

LESSON PLAN

RENEWABLE ENERGY SYSTEMS

6th Semester Diploma in Electrical Engineering (SCTEVT Odisha)



Name of the Faculty-

SIBANANDAPATHY

Total Periods Assigned: 60 Periods (Theory)

22nd Dec 2025 – 10th April 2026

(15 weeks)

DEPARTMENT OF ELECTRICAL ENGINEERING

VISION:

To produce Electrical Engineer professionals who can contribute for socio-economic and technological development to meet global needs.

MISSION:

M1 - To strengthen academic infrastructure leading to quality professional by using modern technical tools and technologies.

M2 - To impart innovative knowledge among the students and make more industry-institution programs to make them successful professionals for serving the society.

M3 - To provide a learning environment to improve problem solving abilities, leadership abilities, ethical responsibilities and lifelong learning.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO1: Apply electrical engineering knowledge and practical skills to solve well-defined engineering problems using modern tools and techniques.

PEO2: Perform effectively in industry and society as competent junior engineer, supervisors, or entrepreneurs with ethical and sustainable engineering practices.

PEO3: Demonstrate teamwork, communication, leadership, and project management skills in professional engineering activities.

PEO4: Engage in lifelong learning and adapt to emerging technologies for career growth and higher education.

PROGRAM SPECIFIC OUTCOMES

The electrical diploma engineers will be able to:

PSO1:-Apply the fundamentals of mathematics, science and engineering knowledge to identify, formulate, design and investigate engineering problems of electric circuits, analog and digital electronics, control system, electrical machines and power system.

PSO2:- Apply the appropriate techniques and modern engineering hardware and software tools in electrical engineering to engage in life-long learning and to successfully adapt in multidisciplinary environments.

PSO3:-Work professionally in power systems engineering, Electrical machinery and electrical circuit.

DISTRIBUTION OF PERIODS

Unit No.	Topic / Module Name	Periods Allocated
Unit 1	Introduction to Energy Sources & Solar Radiation	10
Unit 2	Solar Photovoltaic & Thermal Systems	15
Unit 3	Wind Energy Systems	12
Unit 4	Biomass & Bio-Energy	8
Unit 5	Ocean, Tidal and Geothermal Energy	7
Unit 6	Grid Integration and Energy Storage Systems	8
Total		60

Topic wise distribution of Periods

Class No.	Topics to be Covered
1	Energy Scenario and Renewable Energy
2	Conventional vs Renewable Sources
3	Solar Radiation Basics
4	Solar Energy Collection
5	Solar Thermal Systems
6	Solar Water Heating
7	Solar Cooker
8	Solar PV Principles
9	Solar Cell Characteristics
10	PV System Components
11	Solar PV Applications
12	Wind Energy Fundamentals
13	Wind Energy Conversion System
14	Wind Turbine Components
15	Wind Power Generation
16	Wind Farm Concepts
17	Biomass Energy
18	Biomass Conversion Techniques

19	Biogas Plant
20	Biomass Gasification
21	Small Hydro Power
22	Hydro Plant Components
23	Geothermal Energy
24	Ocean Energy
25	Tidal Energy
26	Wave Energy
27	Fuel Cells
28	Hydrogen Energy
29	Energy Storage Systems
30	Battery Storage
31	Renewable Grid Integration
32	Hybrid Renewable Systems
33	Smart Grid Concepts
34	Energy Management
35	Renewable Energy Policies
36	Environmental Impact
37	Economic Analysis
38	Case Study: Solar Plant
39	Case Study: Wind Farm
40	Case Study: Biomass Plant
41	Numerical Problems
42	Numerical Problems
43	Renewable Energy Applications
44	Revision
45	Revision

Faculty Signature: _____

HOD Signature: _____