

Lesson Plan

Name of Institute	: Ambala College of Engineering and Applied Research
Name of the Faculty member	: Ajay Kumar
Discipline	: Mechanical Engineering
Semester	: 7 th
Subject	: Solar Energy Analysis (MEP - 411)
Lesson Plan Duration	: 15 weeks (from October 2021 to January 2022)
Work Load	: L 3 T 0 P 0

Week	Theory	
	Lecture day	Topic (including assignment/ test)
1 st	1	Basic Heat transfer principles
	2	Present & future scope of solar energy
	3	Availability of solar energy, nature of solar energy
2 nd	1	Solar energy and environment, Sun as the source of radiation
	2	Solar radiation: measurement of solar radiation
	3	Irradiance, solar constant, insolation, radiosity
3 rd	1	Emissive power, earth's equator, meridian longitude
	2	Sun earth angles
	3	Numerical Problems
4 th	1	Numerical Problems
	2	Sunrise, sun set and day length, solar time, equation of time
	3	Various methods of using solar energy, photo thermal
5 th	1	Photovoltaic, photosynthesis
	2	Solar thermal energy: Stationary collectors, FPC
	3	CPC collectors
6 th	1	ETC collectors, sun tracking
	2	Concentrating collectors, PTC, PDR
	3	Concentrating collectors HFC, Fresnel collectors
7 th	1	Solar thermal power plants, solar chimney power plant
	2	Solar pond, solar water heater, solar cooker
	3	Solar disinfection, limitations of solar thermal energy
8 th	1	Sensible heat storage, Latent heat storage
	2	Chemical energy system, Performance calculations
	3	Numerical Problems

9 th	1	Flow systems: Natural flow system, Forced flow systems
	2	Water heating systems for domestic
	3	Water heating systems industrial
10 th	1	Space heating requirements
	2	Solar distillation.
	3	Direct solar heating and cooling
11 th	1	Indirect solar heating and cooling and
	2	Isolated heating concepts, cooling concepts
	3	Load calculation methods
12 th	1	Numerical Problems
	2	Performance evaluation methods.
	3	Solar thermal power generation: Introduction
13 th	1	Parabolic concentrating systems
	2	Cylindrical concentrating systems
	3	Central receiver system
14 th	1	Solar refrigeration and air conditioning systems: Introduction
	2	Solar refrigeration and
	3	Solar air conditioning systems
15 th	1	Solar desiccant cooling.
	2	Numerical Problems
	3	Numerical Problems

(Signature of the teacher concerned with date)