

Certificate Course in Renewable Energy Resources under CBCS pattern
(w.e.f. 2022-2023 onwards)

Department of Physics, Kakatiya University, Warangal

Certificate Course in Renewable Energy Resources

Course Duration:3 Months

Paper code	Comp. code	Title of the paper	Internal Exam Marks	End Exam		Total Max. Marks	Total Min. Marks	No. of credits
				Max. Marks	Min. Marks			
Theory								
C-1	C01	Paper –I:Solar Energy	10	40	16	50	20	02
C-2	C02	Paper- II: Wind,Bio-Mass, Geothermal and Ocean Energy	10	40	16	50	20	02
Total						100		04

G. Padmaja

11/10/2022

Chairperson, BoS in Physics, KU, Wgl

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Paper-II: Wind, Bio-Mass, Geothermal and Ocean Energy

UNIT I:

10 Hrs.

Wind and Bio-Mass Energy: Resources and potentials, horizontal and vertical axis windmills, performance characteristics. Principles of Bio-Conversion, Energy from waste, types of bio-gas digesters, gas yield, combustion characteristics of bio-gas, utilization for cooking, LPG and CNG.

UNIT II:

10 Hrs

Geothermal and Ocean Energy: Resources, types of wells, methods of harnessing the energy, potential in India. OTEC, principles of utilization, setting of OTEC plants, thermodynamic cycles. Tidal and wave energy, Potential and conversion techniques, mini-hydel power plants, land and their economics.

TEXT BOOKS:

1. Non-Conventional Energy Sources - G.D Rai, Khanna Publishers
2. Renewable Energy Resources-Twidell & Wier, CRC Press (Taylor & Francis)

REFERENCE BOOKS:

1. Renewable energy resources - Tiwari and Ghosal, Narosa.
2. Renewable Energy Technologies - Ramesh & Kumar, Narosa
3. Non-Conventional Energy Systems - K Mittal, Wheeler
4. Renewable energy sources and emerging technologies by D.P. Kothari, K.C. Singhal.

G. Padmaja
11/10/2022