PERIYAR MANIAMMAI INSTITUTE OF SCIENCE & TECHNOLOGY

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

B.Tech. Electrical and Electronics Engineering

CURRICULUM – REGULATIONS 2024

Category of courses and minimum credit requirement for B.Tech. Electrical and Electronics 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)	55
2.	**Professional Core Courses**	65
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	U24GE153	Design Thinking Laboratory	0	0	4	2
8	U24PH102	Engineering Physics Laboratory	0	0	2	1
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	U24EE201	Electron Devices	3	0	0	3
4	U24EE202	DC Machines and Transformers	3	1	0	4
5	U24EE203	Electrical Circuit Analysis	3	1	0	4
6	U24EE204	Digital Logic Design	3	0	0	3
Practical						
7	U24EE205	DC Machines and Transformers Laboratory	0	0	2	1
8	U24EE206	Electron Devices and Circuits Laboratory	0	0	2	1
9	U24EE207	Digital Logic Design Laboratory	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	U24CS257	Data Structures and Algorithms	3	0	2	4
2	U24EE251	Signals and Systems	3	0	0	3
3	U24EE252	AC and Special Electrical Machines	3	1	0	4
4	U24EE253	Measurements and Instrumentation	3	0	0	3
5	U24EE751	Ancient Concepts and Applications in Engineering	3	0	0	3
Practical						
6	U24EE254	AC and Special Electrical Machines Laboratory	0	0	2	1
7	U24EE255	Measurements and Instrumentation Laboratory	0	0	2	1
8	U24EM2XX	Internship / Practical Training / Value Added Course(s)	2	0	2	3
Audit Course						
9	U24AUXXX	Audit Course - II	--	--	--	--
		Total	17	1	8	22

SEMESTER V

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24SH301	Economics for Engineers	3	0	0	3
2	U24EE301	Digital Signal Processing	3	0	0	3
3	U24EE302	Power Electronics	3	0	0	3
4	U24EE303	Control Systems	3	1	0	4
5	U24EE7XX	Open Elective – II	3	0	0	3
6	U24EE9XX	Professional Elective - I	3	0	0	3
7	U24EE9XX	Professional Elective - II	3	0	0	3
Practical						
8	U24EE304	Power Electronics Laboratory	0	0	2	1
9	U24EE305	Signals and Control Systems Laboratory	0	0	2	1
10	U24EM301	Value Added Course – Community Engagement and Social Responsibility	1	0	2	2
Audit Course						
11	U24AUXXX	Audit Course - III	--	--	--	--
		Total	22	1	6	26

SEMESTER VI

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24EE351	Microprocessors and Microcontrollers	3	0	0	3
2	U24EE352	Power Systems Analysis	3	0	0	3
3	U24EE353	Electric Drives	3	0	0	3
4	U24EE7XX	Open Elective – III	3	0	0	3
5	U24EE8XX	Online Course - I	3	0	0	3
6	U24EE9XX	Professional Elective - III	3	0	0	3
7	U24EE9XX	Professional Elective - IV	3	0	0	3
Practical						
8	U24EE354	Microprocessors and Microcontrollers Laboratory	0	0	2	1
9	U24EE355	Power Systems Simulation Laboratory	0	0	2	1
10	U24EM3XX	Skill Enhancement / Value Added Course(s)	1	0	2	2
Audit Course						
11	U24AUXXX	Audit Course - IV	--	--	--	--
		Total	22	0	6	25

SEMESTER VII

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24GE401	Professional Ethics	3	0	0	3
2	U24EE401	Energy Systems and Auditing	3	1	0	4
3	U24EE402	Industrial Internet of Things	3	0	0	3
4	U24EE403	Design of Embedded Systems	3	1	0	4
5	U24EE9XX	Professional Elective - V	3	0	0	3
6	U24EE9XX	Professional Elective - VI	3	0	0	3
Practical						
7	U24EE404	Embedded Systems Laboratory	0	0	2	1
8	U24EE405	IoT and its Applications Laboratory	0	0	2	1
9	U24EM401	Project Phase - I	0	0	8	4
		Total	18	2	12	26

SEMESTER VIII

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	U24EE8XX	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:

Course	I	II	III	IV	V	VI	VII	VIII
B.Tech. Electrical and Electronics Engineering	22	24	24	22	26	25	26	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**	55	18	20	7	4	3	-	3	-
2.	**Professional Core Courses**	65	-	-	17	12	12	11	13	-
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**	**22**	**26**	**25**	**26**	**11**

Suggested List of Professional Elective Courses

Professional Elective – I

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24EE901	FPGA Design	3	0	0	3
2	U24EE902	Transmission and Distribution	3	0	0	3
3	U24EE903	Neural Networks	3	0	0	3
4	U24EE904	Smart Sensors and Actuators	3	0	0	3
5	U24EE905	Renewable Energy Resources	3	0	0	3

Professional Elective – II

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24EE906	Micro Electro Mechanical Systems	3	0	0	3
2	U24EE907	Electrical Energy Conservation and Utilization	3	0	0	3
3	U24EE908	Machine Learning Algorithms	3	0	0	3
4	U24EE909	Robotics and Automation	3	0	0	3
5	U24EE910	Bio-Medical Instrumentation	3	0	0	3

Professional Elective – III

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24EE951	Power Electronics for Renewable Energy Systems	3	0	0	3
2	U24EE952	Cyber Security in Power Systems	3	0	0	3
3	U24EE953	Deep Learning Techniques	3	0	0	3
4	U24EE954	Industrial Automation and Control	3	0	0	3
5	U24EE955	Electrical Machine Design	3	0	0	3

Professional Elective – IV

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24EE956	Power Quality and FACTS	3	0	0	3
2	U24EE957	Substation Engineering and Automation	3	0	0	3
3	U24EE958	Generative AI Models	3	0	0	3
4	U24EE959	Intelligent Control of Electric Vehicles	3	0	0	3
5	U24EE960	Drone Technology	3	0	0	3

Professional Elective – V

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24EE911	Smart Grids	3	0	0	3
2	U24EE912	Power Systems Operation and Control	3	0	0	3
3	U24EE913	AI and IoT Applications in Electrical Vehicles	3	0	0	3
4	U24EE914	Cyber Physical Systems	3	0	0	3
5	U24EE915	VLSI Design	3	0	0	3

Professional Elective – VI

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24EE916	Embedded Systems for Automotive Applications	3	0	0	3
2	U24EE917	Power Systems Protection	3	0	0	3
3	U24EE918	Predictive Maintenance using AI	3	0	0	3
4	U24EE919	HVAC and Building Automation	3	0	0	3
5	U24EE920	Wearable Devices	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
4	U24SH301	Economics for Engineers	3	0	0	3
Basic Science Courses						
5	U24MA101	Matrices and Differential Calculus	3	1	0	4
6	U24PH101	Engineering Physics	3	0	0	3
7	U24MA102	Mathematics Laboratory	0	0	2	1
8	U24PH102	Engineering Physics Laboratory	0	0	2	1
9	U24MA151	Vector Calculus and Laplace Transforms	3	1	0	4
10	U24CH151	Engineering Chemistry	3	0	0	3
11	U24CH152	Engineering Chemistry Laboratory	0	0	2	1
12	U24MA201	Fourier Transforms and Partial Differential Equations	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
18	U24GE154	Engineering Practices	0	0	2	1

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
19	U24CS257	Data Structures and Algorithms	3	0	2	4
20	U24GE401	Professional Ethics	3	0	0	3
		Total	42	5	16	55

Professional Core Courses

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24EE201	Electron Devices	3	0	0	3
2	U24EE202	DC Machines and Transformers	3	1	0	4
3	U24EE203	Electrical Circuit Analysis	3	1	0	4
4	U24EE204	Digital Logic Design	3	0	0	3
5	U24EE205	DC Machines and Transformers Laboratory	0	0	2	1
6	U24EE206	Electron Devices and Circuits Laboratory	0	0	2	1
7	U24EE207	Digital Logic Design Laboratory	0	0	2	1
8	U24EE251	Signals and Systems	3	0	0	3
9	U24EE252	AC and Special Electrical Machines	3	1	0	4
10	U24EE253	Measurements and Instrumentation	3	0	0	3
11	U24EE254	AC and Special Electrical Machines Laboratory	0	0	2	1
12	U24EE255	Measurements and Instrumentation Laboratory	0	0	2	1
13	U24EE301	Digital Signal Processing	3	0	0	3
14	U24EE302	Power Electronics	3	0	0	3
15	U24EE303	Control Systems	3	1	0	4

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
16	U24EE304	Power Electronics Laboratory	0	0	2	1
17	U24EE305	Signals and Control Systems Laboratory	0	0	2	1
18	U24EE351	Microprocessors and Microcontrollers	3	0	0	3
19	U24EE352	Power Systems Analysis	3	0	0	3
20	U24EE353	Electric Drives	3	0	0	3
21	U24EE354	Microprocessors and Microcontrollers Laboratory	0	0	2	1
22	U24EE355	Power Systems Simulation Laboratory	0	0	2	1
23	U24EE401	Energy Systems and Auditing	3	1	0	4
24	U24EE402	Industrial Internet of Things	3	0	0	3
25	U24EE403	Design of Embedded Systems	3	1	0	4
26	U24EE404	Embedded Systems Laboratory	0	0	2	1
27	U24EE405	IoT and its Applications Laboratory	0	0	2	1
Total			48	6	22	65

Professional Elective Courses

Sl.No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24EC9XX	Professional Elective - I	3	0	0	3
2	U24EC9XX	Professional Elective - II	3	0	0	3
3	U24EC9XX	Professional Elective - III	3	0	0	3
4	U24EC9XX	Professional Elective - IV	3	0	0	3
5	U24EC9XX	Professional Elective - V	3	0	0	3

Sl.No.	Course Code	Course Name	Credits			
			L	T	P	C
6	U24EC9XX	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	U24EE7XX	Open Elective – I (IKS)	3	0	0	3
2	U24EE7XX	Open Elective - II	3	0	0	3
3	U24EE7XX	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	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

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
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	U24EE8XX	Online Course – I	3	0	0	3
2	U24EE8XX	Online Course – II	3	0	0	3
		Total	6	0	0	6

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	U24AU001	Disaster Management	-	-	-	-

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
2	U24AU003	Cyber Security	-	-	-	-
3	U24AU007	Environmental Studies	-	-	-	-
4	U24AU008	Entrepreneurship Development	-	-	-	-
5	U24AU009	Constitution of India	-	-	-	-

Technology Readiness Courses (optional)

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	U24TR001	AI Ethics & Bias	3	0	0	3
2	U24TR002	Value Added Course – AI Based Education	1	0	0	1
3	U24TR003	AI Agents and Intelligent Systems	3	0	0	3
4	U24TR004	Skill Development Programme – Development of Custom Large Language Models	0	0	2	1
5	U24TR005	Explainable AI	3	0	0	3
6	U24TR006	Transformers and Attention Mechanisms	3	0	0	3
7	U24TR007	Large Language Models	3	0	0	3
8	U24TR008	Multimodal AI	3	0	0	3
		Total	19	0	2	20

Students may opt for any technology readiness course based on their interests or career goals. These courses can be delivered through flipped classrooms, online platforms, or industry-led sessions. Each course is designed to target specific

employability and research skills. Students should be encouraged to implement multimodal or generative AI in real-life applications. These courses may be offered as Specialization Tracks / Minor Programmes / Certificate Courses (industry-led or hybrid mode).

Course Title	Suggested Prerequisites
AI Ethics & Bias	Introduction to Artificial Intelligence, Data Science Fundamentals
AI Agents and Intelligent Systems	Python Programming, Discrete Mathematics, Introduction to Artificial Intelligence
Explainable AI	Machine Learning, Probability, Linear Algebra
Transformers and Attention Mechanisms	Neural Networks, Deep Learning, Machine Learning
Large Language Models	Natural Language Processing, Transformers, Deep Learning
Multimodal AI	Natural Language Processing, Computer Vision, Machine Learning, Audio Processing Basics