COEP Technological University Pune

(A Unitary Public University of Govt. of Maharashtra)

Proposed Curriculum Structure

M. Tech.

Automotive Technology

(Effective from: A.Y. 2023-24)
Revised 2025-26_3

OPTION II : Curriculum Structure for M. Tech. Engineering NEP Effective from 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
PEC	Programme Specific Elective Course	3	9	11.25
PCC	Program Core Course Mandatory Learning Course	6	20	25
LC	Laboratory Course	2	4	5
OE	Open Elective	1	3	3.75
MLC	Mandatory Learning Course (research Methodology and Intellectual property rights)	1	03	3.75
SLC	Self-Learning Course	2	6	7.5
AEC	Ability Enhancement course	1	2	2.5
ELC	Experiential learning course (Dissertation, Mini project and summer Internship).	2+1	22+3	31.25
CCA	CO-Curricular & extra	1	1	1.25
	Total	**22**	**80**	**100%**

23.6.26

Dr. Chougule N. K.
Head
Department of Mechanical Engineering
COEP Technological University, Pune-05.

PG Program [M. Tech. Automotive Technology]
Proposed Curriculum Structure
Semester I

Sr. No.	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme (Weightages in %)				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
1.	PSMC	PSMC- MAT-25001	Program Specific Mathematics Course (Computational Methods in Engineering)	3	1	--	01	4	30	20	50	-	-
2	PSBC	PSBC -MAT-25001	Automotive Engineering Systems (ARAI)	2	0	2	01	3	30	20	50	50	50
3	PCC-I	PCC-I MAT-25001	Vehicle Dynamics (COEP)	3	1	--	1	4	**30**	**20**	**50**		
4	PCC-II	PCC-II MAT-25002	Automotive Fuels & Emission (ARAI/COEP)	3	--	--	01	3	**30**	**20**	**50**		
5	PCC-III	PCC-III MAT-25002	Automotive Noise Vibration Harness (ARAI)	3	--	--	01	3	**30**	**20**	**50**		
6	LC-I	LC-I MAT-25001	Automotive Lab-I:(ARAI & COEP)	--	--	4	--	2				**50**	**50**
7	PEC I	**Departmental Elective**											
		PEC-I MAT(DE)-25001	Combustion Engineering (COEP)	3	-	-	1	3					
		PEC-I MAT(DE)-25002	Hybrid and Electric vehicles (ARAI)										
		PEC-I MAT(DE)-25003	Modelling of Automotive Systems (COEP)						30	20	50		
		PEC-I MAT(DE)-25004	Automotive Materials & Composites (COEP)										
		PEC-I MAT(DE)-	Combustion Engineering										

		25005	(COEP)										
		PEC-I MAT(DE) 2006	**Passenger Vehicle Homologation (COEP –Indutry)**										
8.	MLC		Research Methodology and Intellectual Property Rights (COEP)	2	1	--		03	30	20	50	-	-
			Total	**19**	**03**	**06**	**07**	**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

PG Program [M. Tech. Automotive Technology]
Proposed Curriculum Structure
Semester II

Sr. No	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme (Weightages in %)				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
1.	OE	OE MAT-25001	Interdisciplinary Open Course	03	--	--	01	3	30	20	50	-	-
2	PCC-I	PCC-I MAT-25001	IC Engine Modelling (COEP)	3	--	02	01	4	**30**	**20**	**50**	**50**	**50**
3	PCC-II	PCC-II MAT-25002	Automotive Mechatronics (ARAI)	3	--	--	01	3	**30**	20	50		
4	PCC-III	PCC-III MAT-25003	Automotive Engine Design (COEP)	3	--	---	01	3	**30**	**20**	**50**		
5	PECII	**Department Elective –II**		3	--	---	01	3	**30**	**20**	50		
		PEC-II MAT (DE)- 25001	Automotive Safety and Lighting (ARAI)										
		PEC-II MAT (DE)- 25002	Finite Element Method (ARAI)										
		PEC-II MAT (DE)- 25003	Computational Fluid Dynamics (COEP)										
		PEC-II MAT (DE)- 25004	E-Noise Vibration Harshness (ARAI)										
		PEC-II MAT (DE)- 25005	Automotive Tribology (COEP)										

6	PECIII	**Department Elective –III**		3	-	-	1	3	30	20	50		
		PEC-III MAT(DE) 25001	Automotive System Design (COEP)										
		PEC-III MAT(DE)- 25002	Automotive Aerodynamics. (COEP)										
		PEC-III MAT(DE)- 25003	Automotive HVAC (ARAI)										
		PEC-III MAT(DE)- 25004	Automotive Transmission and Control										
		PEC-III MAT(DE) 25005	Energy Management and Vehicle Integration										
		PEC-III MAT(DE)- 25006	**Automotive Intelligence (ARAI)**										
7	LC	LC MAT-25001	Auto Lab-II:(ARAI & COEP)	--	--	4	--	2				**50**	**50**
8	AEC	--------25001	Effective Technical Communication (COEP)	1	-	2	1	2	50	50	-	100	-
9	CCA	----- -25001	Liberal Learning Course (COEP)	1	--	02	02	1	-	-	-	100	-
			Total	**19**	**00**	**10**	**09**	**24**					

Semester III

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

- **SUMMER Internship for two months after Sem II for and before sem III**

Semester IV

Sr. No.	Course Type	Course Code	Course Name	L	T	P	S	Cr	Evaluation Scheme (Weightages in %)				
									Theory			Laboratory	
									MSE	TA	ESE	ISE	ESE
1.	ELC	ELC MAT-20002	Dissertation Phase – II	--	--	22	12	11	-	-	-	70	30
Total Credits								11					

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SEMESTER I **(PSMC) (MAT-19001) Computational Methods in Engineering**	
Teaching Scheme Lectures: 3 hrs/week	**Examination Scheme: Weightage in %** Mid Semester Exam (MSE): 30 Teacher Assessment (TA): 20 End Semester Exam (ESE): 50
Course Outcomes: At the end of the course, students will demonstrate the ability to: 1. understand the mathematical models and methodologies to solve those models 2. analyze and develop the mathematical model of an engineering system. 3. solve differential equations using numerical techniques.	
Syllabus Contents: • Roots of Equations: Bracketing methods, open methods and case studies. • Linear Algebraic Equations: Gauss Elimination, LU decomposition and matrix inversion, special matrices and Gauss-Seidel method, case studies. • Numerical Differentiation and Integration: Newton-Cotes integration formulas, integration of equations, numerical differentiation, case studies. • Ordinary Differential Equations: Runge-Kutta methods, stiffness and multistep methods, boundary value and eigen value problems, case studies. • Partial Differential Equations: Finite difference methods for elliptic and parabolic equations, case studies.	
References: 1. J.B. Doshi, "Differential Equations for Scientists and Engineers", Narosa, 2010.	