PERIYAR MANIAMMAI INSTITUTE OF SCIENCE & TECHNOLOGY

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

M.Tech. Renewable Energy

CURRICULUM – REGULATIONS 2024

Category of courses and minimum credit requirement for M.Tech. Renewable Energy programme as per Regulations 2024 are outlined below:

Sl. No.	Category of Courses	Credits
1.	**Foundation Courses**	04
2.	**Programme Core Courses**	33
3.	**Programme Elective Courses**	12
4.	**Online Courses**	03
5.	**Employability Enhancement Courses** (Internship / Field Visit / Professional Practices / Project / Research / Thesis / Dissertation)	20
6.	**Value Added Courses / Value Addition Courses** (IKS, Community Engagement, Research Methodology and IPR, Cyber Security)	08
	Total	**80**

SEMESTER I

Sl. No.	Course Code	Course Name	Credits			
			L	**T**	**P**	**C**
Theory						
1	P24RE101	Mathematical Methods for Energy Systems	3	1	0	4
2	P24RE102	Solar Energy Systems	3	1	0	4
3	P24RE103	Wind, Ocean, Hydro and Geothermal Energy Systems	3	0	0	3
4	P24RE104	Fuels and Combustion Technology	3	0	0	3
5	P24RE9XX	Professional Elective - I	3	0	0	3
6	P24VA007	Indian Knowledge System in Engineering and Technology	3	0	0	3
Practical						
7	P24RE105	Solar Energy Laboratory	0	0	4	2
8	P24RE106	Computational Laboratory for Energy Engineering	0	0	4	2
		Total	18	2	8	24

SEMESTER II

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	P24RE151	Bio Energy Systems	3	0	0	3
2	P24RE152	Computational Fluid Dynamics	3	1	0	4
3	P24RE153	Optimum Utilization of Heat and Power	3	1	0	4
4	P24RE154	Energy Modelling and Management	3	0	0	3
5	P24RE9XX	Professional Elective - II	3	0	0	3
6	P24RE9XX	Professional Elective - III	3	0	0	3
7	P24VA002	Community Engagement and Social Responsibility	1	0	2	2
Practical						
8	P24RE155	Bio Energy and Computational Fluid Dynamics Laboratory	0	0	4	2
		Total	19	2	6	24

SEMESTER III

Sl. No.	Course Code	Course Name	Credits			
			L	**T**	**P**	**C**
Theory						
1	P24RE201	Industrial Energy Conservation and Audit	3	0	0	3
2	P24RE9XX	Professional Elective - IV	3	0	0	3
3	P24RE9XX	Online Course	3	0	0	3
4	P24VA001	Research Methodology	3	0	0	3
Practical						
5	P24RE202	Internship	0	0	4	2
6	P24RE203	Project Phase - I	0	0	12	6
		Total	12	0	16	20

SEMESTER IV

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	P24RE251	Project Phase - II	0	0	24	12
		Total	0	0	24	12

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

Programme	I	II	III	IV
M.Tech. Renewable Energy	24	24	20	12

Semester wise Credit Distribution (in all categories of courses)

Sl. No.	Category of Courses	Credits	I	II	III	IV
1.	Foundation Courses	4	4	-	-	-
2.	Programme Core Courses	33	14	16	3	-
3.	Programme Elective Courses	12	3	6	3	-
4.	Online Courses	3	-	-	3	-
5.	Employability Enhancement Courses	20	-	-	8	12
6.	Value Added Courses	8	3	2	3	-
	Total	80	24	24	20	12

Suggested List of Professional Elective Courses

Professional Elective - I

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	P24RE901	Fluid Dynamics and Heat Transfer	3	0	0	3
2	P24RE902	Carbon Sequestration and Trading	3	0	0	3
3	P24RE903	Optimization Methods	3	0	0	3
4	P24RE904	Hydro Power and Nuclear Energy	3	0	0	3

Professional Elective - II

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	P24RE951	Electrical Energy Technology	3	0	0	3
2	P24RE952	Waste Management and Circular Economy	3	0	0	3
3	P24RE953	Green Building Technologies	3	0	0	3
4	P24RE954	Fuel cells and Hydrogen Energy	3	0	0	3

Professional Elective - III

Sl. No.	Course Code	Course Name	Credits			
			L	T	P	C
1	P24RE955	Energy Conservation in HVAC	3	0	0	3
2	P24RE956	Sustainable Development	3	0	0	3
3	P24RE957	Unit Operations in Industries	3	0	0	3
4	P24RE958	Instrumentation Technology for Energy Systems	3	0	0	3

Professional Elective - IV

Sl. No.	Course Code	Course Name	Hours / Credits			
			L	T	P	C
1	P24RE905	Energy Storage Systems	3	0	0	3
2	P24RE906	Process Modelling in Energy Systems	3	0	0	3
3	P24RE907	E-Vehicles Technology	3	0	0	3
4	P24RE908	Artificial Intelligence for Energy Systems	3	0	0	3