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**PERIYAR
MANIAMMAI**
INSTITUTE OF SCIENCE & TECHNOLOGY
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Faculty of Engineering and Technology

Department of Mechanical Engineering

B.Tech. Mechanical Engineering

Curriculum Regulations 2024

**PERIYAR MANIAMMAI INSTITUTE OF
SCIENCE & TECHNOLOGY
Vallam, Thanjavur – 613403**

PERIYAR MANIAMMAI INSTITUTE OF SCIENCE & TECHNOLOGY
FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING
B.Tech. Mechanical Engineering
CURRICULUM – REGULATIONS 2024

Category of courses and minimum credit requirement for B.Tech. Mechanical Engineering programme as per Regulations 2024 are outlined below:

Sl. No.	Category of Courses	Credits
1.	Foundation Courses (Humanities and Social Sciences including Management Courses, Basic Science and Engineering Science Courses)	60
2.	Professional Core Courses	60
3.	Professional Elective Courses	18
4.	Open Elective Courses	09
5.	Online Courses	06
6.	Employability Enhancement Courses (Value-added, Community Engagement and Social Responsibility, Skill Development Courses, Soft and Managerial Skills, Internship, Mini-projects, and Capstone project)	27
7.	Audit Courses *	---
	Total	180

***Note:** Audit Courses such as Life Science, Environmental Science, Indian History etc., shall be introduced as they mandate the requirement of Outcome Based Education.

SEMESTER I

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24EN101	Technical English	3	0	0	3
2	U24MA101	Matrices and Differential Calculus	3	1	0	4
3	U24CH151	Engineering Chemistry	3	0	0	3
4	U24GE101	Principles of Engineering	3	0	0	3
5	U24GE152	Engineering Graphics	2	1	0	3
6	U24EM101	Coding Techniques	3	0	0	3
Practical						
7	U24MA102	Mathematics Laboratory	0	0	2	1
8	U24CH152	Engineering Chemistry Laboratory	0	0	2	1
9	U24EM102	Coding Techniques Laboratory	0	0	2	1
Total			17	2	6	22

SEMESTER II

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24EN151	Technical Communication Skill Development	2	0	2	3
2	U24MA151	Vector Calculus and Laplace Transforms	3	1	0	4
3	U24PH101	Engineering Physics	3	0	0	3
4	U24GE151	Design Thinking	3	0	0	3
5	U24GE102	Biology for Engineers	3	0	0	3
6	U24EM151	Programming in Practice	3	0	0	3
Practical						
7	U24PH102	Engineering Physics Laboratory	0	0	2	1
8	U24GE153	Design Thinking Laboratory	0	0	4	2
9	U24GE154	Engineering Practices	0	0	2	1
10	U24EM152	Programming in Practice Laboratory	0	0	2	1
Total			17	1	12	24

SEMESTER III

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24MA202	Fourier Transforms and Partial Differential Equations	3	1	0	4
2	U24SH201	Universal Human Values	2	1	0	3
3	U24GE201	Engineering Mechanics	3	0	0	3
4	U24GE205	Electrical Machines	3	1	0	4
5	U24ME201	Engineering Thermodynamics	3	0	0	3
6	U24ME202	Fluid Mechanics and Machinery	3	1	0	4
Practical						
7	U24GE206	Electrical Machines Laboratory	0	0	2	1
8	U24ME203	Fluid Mechanics and Machinery Laboratory	0	0	2	1
9	U24ME204	Computer Aided Machine Drawing	0	0	2	1
Audit Course						
10	U24AUXXX	Audit Course - I	-	-	-	-
Total			17	4	6	24

SEMESTER IV

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24MA253	Statistics and Numerical Methods	3	1	0	4
2	U24ME251	Mechatronics and Control	3	0	0	3
3	U24ME252	Mechanics of Deformable Solids	3	1	0	4
4	U24ME253	Kinematics and Dynamics of Machines	3	1	0	4
5	U24ME254	Engineering Materials and Applications	3	0	0	3
6	U24ME751	Indian Knowledge System - Concepts and Applications in Engineering	3	0	0	3
Practical						
7	U24ME255	Mechatronics and Control Laboratory	0	0	2	1
8	U24ME256	Dynamics and Strength of Materials Laboratory	0	0	2	1
9	U24EM2XX	Internship / Practical Training / Value Added Course(s)	2	0	2	3
Audit Course						
10	U24AUXXX	Audit Course - II	-	-	-	-
Total			20	3	6	26

SEMESTER V

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24ME301	Heat and Mass Transfer	3	1	0	4
2	U24ME302	Thermal Engineering	3	1	0	4
3	U24ME303	Manufacturing Processes	3	0	0	3
4	U24ME7XX	Open Elective - II	3	0	0	3
5	U24ME9XX	Professional Elective - I	3	0	0	3
6	U24ME9XX	Professional Elective - II	3	0	0	3
7	U24EM301	Value Added Course – Community Engagement and Social Responsibility	1	0	2	2
Practical						
8	U24ME304	Heat Transfer and Thermal Engineering Laboratory	0	0	2	1
9	U24ME305	Manufacturing Processes Laboratory	0	0	2	1
Audit Course						
10	U24AUXXX	Audit Course - III	-	-	-	-
Total			19	2	6	24

SEMESTER VI

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24ME351	Design of Machine Elements and Mechanical Systems	3	1	0	4
2	U24ME352	Product Innovation and Entrepreneurship	3	0	0	3
3	U24ME353	Metrology and Measurements	3	0	0	3
4	U24ME7XX	Open Elective - III	3	0	0	3
5	U24ME8XX	Online Course - I	3	0	0	3
6	U24ME9XX	Professional Elective - III	3	0	0	3
7	U24ME9XX	Professional Elective - IV	3	0	0	3
Practical						
8	U24ME354	Metrology and Measurements Laboratory	0	0	2	1
9	U24EM3XX	Skill Enhancement / Value Added Course(s)	1	0	2	2
Audit Course						
10	U24AUXXX	Audit Course - IV	-	-	-	-
Total			22	1	4	25

SEMESTER VII

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24GE401	Professional Ethics	3	0	0	3
2	U24ME401	Computer Aided Design and Analysis	3	0	0	3
3	U24ME402	Manufacturing Automation	3	0	0	3
4	U24ME403	Production and Operation Management	3	0	0	3
5	U24ME9XX	Professional Elective - V	3	0	0	3
6	U24ME9XX	Professional Elective - VI	3	0	0	3
Practical						
7	U24ME404	Computer Aided Design and Analysis Laboratory	0	0	2	1
8	U24ME405	Computer Aided Manufacturing and 3D Printing Laboratory	0	0	2	1
9	U24EM401	Project Phase - I	0	0	8	4
Total			18	0	12	24

SEMESTER VIII

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24ME8XX	Online Course - II	3	0	0	3
Practical						
2	U24EM451	Project Phase - II	0	0	16	8
Total			3	0	16	11

The number of credits in each semester is summarized as follows:

Programme	I	II	III	IV	V	VI	VII	VIII
B.Tech. Mechanical Engineering	22	24	24	26	24	25	24	11

Semester wise Credit Distribution (in all categories of courses)

Sl. No.	Category of Courses	Credits	I	II	III	IV	V	VI	VII	VIII
1.	Foundation Courses	60	18	20	15	4	-	-	3	-
2.	Professional Core Courses	60	-	-	9	16	13	11	11	-
3.	Professional Elective Courses	18	-	-	-	-	6	6	6	-
4.	Open Elective Courses	9	-	-	-	3	3	3	-	-
5.	Employability Enhancement Courses	27	4	4	-	3	2	2	4	8
6.	Online Courses	6	-	-	-	-	-	3	-	3
7.	Audit Courses	---	-	-	-	-	-	-	-	-
Total		180	22	24	24	26	24	25	24	11

Suggested List of Professional Elective Courses

General Stream

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24ME901	Automobile Engineering and E-Vehicles	3	0	0	3
2	U24ME902	Automotive Electronics	3	0	0	3
3	U24ME903	Microelectromechanical Systems	3	0	0	3
4	U24ME904	Introduction to Nanotechnology	3	0	0	3

Applied Mechanics and Design Stream

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24ME905	Mechanical Vibrations	3	0	0	3
2	U24ME906	Mathematical Modeling and Analysis	3	0	0	3
3	U24ME907	Finite Element Analysis	3	0	0	3
4	U24ME908	Product Design and Development	3	0	0	3
5	U24ME909	Design of Transmission Systems	3	0	0	3
6	U24ME910	Design of Jigs, Fixtures and Press tools	3	0	0	3

Fluid Mechanics and Thermal Stream

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24ME911	Gas Dynamics and Shock Waves	3	0	0	3
2	U24ME912	Renewable Energy Systems and Sustainability	3	0	0	3
3	U24ME913	Computational Fluid Dynamics	3	0	0	3
4	U24ME914	Advanced I.C Engines	3	0	0	3
5	U24ME915	Refrigeration and Air conditioning	3	0	0	3
6	U24ME916	Power Plant Engineering	3	0	0	3

Materials and Manufacturing Stream

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24ME917	Composite Materials	3	0	0	3
2	U24ME918	Advanced Welding Technology	3	0	0	3
3	U24ME919	Computer Integrated Manufacturing	3	0	0	3
4	U24ME920	Industrial Robotics	3	0	0	3
5	U24ME921	Additive Manufacturing	3	0	0	3
6	U24ME922	Internet of Things and Smart Manufacturing	3	0	0	3

Industrial Engineering Stream

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24ME923	Industrial Safety Engineering	3	0	0	3
2	U24ME924	Total Quality Management	3	0	0	3
3	U24ME925	Process Planning and Cost Estimation	3	0	0	3
4	U24ME926	Reliability Engineering	3	0	0	3

AI for Mechanical Engineering Stream

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24ME927	Natural Language Processing	3	0	0	3
2	U24ME928	Artificial Intelligence for Mechanical Systems	3	0	0	3
3	U24ME929	Deep Learning Techniques for Mechanical Engineering	3	0	0	3
4	U24ME930	Prompt Engineering	3	0	0	3
5	U24ME931	Generative AI Models	3	0	0	3

List of Courses under each Category

Foundation Courses

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Humanities & Social Sciences including Management Courses						
1	U24EN101	Technical English	3	0	0	3
2	U24EN151	Technical Communication Skill Development	2	0	2	3
3	U24SH201	Universal Human Values	2	1	0	3
Basic Science Courses						
4	U24MA101	Matrices and Differential Calculus	3	1	0	4
5	U24PH101	Engineering Physics	3	0	0	3
6	U24MA102	Mathematics Laboratory	0	0	2	1
7	U24PH102	Engineering Physics Laboratory	0	0	2	1
8	U24MA151	Vector Calculus and Laplace Transforms	3	1	0	4
9	U24CH151	Engineering Chemistry	3	0	0	3
10	U24CH152	Engineering Chemistry Laboratory	0	0	2	1
11	U24MA202	Fourier Transforms and Partial Differential Equations	3	1	0	4
12	U24MA253	Statistics and Numerical Methods	3	1	0	4
Engineering Science Courses						
13	U24GE101	Principles of Engineering	3	0	0	3
14	U24GE102	Biology for Engineers	3	0	0	3
15	U24GE151	Design Thinking	3	0	0	3
16	U24GE152	Engineering Graphics	2	1	0	3
17	U24GE153	Design Thinking Laboratory	0	0	4	2

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
18	U24GE154	Engineering Practices	0	0	2	1
19	U24GE201	Engineering Mechanics	3	0	0	3
20	U24GE205	Electrical Machines	3	1	0	4
21	U24GE206	Electrical Machines Laboratory	0	0	2	1
22	U24GE401	Professional Ethics	3	0	0	3
Total			45	7	16	60

Professional Core Courses

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24ME201	Engineering Thermodynamics	3	0	0	3
2	U24ME202	Fluid Mechanics and Machinery	3	1	0	4
3	U24ME203	Fluid Mechanics and Machinery Laboratory	0	0	2	1
4	U24ME204	Computer Aided Machine Drawing	0	0	2	1
5	U24ME251	Mechatronics and Control	3	0	0	3
6	U24ME252	Mechanics of Deformable Solids	3	1	0	4
7	U24ME253	Kinematics and Dynamics of Machines	3	1	0	4
8	U24ME254	Engineering Materials and Applications	3	0	0	3
9	U24ME255	Mechatronics and Control Laboratory	0	0	2	1
10	U24ME256	Dynamics and Strength of Materials Laboratory	0	0	2	1
11	U24ME301	Heat and Mass Transfer	3	1	0	4
12	U24ME302	Thermal Engineering	3	1	0	4

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
13	U24ME303	Manufacturing Processes	3	0	0	3
14	U24ME304	Heat Transfer and Thermal Engineering Laboratory	0	0	2	1
15	U24ME305	Manufacturing Processes Laboratory	0	0	2	1
16	U24ME351	Design of Machine Elements and Mechanical Systems	3	1	0	4
17	U24ME352	Product Innovation and Entrepreneurship	3	0	0	3
18	U24ME353	Metrology and Measurements	3	0	0	3
19	U24ME354	Metrology and Measurements Laboratory	0	0	2	1
20	U24ME401	Computer Aided Design and Analysis	3	0	0	3
21	U24ME402	Manufacturing Automation	3	0	0	3
22	U24ME403	Production and Operation Management	3	0	0	3
23	U24ME404	Computer Aided Design and Analysis Laboratory	0	0	2	1
24	U24ME405	Computer Aided Manufacturing and 3D Printing Laboratory	0	0	2	1
Total			45	6	18	60

Professional Elective Courses

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24ME9XX	Professional Elective - I	3	0	0	3
2	U24ME9XX	Professional Elective - II	3	0	0	3
3	U24ME9XX	Professional Elective - III	3	0	0	3
4	U24ME9XX	Professional Elective - IV	3	0	0	3
5	U24ME9XX	Professional Elective - V	3	0	0	3
6	U24ME9XX	Professional Elective - VI	3	0	0	3
Total			18	0	0	18

Open Elective Courses

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24ME751	Indian Knowledge System - Concepts and Applications in Engineering	3	0	0	3
2	U24ME7XX	Open Elective - II	3	0	0	3
3	U24ME7XX	Open Elective - III	3	0	0	3
Total			9	0	0	9

Employability Enhancement Courses

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24EM101	Coding Techniques	3	0	0	3
2	U24EM102	Coding Techniques Laboratory	0	0	2	1
3	U24EM151	Programming in Practice	3	0	0	3
4	U24EM152	Programming in Practice Laboratory	0	0	2	1
5	U24EM2XX	Internship / Practical Training / Value Added Course(s)	2	0	2	3
6	U24EM301	Value Added Course – Community Engagement and Social Responsibility	1	0	2	2
7	U24EM3XX	Skill Development / Value Added Course(s)	1	0	2	2
8	U24EM401	Project Phase - I	0	0	8	4
9	U24EM451	Project Phase - II	0	0	16	8
Total			10	0	34	27

Online Courses

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24ME8XX	Online Course - I	3	0	0	3
2	U24ME8XX	Online Course - II	3	0	0	3
Total			6	0	0	6

Suggested List of Open Elective Courses

Sl.No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24ME701	Renewable Energy	3	0	0	3
2	U24ME702	Energy Studies	3	0	0	3
3	U24ME703	Product Engineering	3	0	0	3
4	U24ME704	Industrial Safety and Management	3	0	0	3
5	U24ME761	Industrial Engineering and Management	3	0	0	3
6	U24ME762	Quality Engineering and Management	3	0	0	3
7	U24ME763	Nanomaterials and Applications	3	0	0	3

Suggested List of Value-Added Courses

Sl.No.	Course Code	Course Name	Credits (to be acquired in two or three spells or clubbed with more courses)			
			L	T	P	C
1	U24VA00X	Community Engagement and Social Responsibility	1	0	2	2
2	U24VA00X	Electronic Devices and Circuits	2	0	0	2
3	U24VA00X	Tool Design and Drawing	1	0	2	2
4	U24VA00X	AutoCAD	1	0	2	2
5	U24VA00X	Non Destructive Testing	1	0	2	2
6	U24VA00X	Mechanical, Electrical and plumbing	0	0	2	1
7	U24VA00X	Advanced CNC Programming	0	0	2	1
8	U24VA00X	Fusion 360	1	0	2	2
9	U24VA00X	Mastercam	1	0	2	2

Suggested List of Online Courses

Sl.No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24ME851	Principles of Management	3	0	0	3
2	U24ME852	Advanced Robotics	3	0	0	3
3	U24ME853	Advanced Machining Processes	3	0	0	3
4	U24ME854	Optimization from fundamentals	3	0	0	3
5	U24ME855	Principles of Industrial Engineering	3	0	0	3

Audit Courses

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24AUXXX	Audit Course - I	-	-	-	-
2	U24AUXXX	Audit Course - II	-	-	-	-
3	U24AUXXX	Audit Course - III	-	-	-	-
4	U24AUXXX	Audit Course - IV	-	-	-	-
Total			-	-	-	-

Suggested List of Audit Courses

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24AUXXX	Environmental Studies	-	-	-	-
2	U24AUXXX	Disaster Management	-	-	-	-
3	U24AUXXX	Sustainable Engineering	-	-	-	-
4	U24AUXXX	Cyber Security	-	-	-	-
Total			-	-	-	-

Curriculum Flexibility

The curriculum allows students to choose from multiple entry and exit options, provided they satisfy the regulatory requirements, and is supported by appropriate certifications. This provides flexible learning opportunities for the students. A “UG Certificate” shall be issued to the student who is willing to exit the four-year B.Tech. UG degree programme after completion of first year of study, a “UG Diploma” after two years (4 semesters) of study, “B.Tech. Vocational” degree after 3 years of study, and “B.Tech. Degree” after a 4-year (8 semesters) programme of study. The credits earned by the individual student are accumulated with the aid of the Academic Bank of Credits system. For students who choose to exit after completing 2, 4, or 6 semesters of study, they must have earned six to eight additional credits through theory courses, practicals, training, or skill-based courses to be eligible for certification. The credit requirements and the list of courses are detailed below.

Exit Options

Sl. No.	Exit Option (after)	Credits Earned so far	Additional Credits Requirement	Certification
1	I Year	46	10	UG Certificate
2	II Year	96	10	UG Diploma
3	III Year	145	8	B.Tech. Vocational

Suggested List of Courses for “UG Certificate”

Sl.No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24ME201	Engineering Thermodynamics	3	0	0	3
2	U24ME202	Fluid Mechanics and Fluid Machinery	3	1	0	4
3	U24ME203	Fluid Mechanics and Fluid Machinery Laboratory	0	0	2	1

Sl.No.	Course Code	Course Name	Credits			
			L	T	P	C
4	U24ME204	Computer Aided Machine Drawing	0	0	2	1
5	U24VA00X	Value Added Course	0	0	2	1

Suggested List of Courses for “UG Diploma”

Sl.No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24ME302	Thermal Engineering	3	1	0	4
2	U24ME303	Manufacturing Processes	3	0	0	3
3	U24ME305	Manufacturing Processes Laboratory	0	0	2	1
4	U24EM301	Value Added Course(s)	2	0	0	2

Suggested List of Courses for “B.Tech. Vocational”

Sl.No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24ME401	Computer Aided Design and Analysis	3	0	0	3
2	U24ME402	Manufacturing Automation	3	0	0	3
3	U24ME404	Computer Aided Design and Analysis Laboratory	0	0	2	1
4	U24ME405	Computer Aided Manufacturing and 3D Printing Laboratory	0	0	2	1

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B.Tech. Mechanical Engineering with Specialization in Energy Engineering

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FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING

B.Tech. Mechanical Engineering with Specialization in Energy Engineering
CURRICULUM – REGULATIONS 2024

Category of courses and minimum credit requirement for B.Tech. Mechanical Engineering with Specialization in Energy Engineering programme as per Regulations 2024 are outlined below:

Sl. No.	Category of Courses	Credits
1.	Foundation Courses (Humanities and Social Sciences including Management Courses, Basic Science and Engineering Science Courses)	60
2.	Professional Core Courses	60
3.	Professional Elective Courses	18
4.	Open Elective Courses	09
5.	Online Courses	06
6.	Employability Enhancement Courses (Value-added, Community Engagement and Social Responsibility, Skill Development Courses, Soft and Managerial Skills, Internship, Mini-projects, and Capstone project)	27
7.	Audit Courses *	---
8.	Courses Lead to Specialization / Minor / Honours	20
	Total	200

***Note:** Audit Courses such as Life Science, Environmental Science, Indian History etc., shall be introduced as they mandate the requirement of Outcome Based Education.

SEMESTER I

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24EN101	Technical English	3	0	0	3
2	U24MA101	Matrices and Differential Calculus	3	1	0	4
3	U24CH151	Engineering Chemistry	3	0	0	3
4	U24GE101	Principles of Engineering	3	0	0	3
5	U24GE152	Engineering Graphics	2	1	0	3
6	U24EM101	Coding Techniques	3	0	0	3
Practical						
7	U24MA102	Mathematics Laboratory	0	0	2	1
8	U24CH152	Engineering Chemistry Laboratory	0	0	2	1
9	U24EM102	Coding Techniques Laboratory	0	0	2	1
Total			17	2	6	22

SEMESTER II

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24EN151	Technical Communication Skill Development	2	0	2	3
2	U24MA151	Vector Calculus and Laplace Transforms	3	1	0	4
3	U24PH101	Engineering Physics	3	0	0	3
4	U24GE151	Design Thinking	3	0	0	3
5	U24GE102	Biology for Engineers	3	0	0	3
6	U24EM151	Programming in Practice	3	0	0	3
Practical						
7	U24PH102	Engineering Physics Laboratory	0	0	2	1
8	U24GE153	Design Thinking Laboratory	0	0	4	2
9	U24GE154	Engineering Practices	0	0	2	1
10	U24EM152	Programming in Practice Laboratory	0	0	2	1
Total			17	1	12	24

SEMESTER III

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24MA202	Fourier Transforms and Partial Differential Equations	3	1	0	4
2	U24SH201	Universal Human Values	2	1	0	3
3	U24GE201	Engineering Mechanics	3	0	0	3
4	U24GE205	Electrical Machines	3	1	0	4
5	U24ME201	Engineering Thermodynamics	3	0	0	3
6	U24ME202	Fluid Mechanics and Machinery	3	1	0	4
Practical						
7	U24GE206	Electrical Machines Laboratory	0	0	2	1
8	U24ME203	Fluid Mechanics and Machinery Laboratory	0	0	2	1
9	U24ME204	Computer Aided Machine Drawing	0	0	2	1
Audit Course						
10	U24AUXXX	Audit Course - I	-	-	-	-
Courses Lead to Specialization / Minor / Honours						
11	U24ME604	Renewable Energy Sources	3	0	2	4
Total			20	4	8	28

SEMESTER IV

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24MA253	Statistics and Numerical Methods	3	1	0	4
2	U24ME251	Mechatronics and Control	3	0	0	3
3	U24ME252	Mechanics of Deformable Solids	3	1	0	4
4	U24ME253	Kinematics and Dynamics of Machines	3	1	0	4
5	U24ME254	Engineering Materials and Applications	3	0	0	3
6	U24ME751	Indian Knowledge System - Concepts and Applications in Engineering	3	0	0	3
Practical						
7	U24ME255	Mechatronics and Control Laboratory	0	0	2	1
8	U24ME256	Dynamics and Strength of Materials Laboratory	0	0	2	1
9	U24EM2XX	Internship / Practical Training / Value Added Course(s)	2	0	2	3
Audit Course						
10	U24AUXXX	Audit Course - II	-	-	-	-
Courses Lead to Specialization / Minor / Honours						
11	U24ME653	Energy Conversion Systems	3	1	0	4
Total			23	4	6	30

SEMESTER V

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24ME301	Heat and Mass Transfer	3	1	0	4
2	U24ME302	Thermal Engineering	3	1	0	4
3	U24ME303	Manufacturing Processes	3	0	0	3
4	U24ME7XX	Open Elective - II	3	0	0	3
5	U24ME9XX	Professional Elective - I	3	0	0	3
6	U24ME9XX	Professional Elective - II	3	0	0	3
7	U24EM301	Value Added Course – Community Engagement and Social Responsibility	1	0	2	2
Practical						
8	U24ME304	Heat Transfer and Thermal Engineering Laboratory	0	0	2	1
9	U24ME305	Manufacturing Processes Laboratory	0	0	2	1
Audit Course						
10	U24AUXXX	Audit Course - III	-	-	-	-
Courses Lead to Specialization / Minor / Honours						
11	U24ME605	Energy Storage Systems and Sustainable Development	3	1	0	4
Total			22	3	6	28

SEMESTER VI

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24ME351	Design of Machine Elements and Mechanical Systems	3	1	0	4
2	U24ME352	Product Innovation and Entrepreneurship	3	0	0	3
3	U24ME353	Metrology and Measurements	3	0	0	3
4	U24ME7XX	Open Elective - III	3	0	0	3
5	U24ME8XX	Online Course - I	3	0	0	3
6	U24ME9XX	Professional Elective - III	3	0	0	3
7	U24ME9XX	Professional Elective - IV	3	0	0	3
Practical						
8	U24ME354	Metrology and Measurements Laboratory	0	0	2	1
9	U24EM3XX	Skill Enhancement / Value Added Course(s)	1	0	2	2
Audit Course						
10	U24AUXXX	Audit Course - IV	-	-	-	-
Courses Lead to Specialization / Minor / Honours						
11	U24ME654	Energy Audit, Conservation and Management	3	1	0	4
Total			25	2	4	29

SEMESTER VII

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24GE401	Professional Ethics	3	0	0	3
2	U24ME401	Computer Aided Design and Analysis	3	0	0	3
3	U24ME402	Manufacturing Automation	3	0	0	3
4	U24ME403	Production and Operation Management	3	0	0	3
5	U24ME9XX	Professional Elective - V	3	0	0	3
6	U24ME9XX	Professional Elective - VI	3	0	0	3
Practical						
7	U24ME404	Computer Aided Design and Analysis Laboratory	0	0	2	1
8	U24ME405	Computer Aided Manufacturing and 3D Printing Laboratory	0	0	2	1
9	U24EM401	Project Phase - I	0	0	8	4
Courses Lead to Specialization / Minor / Honours						
10	U24ME606	Design and Analysis of Energy Systems	3	0	2	4
Total			21	0	14	28

SEMESTER VIII

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24ME8XX	Online Course - II	3	0	0	3
Practical						
2	U24EM451	Project Phase - II	0	0	16	8
Total			3	0	16	11

The number of credits in each semester is summarized as follows:

Programme	I	II	III	IV	V	VI	VII	VIII
B.Tech. Mechanical Engineering with Specialization in Energy Engineering	22	24	28	30	28	29	28	11

Semester wise Credit Distribution (in all categories of courses)

Sl. No.	Category of Courses	Credits	I	II	III	IV	V	VI	VII	VIII
1.	Foundation Courses	60	18	20	15	4	-	-	3	-
2.	Professional Core Courses	60	-	-	9	16	13	11	11	-
3.	Professional Elective Courses	18	-	-	-	-	6	6	6	-
4.	Open Elective Courses	9	-	-	-	3	3	3	-	-
5.	Employability Enhancement Courses	27	4	4	-	3	2	2	4	8
6.	Online Courses	6	-	-	-	-	-	3	-	3
7.	Audit Courses	---	-	-	-	-	-	-	-	-
8.	Courses Lead to Specialization / Minor / Honours	20	-	-	4	4	4	4	4	-
Total		200	22	24	28	30	28	29	28	11

Courses Lead to Specialization / Minor / Honours

Sl. No.	CourseCode	Course Name	Credits			
			L	T	P	C
1	U24ME604	Renewable Energy Sources	3	0	2	4
2	U24ME653	Energy Conversion Systems	3	1	0	4
3	U24ME605	Energy Audit, Conservation and Management	3	1	0	4
4	U24ME654	Energy Storage Systems and Sustainable Development	3	1	0	4
5	U24ME606	Design and Analysis of Energy Systems	3	0	2	4
Total			15	3	4	20

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**PERIYAR
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Faculty of Engineering and Technology

Department of Mechanical Engineering

B.Tech. Mechanical Engineering with Specialization in Robotics and Industrial Automation

Curriculum Regulations 2024

**PERIYAR MANIAMMAI INSTITUTE OF
SCIENCE & TECHNOLOGY
Vallam, Thanjavur – 613403**

PERIYAR MANIAMMAI INSTITUTE OF SCIENCE & TECHNOLOGY
FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING
B.Tech. Mechanical Engineering with Specialization in Robotics and
Industrial Automation

CURRICULUM – REGULATIONS 2024

Category of courses and minimum credit requirement for B.Tech. Mechanical Engineering with Specialization in Robotics and Industrial Automation programme as per Regulations 2024 are outlined below:

Sl. No.	Category of Courses	Credits
1.	Foundation Courses (Humanities and Social Sciences including Management Courses, Basic Science and Engineering Science Courses)	60
2.	Professional Core Courses	60
3.	Professional Elective Courses	18
4.	Open Elective Courses	09
5.	Online Courses	06
6.	Employability Enhancement Courses (Value-added, Community Engagement and Social Responsibility, Skill Development Courses, Soft and Managerial Skills, Internship, Mini-projects, and Capstone project)	27
7.	Audit Courses *	---
8.	Courses Lead to Specialization / Minor / Honours	20
	Total	200

***Note:** Audit Courses such as Life Science, Environmental Science, Indian History etc., shall be introduced as they mandate the requirement of Outcome Based Education.

SEMESTER I

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24EN101	Technical English	3	0	0	3
2	U24MA101	Matrices and Differential Calculus	3	1	0	4
3	U24CH151	Engineering Chemistry	3	0	0	3
4	U24GE101	Principles of Engineering	3	0	0	3
5	U24GE152	Engineering Graphics	2	1	0	3
6	U24EM101	Coding Techniques	3	0	0	3
Practical						
7	U24MA102	Mathematics Laboratory	0	0	2	1
8	U24CH152	Engineering Chemistry Laboratory	0	0	2	1
9	U24EM102	Coding Techniques Laboratory	0	0	2	1
Total			17	2	6	22

SEMESTER II

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24EN151	Technical Communication Skill Development	2	0	2	3
2	U24MA151	Vector Calculus and Laplace Transforms	3	1	0	4
3	U24PH101	Engineering Physics	3	0	0	3
4	U24GE151	Design Thinking	3	0	0	3
5	U24GE102	Biology for Engineers	3	0	0	3
6	U24EM151	Programming in Practice	3	0	0	3
Practical						
7	U24PH102	Engineering Physics Laboratory	0	0	2	1
8	U24GE153	Design Thinking Laboratory	0	0	4	2
9	U24GE154	Engineering Practices	0	0	2	1
10	U24EM152	Programming in Practice Laboratory	0	0	2	1
Total			17	1	12	24

SEMESTER III

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24MA202	Fourier Transforms and Partial Differential Equations	3	1	0	4
2	U24SH201	Universal Human Values	2	1	0	3
3	U24GE201	Engineering Mechanics	3	0	0	3
4	U24GE205	Electrical Machines	3	1	0	4
5	U24ME201	Engineering Thermodynamics	3	0	0	3
6	U24ME202	Fluid Mechanics and Machinery	3	1	0	4
Practical						
7	U24GE206	Electrical Machines Laboratory	0	0	2	1
8	U24ME203	Fluid Mechanics and Machinery Laboratory	0	0	2	1
9	U24ME204	Computer Aided Machine Drawing	0	0	2	1
Audit Course						
10	U24AUXXX	Audit Course - I	-	-	-	-
Courses Lead to Specialization / Minor / Honours						
11	U24ME601	Service Robotics	3	0	2	4
Total			20	4	8	28

SEMESTER IV

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24MA253	Statistics and Numerical Methods	3	1	0	4
2	U24ME251	Mechatronics and Control	3	0	0	3
3	U24ME252	Mechanics of Deformable Solids	3	1	0	4
4	U24ME253	Kinematics and Dynamics of Machines	3	1	0	4
5	U24ME254	Engineering Materials and Applications	3	0	0	3
6	U24ME751	Indian Knowledge System - Concepts and Applications in Engineering	3	0	0	3
Practical						
7	U24ME255	Mechatronics and Control Laboratory	0	0	2	1
8	U24ME256	Dynamics and Strength of Materials Laboratory	0	0	2	1
9	U24EM2XX	Internship / Practical Training / Value Added Course(s)	2	0	2	3
Audit Course						
10	U24AUXXX	Audit Course - II	-	-	-	-
Courses Lead to Specialization / Minor / Honours						
11	U24ME651	Industrial Robotics and Automation	3	0	2	4
Total			23	3	8	30

SEMESTER V

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24ME301	Heat and Mass Transfer	3	1	0	4
2	U24ME302	Thermal Engineering	3	1	0	4
3	U24ME303	Manufacturing Processes	3	0	0	3
4	U24ME7XX	Open Elective - II	3	0	0	3
5	U24ME9XX	Professional Elective - I	3	0	0	3
6	U24ME9XX	Professional Elective - II	3	0	0	3
7	U24EM301	Value Added Course – Community Engagement and Social Responsibility	1	0	2	2
Practical						
8	U24ME304	Heat Transfer and Thermal Engineering Laboratory	0	0	2	1
9	U24ME305	Manufacturing Processes Laboratory	0	0	2	1
Audit Course						
10	U24AUXXX	Audit Course - III	-	-	-	-
Courses Lead to Specialization / Minor / Honours						
11	U24ME602	Real time Operating System in Robotics	3	0	2	4
Total			22	2	8	28

SEMESTER VI

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24ME351	Design of Machine Elements and Mechanical Systems	3	1	0	4
2	U24ME352	Product Innovation and Entrepreneurship	3	0	0	3
3	U24ME353	Metrology and Measurements	3	0	0	3
4	U24ME7XX	Open Elective - III	3	0	0	3
5	U24ME8XX	Online Course - I	3	0	0	3
6	U24ME9XX	Professional Elective - III	3	0	0	3
7	U24ME9XX	Professional Elective - IV	3	0	0	3
Practical						
8	U24ME354	Metrology and Measurements Laboratory	0	0	2	1
9	U24EM3XX	Skill Enhancement / Value Added Course(s)	1	0	2	2
Audit Course						
10	U24AUXXX	Audit Course - IV	-	-	-	-
Courses Lead to Specialization / Minor / Honours						
11	U24ME652	Computer Vision	3	0	2	4
Total			25	1	6	29

SEMESTER VII

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24GE401	Professional Ethics	3	0	0	3
2	U24ME401	Computer Aided Design and Analysis	3	0	0	3
3	U24ME402	Manufacturing Automation	3	0	0	3
4	U24ME403	Production and Operation Management	3	0	0	3
5	U24ME9XX	Professional Elective - V	3	0	0	3
6	U24ME9XX	Professional Elective - VI	3	0	0	3
Practical						
7	U24ME404	Computer Aided Design and Analysis Laboratory	0	0	2	1
8	U24ME405	Computer Aided Manufacturing and 3D Printing Laboratory	0	0	2	1
9	U24EM401	Project Phase - I	0	0	8	4
Courses Lead to Specialization / Minor / Honours						
10	U24ME603	Deep Learning	3	0	2	4
Total			21	0	14	28

SEMESTER VIII

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24ME8XX	Online Course - II	3	0	0	3
Practical						
2	U24EM451	Project Phase - II	0	0	16	8
Total			3	0	16	11

The number of credits in each semester is summarized as follows:

Programme	I	II	III	IV	V	VI	VII	VIII
B.Tech. Mechanical Engineering with Specialization in Robotics and Industrial Automation	22	24	28	30	28	29	28	11

Semester wise Credit Distribution (in all categories of courses)

Sl. No.	Category of Courses	Credits	I	II	III	IV	V	VI	VII	VIII
1.	Foundation Courses	60	18	20	15	4	-	-	3	-
2.	Professional Core Courses	60	-	-	9	16	13	11	11	-
3.	Professional Elective Courses	18	-	-	-	-	6	6	6	-
4.	Open Elective Courses	9	-	-	-	3	3	3	-	-
5.	Employability Enhancement Courses	27	4	4	-	3	2	2	4	8
6.	Online Courses	6	-	-	-	-	-	3	-	3
7.	Audit Courses	---	-	-	-	-	-	-	-	-
8.	Courses Lead to Specialization / Minor / Honours	20	-	-	4	4	4	4	4	-
Total		200	22	24	28	30	28	29	28	11

Courses Lead to Specialization / Minor / Honours

Sl. No.	CourseCode	Course Name	Credits			
			L	T	P	C
1	U24ME601	Service Robotics	3	0	2	4
2	U24ME651	Industrial Robotics and Automation	3	0	2	4
3	U24ME602	Real time Operating System in Robotics	3	0	2	4
4	U24ME652	Computer Vision	3	0	2	4
5	U24ME603	Deep Learning	3	0	2	4
Total			15	0	10	20