

## EE681: Renewable Energy Technology

Teaching Scheme			Credits	Marks Distribution				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE	CE	ESE	CE		
3	2	0	5	70	30	30	20	150

### Course Content:

Sr. No.	Topics	Teaching Hrs.
1	<p><b><u>Introduction:</u></b></p> <p>Renewable Sources of Energy, Grid-Supplied Electricity, Distributed Generation-Renewable. Various no-conventional energy resources; Introduction, availability, classification, relative merits and demerits.</p>	04
2	<p><b><u>Solar Energy:</u></b></p> <p>Photo voltaic power generation, spectral distribution of energy in solar radiation, solar cell Configurations, voltage developed by solar cell, photo current and load current, practical solar cell performance, commercial photo voltaic systems, test specifications for PV systems, applications of super conducting materials in electrical equipment systems</p>	10
3	<p><b><u>Wind Energy conversion:</u></b></p> <p>Wind power and its sources, site selection criterion, momentum theory, classification of rotors, wind characteristics, performance and limitations of energy conversion systems. Power from wind, properties of air and wind, types of wind Turbines, operating characteristics.</p>	08
4	<p><b><u>Geothermal Energy:</u></b></p> <p>Resources of geothermal energy, thermodynamics of geothermal energy conversion-electrical conversion, non-electrical conversion, environmental, Tides and tidal power stations, modes of operation, tidal project examples, turbines and generators for tidal power generation.</p>	06

5 **Wave energy conversion:**

08

Properties of waves and power content, vertex motion of Waves,  
device applications. Types of ocean thermal energy conversion  
systems Application of OTEC systems examples,

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**Total Hrs. 36**

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**Reference Books:**

1. S.P. Sukhatme, “*Solar Energy - Principles of thermal collection and storage*”,  
TMH, 2008.
2. Thomas Ackermann, “*Wind Power in Power System*”, John Willey & Sons, 2005.
3. Felix A. Farret, M. Godoy Simoes, “*Integration of Alternative Sources of Energy*”,  
John Wiley & Sons, 2006.
4. Remus Teodorescu, Marco Liserre and Pedro Rodríguez, “*Grid Converters  
For Photovoltaic and Wind Power Systems*”, John Wiley & Sons, 2011.