



An Autonomous Institute
Shree Warana Vibhag Shikshan Mandal's
**Tatyasaheb Kore Institute of
Engineering And Technology,
Warananagar**
NBA Accredited Institute

Department of Mechanical Engineering

S. Y. to Final Year B. Tech.
Mechanical Engineering
2024-25

B. Tech. In Mechanical Engineering
Syllabus Structure and Curriculum under Autonomy

SWVSM'S

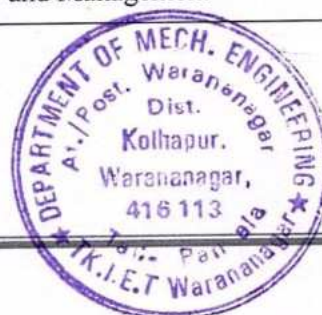
Tatyasaheb Kore Institute of Engineering and Technology, Warananagar
An Autonomous Institute

Abbreviations

Sr.No.	Acronym	Definition
1	ISE	In-Semester Examination
2	ISE-I	In-Semester Examination-I
3	ISE-II	In-Semester Examination-II
4	ESE	End Semester Examination
5	ISA	In-Semester Assessment (Term Work)
6	L	Lecture
7	T	Tutorial
8	P	Practical
9	CH	Contact Hours
10	C	Credit

Course/ Subject Categories

Sr. No.	Acronym	Definition
1	BSC	Basic Science Course
2	ESC	Engineering Science Course
3	PCC	Professional Core Course
4	OE	Open Elective
5	MDM	Multidisciplinary Minor
6	PEC	Professional Elective Course
7	EEC	Entrepreneurship/Economics/ Management Courses
8	VEC	Value Education Course
9	ELC	Experiential Learning Courses
10	VSEC	Vocational and Skill Enhancement Course
11	AEC	Ability Enhancement Course
12	HSSM	Humanities Social Science and Management



SWVSM'S

Tatyasaheb Kore Institute of Engineering and Technology, Warananagar
An Autonomous Institute

Course/ Subject Categories

Year of Implementation	UG/PG	Subject Category	Branch	Sem	Course Number
24	UG	PCC	ME	3	01

Course Term work and POE Code

Year of Implementation	UG/PG	Subject Category	Branch Code	Sem	Course Number	T- Term work P- POE A- Audit Course
24	UG	PCC	ME	3	01	T/P/A



SWVSM'S

Tatyasaheb Kore Institute of Engineering and Technology, Warananagar
An Autonomous Institute

(National Education Policy (NEP) 2020 Structure)

Vision

To be a leading Mechanical Engineering department recognized for fostering innovation, academic excellence, and ethical professionalism, contributing significantly to industry advancements and societal welfare.

MISSION STATEMENTS

- M1 Provide a dynamic learning environment that cultivates technical proficiency, critical thinking, and problem-solving skills among students.
- M2 Foster collaboration with industries to ensure curriculum relevance, facilitate internships, and promote entrepreneurial initiatives.
- M3 Promote a culture of research and innovation, encouraging faculty and students to engage in impactful projects addressing contemporary challenges.
- M4 Prioritize inclusivity by providing equal educational opportunities to all students, especially those from rural and underprivileged backgrounds.
- M5 Instill a commitment to lifelong learning, ethical values, and social responsibility, preparing graduates to make meaningful contributions to society and the environment.



Second Year B. Tech. In Mechanical Engineering

National Education Policy (NEP) 2020 Structure



Tatyasaheb Kore Institute of Engineering and Technology, Warananagar
Second Year B. Tech. (Mechanical Engineering)

Semester-III
(National Education Policy (NEP) 2020 Structure)
Credit Scheme
(To be implemented from 2024 - 25)

Sr. No	Category	Sub Category	Course Code	Name of Course	Teaching Scheme					Examination & Evaluation Scheme			
					L	T	P	C	CH	Component	Mark s	Min for Passing	
1	Programme Course	PCC	23UGPCC-ME301	Mathematics for Mechanical Engineering	3	--	--	2	3	ESE	60	24	40
								ISE	40	16			
			23UGPCC-ME302	Applied Thermodynamics	3	--	--	2	3	ESE	60	24	40
										ISE	40	16	
23UGPCC-ME303	Fluid Mechanics	3	--	--	3	3	ESE	60	24	40			
							ISE	40	16				
23UGPCC-ME304	Material Science and Metallurgy	3		--	2	3	ESE	60	24	40			
							ISE	40	16				
2	Humanities Social Science and Management	EEC	23UGEEC-ME305	Fundamentals of Engineering Economics	3	--	--	2	3	ESE	60	24	40
									ISE	40	16		
		VEC	23UGVEC-ME306L	Personal Values and Ethics	2	--	--	2	2	ISA	50	20	20
3	Multidisciplinary Courses	MDM-1	23UGMDM1-ME307L	Multidisciplinary Minor-1 (Specify MDM Basket)	2	--	--	2	2	ISA	50	20	20
4	Experiential Learning Courses	CEP	23UGCEP-ME308L	Community Connected Project	--	--	2	2	2	ISA	50	20	20
5	Programme Course	PCC	23UGPCC-ME302L	Applied Thermodynamics Lab	--	--	2	1	2	ISA	25	10	10
			23UGPCC-ME303LP	Fluid Mechanics Lab	--	--	2	1	2	ISA	25	10	20
										POE	25	10	
			23UGPCC-ME304LP	Material Science and Metallurgy Lab	--	--	2	1	2	ISA	25	10	20
									POE	25	10		
23UGPCC-ME309L	Machine Drawing & Geometric Modeling Lab	--	--	2	1	2	ISA	25	10	10			
					19	0	10	21	29	0	800	320	320



Tatyasaheb Kore Institute of Engineering and Technology, Warananagar
Second Year B. Tech. (Mechanical Engineering)

Semester-IV
(National Education Policy (NEP) 2020 Structure)
Credit Scheme
(To be implemented from 2024 - 25)

Sr. No.	Category	Sub Category	Course Code	Name of Course	Teaching Scheme					Examination & Evaluation Scheme			
					L	T	P	C	C H	Component	Marks	Min for Passing	
1	Programme Course	PCC	23UGPCC-ME401	Analysis of Mechanical Elements	3	--	--	2	3	ESE	60	24	40
										ISE	40	16	
			23UGPCC-ME402	Theory of Machines-I	3	--	--	2	3	ESE	60	24	40
										ISE	40	16	
			23UGPCC-ME403	Manufacturing Processes and Machine Tools	3	--	--	2	3	ESE	60	24	40
										ISE	40	16	
2	Humanities Social Science and Management	EEC	23UGEEC-ME404	Entrepreneurship/Economics/ Management Courses (EEC) (Specify OE Basket)	3	--	--	2	3	ESE	60	24	40
										ISE	40	16	
3	Multidisciplinary Courses	OE	23UGOE1-ME405	Open Elective (OE-1) (Specify OE Basket)	3	--	--	3	3	ESE	60	24	40
		MDM-2	23UGMDM2-ME406L	Multidisciplinary Minor-2	2	--	--	2	2	ISA	50	20	
4	Skill Courses	VSEC	23UGVSEC-ME407L	C++ Programming Lab	--	--	2	1	2	ISA	50	20	20
5	Humanities Social Science and Management	AEC	23UGAEC-ME408L	Modern Indian language (Specify MIL Basket)	2	--	--	2	2	ISA	25	10	10
		VEC	23UGVEC-ME409L	Environment Ethics and Sustainability	2	--	--	2	2	ISA	50	20	20
6	Programme Course	PCC	23UGPCC-ME401L	Analysis of Mechanical Elements Lab	--	--	2	1	2	ISA	25	10	10
										ISA	25	10	
			23UGPCC-ME402LP	Theory of Machines-I Lab	--	--	2	1	--	POE	25	10	20
										ISA	25	10	
			23UGPCC-ME410LP	Manufacturing Process Lab	--	--	2	1	--	ISA	25	10	20
										POE	25	10	
					21	0	8	21	29	0	800	320	320



Tatyasaheb Kore Institute of Engineering and Technology, Warananagar
Second Year B. Tech. (Mechanical Engineering)

Semester-III & IV
(National Education Policy (NEP) 2020 Structure)
Credit Scheme
(To be implemented from 2024 - 25)

Engineering Economics / Entrepreneurship Course (EEC) and Modern Indian Language (MIL) Basket

Engineering Economics Course Basket Sem. -III			
Category	Sub Category	Course Code	Name of Course
Humanities Social Science and Management	EEC - 1	23UGEEC-ME3051	Economic Analysis of Engineering Projects
		23UGEEC-ME3052	Fundamentals of Engineering Economics
		23UGEEC-ME3053	Engineering Economics for Mechanical Engineers

Engineering Economics Course Basket Sem. -IV			
Category	Sub Category	Course Code	Name of Course
Humanities Social Science and Management	EEC - 2	23UGEEC-ME4041	Industrial Management and Operation Research
		23UGEEC-ME4042	Intellectual Property Rights and Patents
		23UGEEC-ME4043	Start up Management

Modern Indian Language			
Category	Sub Category	Course Code	Name of Course
Humanities Social Science and Management	AEC	23UGAEC-ME4081L	Kanada
		23UGAEC-ME4082L	Marathi
		23UGAEC-ME4083L	Hindi



Tatyasaheb Kore Institute of Engineering and Technology, Warananagar
Second Year B. Tech. (Mechanical Engineering)

Semester-IV
(National Education Policy (NEP) 2020 Structure)
Credit Scheme
(To be implemented from 2024 - 25)

Open Electives Basket Offered

Sr. No.	Sem.	Category	Course Code	Name of Course	Teaching Scheme					Examination & Evaluation Scheme			
					L	T	P	C	CH	Component	Marks	Min for Passing	
1	IV	OE-1	23UGOE1-ME4051	Machining Processes (Including CNC)	3	--	--	3	3	ESE	60	24	40
										ISE	40	16	
2	IV	OE-1	23UGOE1-ME4052	Renewable Energy Systems	3	--	--	3	3	ESE	60	24	40
										ISE	40	16	
					6	0	--	6	6		200	80	80

Exit Option to Qualify Diploma completion of S. Y. B. Tech.

Sr. No.	Category	Sub Category	Course Code	Name of Course	Teaching Scheme					Examination & Evaluation Scheme			
					L	T	P	C	CH	Component	Marks	Min for Passing	
1	Skill Courses	VSEC	23UGVSEC-ME411L	CNC Programming	2	--	2	3	4	ISA	50	20	20
2	Experiential Learning Courses	ELC	23UGELC-ME412L	Mini Project	2	--	2	3	4	ISA	50	20	20
3		ELC	23UGELC-ME413L	Internship (2 Weeks)	--	--	6	2	6	ISA	50	20	20
					4	0	10	8	14	0	150	60	60



Third Year B. Tech. In Mechanical Engineering

National Education Policy (NEP) 2020 Structure



Tatyasaheb Kore Institute of Engineering and Technology, Warananagar
Third Year B. Tech. (Mechanical Engineering)

Semester-V
(National Education Policy (NEP) 2020 Structure)
Credit Scheme
(To be implemented from 2025 - 26)

Sr. No.	Category	Sub Category	Course Code	Name of Course	Teaching Scheme					Examination & Evaluation Scheme					
					L	T	P	C	C H	Component	Marks	Min for Passing			
1	Programme Course	PCC	23UGPCC-ME501	Theory of Machine-- II	3	-	--	3	3	ESE	60	24	40		
										ISE	40	16			
		PCC	23UGPCC-ME502	Heat and Mass Transfer	3	-	--	3	3	ESE	60	24	40		
										ISE	40	16			
		PCC	23UGPCC-ME503	Design of Machine Elements-I	3	-	--	2	3	ESE	60	24	40		
										ISE	40	16			
		PEC-1	23UGPEC1-ME504	Professional Elective Course-1 (Specify PEC-1 Basket)	3	-	--	2	3	ESE	60	24	40		
										ISE	40	16			
		2	Multidisciplinary Courses	MDM-3	23UGMDM3-ME505	Multidisciplinary Minor-3	3	-	2	4	5	ESE	60	24	40
												ISE	40	16	
				OE-2	23UGOE2-ME506	Open Elective (OE) -2 (Specify OE-2 Basket)	3	-	--	3	3	ESE	60	24	40
												ISE	40	16	
3	Programme Course	PCC	23UGPCC-ME50LP	Theory of Machine-- II Lab	--	-	2	1	2	ISA	25	10	20		
										POE	25	10			
		PCC	23UGPCC-ME502LP	Heat and Mass Transfer Lab	--	-	2	1	2	ISA	25	10	20		
										POE	25	10			
		PCC	23UGPCC-ME503L	Design of Machine Elements-I Lab	--	-	2	1	2	ISA	25	10	10		
										POE	50	20			
		PCC	23UGPCC-ME507LP	CNC & CMM Lab	--	-	2	1	2	ISA	25	10	30		
										POE	50	20			
					18	0	10	21	28	0	800	320	320		

Program Electives Courses (PEC) Basket

PEC - 1			
Category	Sub Category	Course Code	Name of Course
Programme Course	PEC-1	23UGPEC1-ME5041	Manufacturing Engineering
		23UGPEC1-ME5042	Computer Integrated Manufacturing
		23UGPEC1-ME5043	Additives Manufacturing



Tatyasaheb Kore Institute of Engineering and Technology, Warananagar
Third Year B. Tech. (Mechanical Engineering)

Semester-V
(National Education Policy (NEP) 2020 Structure)
Credit Scheme
(To be implemented from 2024 - 25)

Open Electives Basket Offered

Sr. No.	Sem	Category	Course Code	Name of Course	Teaching Scheme					Examination & Evaluation Scheme			
					L	T	P	C	CH	Component	Marks	Min for Passing	
1	V	OE-2	23UGOE2-ME5061	Product design and development	2	--	2	3	4	ESE	60	24	40
										ISE	40	16	
2	V	OE-2	23UGOE2-ME5062	Hybrid and Electric Vehicles	2	--	2	3	4	ESE	60	24	40
										ISE	40	16	
					4	0	4	6	8		200	80	80



Tatyasaheb Kore Institute of Engineering and Technology, Warananagar
Third Year B. Tech. (Mechanical Engineering)

Semester-VI
(National Education Policy (NEP) 2020 Structure)
Credit Scheme
(To be implemented from 2025 - 26)

Sr. No	Category	Sub Category	Course Code	Name of Course	Teaching Scheme					Examination & Evaluation Scheme			
					L	T	P	C	CH	Component	Marks	Min for Passing	
1	Programme Course	PCC	23UGPCC-ME601	Metrology and Quality control	3	--	--	2	3	ESE	60	24	40
										ISE	40	16	
			23UGPCC-ME602	Fluid and Turbo Machinery	3	--	--	2	3	ESE	60	24	40
										ISE	40	16	
			23UGPCC-ME603	Design of Machine Elements-II	3	--	--	2	3	ESE	60	24	40
										ISE	40	16	
		PEC-2	23UGPEC2-ME604	Professional Elective Course-2 (Specify PEC-2 Basket)	2	1	--	3	3	ESE	60	24	40
										ISE	40	16	
		PEC-3	23UGPEC3-ME605	Professional Elective Course-3 (Specify PEC-3 Basket)	3	--	--	3	3	ESE	60	24	40
										ISE	40	16	
2	Multidisciplinary Courses	MDM-4	23UGMDM4-ME606L	Multidisciplinary Minor-4	2	--	--	2	2	ISA	50	20	20
3	Skill Courses	VSEC	23UGVSEC-ME607L	Computational Techniques and Programming	2	1	--	2	3	ISA	25	10	10
4	Programme Course	PCC	23UGPCC-ME601LP	Metrology and Quality control Lab	--	--	2	1	2	ISA	25	10	20
										POE	25	10	
			23UGPCC-ME602L	Fluid and Turbo Machinery Lab	--	--	2	1	2	ISA	25	10	10
										ISA	25	10	20
			23UGPCC-ME603LP	Design of Machine Elements-II Lab	--	--	2	1	2	ISA	25	10	
										POE	25	10	
			23UGPCC-ME608L	Additive Manufacturing Lab (3D Printing)	--	--	2	1	2	ISA	50	20	20
										ISA	25	10	20
PEC-3	23UGPEC3-ME605LP	Professional Elective Course-3 (Specify PEC-3 Basket)	--	--	2	1	2	ISA	25	10	20		
								POE	25	10			
					18	2	10	21	30	0	800	320	320



Tatyasaheb Kore Institute of Engineering and Technology, Warananagar
Third Year B. Tech. (Mechanical Engineering)

Semester-VI
(National Education Policy (NEP) 2020 Structure)
Credit Scheme
(To be implemented from 2025 - 26)

Program Electives Courses (PEC) Basket

PEC - 2			
Category	Sub Category	Course Code	Name of Course
Programme Course	PEC-2	23UGPEC2-ME6041	Industrial Fluid Power
		23UGPEC2-ME6042	Advanced Manufacturing Technology
		23UGPEC2-ME6043	Additives Manufacturing

PEC - 3			
Category	Sub Category	Course Code	Name of Course
Programme Course	PEC-3	23UGPEC3-ME6051	Internal Combustion Engine
		23UGPEC3-ME6052	Tribology
		23UGPEC3-ME6053	Piping Design

Exit Option to Qualify B. Tech. Vocational completion of T. Y. B. Tech

Sr. No.	Category	Sub Category	Course Code	Name of Course	Teaching Scheme					Examination & Evaluation Scheme			
					L	T	P			Component	Marks	Min for Passing	
1	Skill Courses	VSEC	23UGVSEC-ME609L	Piping Design	2	--	2	3	4	ISA	50	20	20
2	Experiential Learning Courses	ELC	23UGELC-ME610L	Mini Project	1	--	4	3	5	ISA	50	20	20
3		ELC	23UGELC-ME611L	Industrial Internship (2 Weeks)	--	--	6	2	6	ISA	50	20	20
					3	0	12	8	15	0	150	60	60



Final Year B. Tech. In Mechanical Engineering

National Education Policy (NEP) 2020 Structure



Tatyasaheb Kore Institute of Engineering and Technology, Warananagar

Final Year B. Tech. (Mechanical Engineering)

Semester-VII (National Education Policy (NEP) 2020 Structure) Credit Scheme (To be implemented from 2026 - 27)

Sr. No.	Category	Sub Category	Course Code	Name of Course	Teaching Scheme					Examination & Evaluation Scheme			
					L	T	P	C	CH	Component	Marks	Min for Passing	
1	Programme Course	PCC	23UGPCC-ME701	Refrigeration and Air Conditioning	3	--	--	2	3	ESE	60	24	40
										ISE	40	16	
		PCC	23UGPCC-ME702	Mechanical System Design	3	--	--	2	3	ESE	60	24	40
										ISE	40	16	
		PEC-4	23UGPEC4-ME703	Professional Elective Course-4 (Specify PEC-4 Basket)	2	--	--	2	2	ESE	60	24	40
										ISE	40	16	
		PEC-5	23UGPEC5-ME704	Professional Elective Course-5 (Specify PEC-5 Basket)	3	--	--	2	3	ESE	60	24	40
										ISE	40	16	
2	Experiential Learning Courses	ELC	23UGELC-ME705	Research Methodology	2	1	--	3	3	ESE	60	24	40
										ISE	40	16	
3	Multidisciplinary Courses	MDM-5	23UGMDM5-ME706L	Multidisciplinary Minor-5	2	--	--	2	2	ISA	50	20	20
4	Programme Course	PCC	23UGPCC-ME701LP	Refrigeration and Air Conditioning Lab	--	--	2	1	2	ISA	25	10	20
										POE	25	10	
		PCC	23UGPCC-ME 702LP	Mechanical System Design Lab	--	--	2	1	2	ISA	25	10	20
										POE	25	10	
PEC-4	23UGPEC4-ME703L	Professional Elective Course-4 (Specify PEC-4 Basket)	--	--	2	1	2	ISA	25	10	10		
								PEC-5	23UGPEC5-ME704L	Professional Elective Course-5 (Specify PEC-5 Basket)	--	--	2
5	Experiential Learning Courses	ELC	23UGELC-ME707LP	Project Phase - I	--	--	4	4	4	ISA	50	20	40
										POE	50	20	
					15	1	12	21	28	0	800	320	320



Tatyasaheb Kore Institute of Engineering and Technology, Warananagar
Final Year B. Tech. (Mechanical Engineering)

Semester-VII
(National Education Policy (NEP) 2020 Structure)
Credit Scheme
(To be implemented from 2026 - 27)

Program Electives Courses (PEC) Basket

PEC - 4			
Category	Sub Category	Course Code	Name of Course
Programme Course	PEC-4	23UGPEC4-ME7031	Industrial Instrumentation and Control
		23UGPEC4-ME7032	Modeling and Simulation of Manufacturing Systems
		23UGPEC4-ME7033	Power and Energy Engineering

PEC - 5			
Category	Sub Category	Course Code	Name of Course
Programme Course	PEC - 5	23UGPEC5-ME7041	Mechatronics
		23UGPEC5-ME7042	Automobile and Electric Vehicles Engineering
		23UGPEC5-ME7043	Total Quality Management



Tatyasaheb Kore Institute of Engineering and Technology, Warananagar
Final Year B. Tech. (Mechanical Engineering)

Semester-VIII
(National Education Policy (NEP) 2020 Structure)
Credit Scheme
(To be implemented from 2026 - 27)

Sr. No.	Category	Sub Category	Course Code	Name of Course	Teaching Scheme					Examination & Evaluation Scheme			
					L	T	P	C	CH	Component	Marks	Min for Passing	
1	Programme Course	PCC	23UGPCC-ME801	Finite Element Analysis	3	--	--	3	3	ESE	60	24	40
										ISE	40	16	
		PCC	23UGPCC-ME802	Noise and Vibration	3	--	--	2	3	ESE	60	24	40
										ISE	40	16	
		PEC-6	23UGPEC6-ME803	Professional Elective Course-6 (Specify PEC-6 Basket)	2	--	--	2	2	ESE	60	24	40
										ISE	40	16	
2	Multidisciplinary Courses	MDM-6	23UGMDM6-ME804L	Multidisciplinary Minor-6	2	--	--	2	2	ISA	50	20	20
3	Experiential Learning Courses	ELC	23UGELC-ME805LP	Industrial Internship			8	8	8	ISA	100	40	80
										POE	100	40	
4	Programme Course	PCC	23UGPCC-ME801L	Finite Element Analysis Lab	--	--	2	1	2	ISA	25	10	10
										POE	25	10	
		PCC	23UGPCC-ME802LP	Noise and Vibration Lab	--	--	2	1	2	ISA	25	10	20
										POE	25	10	
5	Experiential Learning Courses	ELC	23UGELC-ME806LP	Project Phase -II	--	--	2	2	2	ISA	100	40	40
										POE	75	30	30
					10	0	14	21	24	0	800	320	320

Program Electives Courses (PEC) Basket

PEC - 6			
Category	Sub Category	Course Code	Name of Course
Programme Course	PEC-6	23UGPEC6-ME8031	Industrial Engineering
		23UGPEC6-ME8032	Product Design and Development
		23UGPEC6-ME8033	Cryogenics

