NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

LESSON PLAN

SUBJECT: TH-5 (RENEWABLE ENERGY POWER PLANTS)

Name Of The Faculty :-Er. RANJAN KUMAR PADHI
Branch :- Electrical Engineering **Semester** :- 3RD
Session :-2025-26 **Examination** :-2025 (W)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Solar PV and Concentrated Solar Power Plants	12	17
2	Large Wind Power Plants	12	18
3	Small Wind Turbines	9	13
4	Biomass-based Power Plants	12	20
	TOTAL	45	60

10.7.25

Sign of Faculty

10/07/25

Sign of H.O.D.

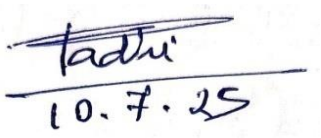
Name of the programme: ELECTRICAL ENGINEERING	Semester: 3rd	**Name of the Teaching Faculty:** Er. RANJAN KUMAR PADHI	
		Academic Year : 2025-26 **Examination :** 2025 (W)	
Course Code: EEPC209 TH:5	**Course Year:** Second Year	**No. of Classes Alloted Per Week :**	4
		Planned Classes Required to Complete the Course	60

Week	Class Day	Topics to be Covered
1st	1st	Solar PV and Concentrated Solar Power Plants Solar Map of India: Global solar power radiation, Solar PV
	2nd	1.1 Solar Map of India: Global solar power radiation, Solar PV
	3rd	1.2 Concentrated Solar Power (CSP) plants, construction and working of: Power Tower, Parabolic Trough, Parabolic Dish, Fresnel Reflectors
	4th	Power Tower, Parabolic Trough, Parabolic Dish, Fresnel Reflectors
2nd	1st	Power Tower, Parabolic Trough, Parabolic Dish, Fresnel Reflectors
	2nd	Power Tower, Parabolic Trough, Parabolic Dish, Fresnel Reflectors
	3rd	1.3 Solar Photovoltaic (PV) power plant: components layout, construction, working. Roof top solar PV power system
	4th	components layout, construction, working. Roof top solar PV power system
3rd	1st	components layout, construction, working. Roof top solar PV power system
	2nd	components layout, construction, working. Roof top solar PV power system
	3rd	components layout, construction, working. Roof top solar PV power system
	4th	components layout, construction, working. Roof top solar PV power system
4th	1st	components layout, construction, working. Roof top solar PV power system
	2nd	components layout, construction, working. Roof top solar PV power system
	3rd	Large Wind Power Plants 2.1 Wind Map of India: Wind power density in watts per square meter Lift and drag principle; long path theory

Week	Class Day	Topics to be Covered
4th	4th	Wind power density in watts per square meter Lift and drag principle; long path theory
5th	1st	Wind power density in watts per square meter Lift and drag principle; long path theory
	2nd	Wind power density in watts per square meter Lift and drag principle; long path theory
	3rd	2.2 Geared type wind power plants: components, layout and working.
	4th	2.2 Geared type wind power plants: components, layout and working.
6th	1st	Direct drive type wind power plants: components, layout and working.
	2nd	Direct drive type wind power plants: components, layout and working.
	3rd	Direct drive type wind power plants: components, layout and working.
	4th	2.3 Constant Speed Electric Generators: Squirrel Cage Induction Generators(SCIG),
7th	1st	2.3 Constant Speed Electric Generators: Squirrel Cage Induction Generators(SCIG),
	2nd	2.4 Wound Rotor Induction Generator (WRIG); Variable Speed Electric Generators: Doubly-fed induction generator (DFIG), wound rotor synchronous generator (WRSG),
	3rd	2.4 Wound Rotor Induction Generator (WRIG); Variable Speed Electric Generators: Doubly-fed induction generator (DFIG), wound rotor synchronous generator (WRSG),
	4th	2.4 Wound Rotor Induction Generator (WRIG); Variable Speed Electric Generators: Doubly-fed induction generator (DFIG), wound rotor synchronous generator (WRSG), permanent magnet synchronous generator (PMSG).
8th	1st	Small Wind Turbines 3.1 Horizon axis small wind turbine: direct drive type, components and working Horizontal axis small wind
	2nd	3.1 Horizon axis small wind turbine: direct drive type, components and working Horizontal axis small wind turbine: geared type, components and working
	3rd	3.1 Horizon axis small wind turbine: direct drive type, components and working Horizontal axis small wind turbine: geared type, components and working
	4th	3.2 Vertical axis small wind turbine: direct drive and geared, components and Working Types of towers and installation of small wind turbines on rooftops and
9th	1st	3.2 Vertical axis small wind turbine: direct drive and geared, components and Working Types of towers and installation of small wind turbines on rooftops and open fields.
	2nd	3.2 Vertical axis small wind turbine: direct drive and geared, components and Working Types of towers and installation of small wind turbines on rooftops and open fields.
	3rd	3.2 Vertical axis small wind turbine: direct drive and geared, components and Working Types of towers and installation of small wind turbines on rooftops and open fields.

Week	Class Day	Topics to be Covered
9th	4th	3.2 Vertical axis small wind turbine: direct drive and geared, components and Working Types of towers and installation of small wind turbines on rooftops and
10th	1st	3.2 Vertical axis small wind turbine: direct drive and geared, components and Working Types of towers and installation of small wind turbines on rooftops and
	2nd	3.3 Electric generators used in small wind power plants
	3rd	3.3 Electric generators used in small wind power plants
	4th	3.3 Electric generators used in small wind power plants
11th	1st	Biomass-based Power Plants 4.1 Properties of solid fuel for biomass power plants: bagasse, wood
	2nd	4.1 Properties of solid fuel for biomass power plants: bagasse, wood chips, rice husk, municipal waste
	3rd	4.1 Properties of solid fuel for biomass power plants: bagasse, wood chips, rice husk, municipal waste
	4th	4.1 Properties of solid fuel for biomass power plants: bagasse, wood chips, rice husk, municipal waste
12th	1st	4.1 Properties of solid fuel for biomass power plants: bagasse, wood chips, rice husk, municipal waste
	2nd	4.2 Properties of liquid and gaseous fuel for bio mass power plants: Jatropha, bio-diesel gobar gas
	3rd	4.2 Properties of liquid and gaseous fuel for bio mass power plants: Jatropha, bio-diesel gobar gas
	4th	4.2 Properties of liquid and gaseous fuel for bio mass power plants: Jatropha, bio-diesel gobar gas
13th	1st	4.3 Layout of a Bio-chemical based (e.g. biogas) power plant:
	2nd	4.3 Layout of a Bio-chemical based (e.g. biogas) power plant:
	3rd	4.3 Layout of a Bio-chemical based (e.g. biogas) power plant:
	4th	4.3 Layout of a Bio-chemical based (e.g. biogas) power plant:
14th	1st	4.3 Layout of a Bio-chemical based (e.g. biogas) power plant:
	2nd	4.4 Layout of a Thermo-chemical based (e.g. Municipal waste) power plant
	3rd	4.4 Layout of a Thermo-chemical based (e.g. Municipal waste) power plant

Week	Class Day	Topics to be Covered
14th	4th	4.4 Layout of a Thermo-chemical based (e.g. Municipal waste) power plant
15th	1st	4.5 Layout of a Agro-chemical based (e.g.bio-diesel) power plant
	2nd	4.5 Layout of a Agro-chemical based (e.g.bio-diesel) power plant
	3rd	4.5 Layout of a Agro-chemical based (e.g.bio-diesel) power plant
	4th	4.5 Layout of a Agro-chemical based (e.g.bio-diesel) power plant



Sign of Faculty

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