

GANDHI INSTITUTE OF TECHNOLOGY AND MANAGEMENT

Lesson Plan

Name of the Program	Diploma				
Course Name	Renewable Power Generations			Course Code	
Course Year	3 rd	Semester	6 th	Academic Period	2022-23
No. of Classes allotted per Week	04		Planned Classes Required to Complete the Course		60

Sl. No.	Topics to be covered	Module	No. of hours Required	Mode of Teaching
1	Introduction: availability, Conventional energy Sources and its Impacts, Non-conventional energy seasonal variations and Renewable energy – sources and features	1	2	LM/ IM
2	Distributed energy systems and dispersed generation (DG).	1	1	LM/ IM
3	Solar Energy: Solar processes and spectral composition of solar radiation. Solar Thermal system-Solar collectors	1	1	LM/ IM
4	Types and performance characteristics, Applications-Solar water heating systems(active & passive)	1	1	LM/ IM/ ICT
5	Solar space heating & cooling systems	1	1	LM/ IM
6	Solar desalination systems, Solar cooker	1	1	LM/ IM
7	Solar photovoltaic system-Operating principle	1	2	LM/ IM
8	Photovoltaic cell concepts, Cell, module, array, Losses in Solar Cell, Effects of Shadowing-Partial and Complete Shadowing	1	2	LM/ IM/ ICT
9	Series and parallel connections, Cell mismatching, Maximum power point tracking	1	2	LM/ IM
10	Applications-Battery charging, Pumping, Lighting, Peltier cooling. Modelling of PV cell	1	2	LM/ IM
11	Wind Energy: Wind energy, Wind energy conversion; Wind power density, efficiency limit for windenergy conversion	2	2	LM/ IM
12	types of converters, aerodynamics of wind rotors	2	1	LM/ IM
13	power ~ speed and torque speed characteristics of wind turbines, wind turbine control systems	2	2	LM/ IM
14	conversion to electrical power: induction and synchronous generators	2	1	LM/ IM
15	grid connected and self-excited induction generator operation	2	1	LM/ IM
16	constant frequency generation with power electronic control single and double output systems	2	2	LM/ IM/ ICT
17	reactive power compensation, Characteristics of wind power plant, Concept of DFIG.	2	1	LM/ IM
18	Biomass Power: Principles of biomass conversion	3	1	LM/ IM/ ICT

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19	Combustion and fermentation	3	1	LM/ IM
20	Anaerobic digestion	3	1	LM/ IM
21	Types of biogas digester	3	2	LM/ IM
22	Wood gassifier, Pyrolysis	3	1	LM/ IM/ ICT
23	Applications. Bio gas, Wood stoves,	3	2	LM/ IM
24	Bio diesel, Combustion engine, Application	3	2	LM/ IM
25	Hybrid Systems: Need for Hybrid Systems	4	2	LM/ IM
26	Range and type of Hybrid systems	4	1	LM/ IM/ ICT
27	Case studies of Diesel-PV,	4	1	LM/ IM
28	Wind-PV, Microhydel-PV	4	1	LM/ IM
29	Biomass-Diesel systems	4	1	LM/ IM
30	Electric and hybrid electric vehicles	4	2	LM/ IM/ ICT
31	Smart Grid: Applications of Computer science Engineering in Renewable power Generations		2	LM/ IM
32				LM/ IM
33				LM/ IM
34				LM/ IM/ ICT

Signature of the Faculty

Signature of the HoD