

22MEHO106		SOLAR POWER PLANTS							
		CATEGORY	L	T	P	C			
		PE	3	0	0	3			
COURSE OBJECTIVES									
1	To explain concept of various power cycles involved in the solar power plants								
2	To learn and study the solar radiation and various solar power plants								
3	To outline the variety of solar systems used to collect solar energy								
4	To learn electric alper formance of PV power plants								
5	To summarize basic economics of solar power plants								
UNIT I		INTRODUCTION				9	0	0	9
Power Plant Scenario - Classification, Basic Principles and Features- Comparison and selection Criteria									
UNIT II		SOLAR POWER CYCLES				9	0	0	9
Vapour cycles–Organic cycles–Combined Cycles–Binary Cycles–Stirling Cycle– Brayton Cycle– Ericsson Cycle									
UNIT III		SOLAR THERMAL POWER PLANTS				9	0	0	9
Collector, Receiver, Energy Transfer Power cycles - Tower, Trough and Dish Systems - Concentrating Dish Systems - Solar Chimneys – Hybrid Systems									
UNIT IV		SOLAR PV POWER PLANTS				9	0	0	9
International PV Power Programmes - Photovoltaic Power Systems - System Integration - EnergyStorage - Power Electronics - Stand-Alone Systems - Grid-Connected Systems –Electrical Performance.									
UNIT V		ECONOMICS OF POWER PLANTS				9	0	0	9
Methods of fixing power tariff - Simple Methods to Calculate the Plant Economy - Life Cycle Cost - Payback Period - Economic Analysis for the Selection of Alternative Decisions and the future of the Power Plants									
TOTAL(45L) : 45 PERIODS									
REFERENCE BOOKS:									
1	Duffie, J.A., and Beckman, W.A. Solar Energy Thermal Process, John Wiley and Sons, NewYork,2006								
2	Kosuke Kurokawa (Ed.), Eergy from the Desert – Feasibility of very large-scale photovoltaicpowergenerationsystems,JamesandJames2003								
3	SukhatmeS.P.,Solar Energy,TataMcGrawHillsP Co.,3rdEdition,2008								
4	C.J.Winter, R.L.Sizmann, L.L.Vant-Hull, SolarPowerPlants, Springer-Verlag Berlinand Heidelberg GmbH&Co.K,2001								

COURSE OUTCOMES: Upon completion of this course, the students will be able to:		Bloom Taxonomy Mapped
C01	Describe the concept of various power cycles involved in the solar power plants were learnt	Understand
C02	Analyze different cycle for solar power generation	Analyze
C03	Describe the construction and working of component solar thermal power plant	Understand
C04	Explain PV system and its Integration	Understand
C05	Fix power tariff and analyze economical aspects of power plant	Analyze

COURSE ARTICULATION MATRIX

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	0	1	2	1	0	0	0	0	0	2	2	0
CO2	3	2	1	1	2	0	1	0	0	0	0	0	2	2	0
CO3	2	1	0	0	1	0	1	0	0	0	0	0	1	0	2
CO4	3	2	1	2	0	0	0	1	0	0	0	0	1	0	2
CO5	1	2	0	0	2	0	0	0	0	0	0	0	1	0	2
Avg	2.4	1.6	0.6	0.6	1.2	0.4	0.6	0.2	0	0	0	0	1.4	0.8	1.2

3/2/1 – indicates strength of correlation (3 – high, 2- medium, 1- low)