thermal Engineering

Sem	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
VI	HON-04	<tbid>	Introduction to modelling and simulation of hydrogen technology	4	-	-	1	4	30	20	50	--	--

Interdisciplinary Minor

Title: Smart Mobility and Green Energy Systems

Sem	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
VI	IDP -04	<td>	CAD/CAM	3	-	2	1	4	30	20	50	50	50

Multidisciplinary Minor in Simulation Engineering

Semester	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme (Weightage in %)				
								Theory			Laboratory	
								MSE	TA	ESE	ISE	ESE
VI	MDM III	Computational Fluid Dynamics	3	0	2	1	4	30	20	50	50	50

Final Year B. Tech. <Mechanical Engineering>

Semester -VII

Sr. No	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
1	PCC	<td>	Energy Conversion	2	0	0	1	2	30	20	50	---	---
2	PCC	<td>	Refrigeration and Air Conditioning	2	0	2	1	3	30	20	50	50	50
3	PCC	<td>	Vibration and Acoustics	2	0	2	1	3	30	20	50	50	50
4	PEC	<td>	Program Elective Course -III (Specify List) *	3	0	0	0	3	30	20	50	---	---
5	ELC	<td>	Internship 2#	0	0	2	0	1				CIE: 100	
6	OE	<td>	Research Methodology and IPR	2	0	0	1	2	30	20	50	---	---
7	MDM	<td>	Multidisciplinary Minor IV	3	0	0	1	3	30	20	50	---	---
8	ELC		Project-III	0	0	10	2	5	--	--	--	50	50
Total				14	01	02	07	22					

Summer Internship (Industry /R&D / Academic Institute) after VI semester during summer vacation and evaluation will be done at the start of VII semester. Duration minimum One and a maximum Two months.

*Program Elective Course III – Discipline-wise List			
Design Engineering	Thermal Engineering/Fluid Science	Manufacturing Science and Engineering	Other Disciplines
Advanced CAD/CAM	Advanced Computational Fluid Dynamics	Industrial Engineering	Hybrid and Electric Vehicles
Mechanics of Composite Materials	Design of Thermal Systems	Reverse Engineering	Aerospace Engineering
Condition Monitoring	Mathematical Modelling & Analysis Thermal System	Production and Operations Management	Design of Defense Equipment
Automatic control systems		AI and ML for Mech. Engineers	Automotive control systems

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Honors: Title: Design Engineering

Sem	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
VII	HON-05	<tbid>	Optimization Techniques in Design	3	-	-	1	3	30	20	50	--	--

Title: Thermal Engineering

Sem	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
VII	HON-05	<tbid>	Electronic cooling systems	3	-	-	1	3	30	20	50	--	--

Interdisciplinary Minor

Title: Smart Mobility and Green Energy Systems

Sem	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
VII	IDP -05	<tbid>	Optimization Techniques in Design	3	-	-	1	3	30	20	50	--	--

Multidisciplinary Minor in Simulation Engineering

Semester	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme (Weightage in %)				
								Theory			Laboratory	
								MSE	TA	ESE	ISE	ESE
VII	MDM IV	Optimization Techniques in Design	3	0	0	1	3	30	20	50	--	--

Semester -VIII

Sr. No	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
1	PEC	<td>	Program Elective Course -IV (Specify List) **	3	0	0	0	3	30	20	50	---	---
2	PEC	<td>	Program Specific Elective- V (Specify List) **	3	0	0	3	3	30	20	50	---	---
3	PEC	<td>	Program Specific Elective- VI (Specify List) **	3	0	0	3	3	30	20	50	---	---
4	ELC	<td>	Internship #3	0	0	0	0	3	---	---	--	50	50
Total				9	00	00	06	12					

** MOOCS / Online Courses