

COEP Technological University, Pune

(A Unitary Public University of Govt. of Maharashtra)

NEP 2020 Compliant

Curriculum Structure

M. Tech. (Mechanical Engineering)

Specialization: **Thermal Science and Energy Systems**

(Effective from: A.Y. 2025-26)

[Signature]
23.6.26

Dr. Chougule N. K.
Head

Department of Mechanical Engineering
COEP Technological University, Pune-05.

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23/06/2026
Professor
Department of Mechanical Engineering,
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**PG Program [M. Tech. (Mechanical Engineering) Specialization: Thermal Science and Energy Systems]
Curriculum Structure
w. e. f. AY 2025-26**

List of Abbreviations

Abbreviation	Title	No of courses	Credits	% of Credits
PSMC	Program Specific Mathematics Course	1	4	5
PSBC	Program Specific Bridge Course	1	3	3.75
PCC	Program Core Course	8	24	30
PEC	Program Specific Elective Course	3	9	11.25
ELC	Experiential learning course (Dissertation Phase I & II, and summer Internship).	2+1	22+3	31.25
OE	Open Elective	1	3	3.75
SLC	Self Learning Course	2	6	7.5
AEC	Ability Enhancement Course	1	2	2.5
LLC	Liberal Learning Course	1	1	1.25
MLC	Mandatory Learning Course (research Methodology and Intellectual property rights)	1	3	3.75
Total		22	80	100%

**PG Program [M. Tech. (Mechanical Engineering) Specialization: Thermal Science and Energy Systems]
Curriculum Structure**

Semester I													
Sr. No.	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme (Weightages in %)				
									Theory			Laboratory	
									MS E	TA	ESE	ISE	ESE
1.	PSM C	MTS-25001	Applied Numerical Methods	3	1	-	1	4	30	20	50	-	-
2.	PCC	MTS-25002	Fluid Dynamics	3	-	-	1	3	30	20	50	-	-
3.	PCC	MTS-25003	Advanced Thermodynamics	3	1	-	1	4	30	20	50	-	-
4.	PCC	MTS-25004	Advanced Heat Transfer	3	-	-	1	3	30	20	50	-	-
5.	PSBC	MTS-25005	Low Temperature Energy Systems	2	-	2	1	3	30	20	50	50	50
6.	PCC	MTS-25006	Thermal Engineering Lab Practice	-	-	4	-	2	-	-	-	50	50
7.	PEC-1		Program Specific Elective Course –I						30	20	50	-	-
		MTS(PE)-25001	Energy Conservation and Management	3	-	-	1	3	30	20	50	-	-
		MTS(PE)-25002	Design of Thermal Systems	3	-	-	1	3	30	20	50	-	-
		MTS(PE)-25003	IC Engine Combustion and Pollution	3	-	-	1	3	30	20	50	-	-
		MTS(PE)-25004	Introduction to Modeling and Simulation of Hydrogen Technologies	3	-	-	1	3	30	20	50	-	-
8	MLC	SET-25001	Research Methodology and Intellectual Property Rights	2	1	-	1	3	30	20	50	-	-
Total Credits				25									

Legends: L-Lecture, T-Tutorial, P-Practical, S-Self Study, Cr-Credits,

ISE: In-Semester-Evaluation, ESE: End-Semester-Evaluation, MSE: Mid-Semester Evaluation, TA: Teacher's Assessment, CIE: Continuous-Internal-Evaluation

Open Elective (OE): Every department shall offer one OE course (in Engineering/Science/Technology). A student can opt for an OE course offered by a department except the one offered by his /her department.

Signature

**PG Program [M. Tech. (Mechanical Engineering) Specialization: Thermal Science and Energy Systems]
Curriculum Structure**

Semester II

Semester II													
Sr. No.	Course Type	Course Code	Course Name	L	T	P	S	C r	Evaluation Scheme (Weightages in %)				
									Theory			Laboratory	
									MS E	TA	ESE	ISE	ESE
1.	OE		Interdisciplinary Open Course										
		OEC25033	Mechanics of Materials	3	-	-	1	3	30	20	50	-	-
		OEC25034	Finite Element Methods	3	-	-	1	3	30	20	50	-	-
2.	PCC	MTS-25007	Computational Fluid Dynamics	3	-	2	1	4	30	20	50	50	50
3.	PCC	MTS-25008	Heat Exchanger Design	3	-	-	1	3	30	20	50		
4.	PCC	MTS-25009	Gas turbines and Jet Propulsion	3	-	-	1	3	30	20	50		
5.	PCC	MTS-25010	Energy System Lab Practice	-	-	4	-	2				50	50
6.	PEC-2		Program Specific Elective Course –II										
		MTS(PE)-25005	Solar and Wind System Design	3	-	-	1	3	30	20	50	-	-
		MTS(PE)-25006	Renewable Energy Systems	3	-	-	1	3	30	20	50	-	-
		MTS(PE)-25007	Cooling of Electronic System	3	-	-	1	3	30	20	50	-	-
7.	PEC-3		Program Specific Elective Course –III										
		MTS(PE)-25008	Micro-fluidics	3	-	-	1	3	30	20	50	-	-
		MTS(PE)-25009	Air Conditioning System Design	3	-	-	1	3	30	20	50	-	-
		MTS(PE)-25010	Energy and Environment	3	-	-	1	3	30	20	50	-	-
8.	AEC	SET-25002	Effective Technical Communication	1	-	2	1	2	50	50	-	100	-
9.	LLC	LLC	Liberal Learning Course	-	-	2	2	1	-	-	-	100	-
Total Credits				24									

➤ **Exit option to qualify for PG Diploma in Thermal Science and Energy Systems:**

- Eight weeks domain specific industrial internship in the month of June-July after successfully completing first year of the program.

**PG Program [M. Tech. (Mechanical Engineering) Specialization: Thermal Science and Energy Systems]
Proposed Curriculum Structure**

Semester III

Sr. No.	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme (Weightages in %)				
									Theory			Laboratory	
									M S E	TA	ESE	ISE	ESE
1	SLC	SLC-MTS-25001	Massive Open Online Course –I	3	-	-	1	3	-	-	100	-	-
2	SLC	SLC-MTS-25002	Massive Open Online Course –II	3	-	-	1	3	-	-	100	-	-
3	ELC	ELC-MTS-25001	Internship	-	-	6	-	3	-	-	100	-	-
4	ELC	ELC-MTS-25002	Dissertation Phase – I	-	-	22	12	11	-	-	-	70	30
Total Credits				20									

Semester IV

Sr. No.	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme (Weightages in %)				
									Theory			Laboratory	
									M S E	TA	ESE	ISE	ESE
1	ELC	ELC-MTS-25003	Dissertation Phase – II	-	-	22	12	11	-	-	-	70	30
Total Credits				11									

➤ **MOOC Courses:**

- ✓ The MOOC Course must be from NPTEL of minimum 12 weeks duration.
- ✓ Generally the selected course should be in line with specializations or project needs.

