CLUSTER UNIVERSITY SRINAGAR

SYLLABUS (FYUP UNDER NEP 2020)

Offered By Department Of PHYSICS

Semester 1st to 3rd (Multi-Disciplinary Course)

Course Title: Energy Sources

Course Code: UGPHY22D101 **Max. Marks: 75**
Credits: 3 **External: 55; Min Marks: 22**
Contact Hrs:45 **Internal (Continuous Assessment): 20 Marks, Min Marks: 08**

Objectives:

The broad objective of the Course shall be to give the students feel of the importance of energy conservation viz a viz its consumption under present global energy scenario.

Course Outcomes:

To give broader understanding of
Different energy sources with their origin and importances.
Generating energy that produces no green house emission & reduces air pollution.

UNIT I 15 Hrs

Non-Renewable energy sources

Energy: Concept & Sources in general, significance & necessity, Classification of energy sources: Primary and Secondary energy, Commercial and Non-commercial energy, Renewable and Non-renewable energy, Conventional and Non-conventional energy, Based on Origin-Examples and limitations, Importance of Non-commercial energy resources.

UNIT II 15 Hrs

Renewable energy sources

Need of renewable energy, non-conventional energy sources. An overview of developments in Offshore Wind Energy, Tidal Energy, Wave energy systems, Ocean Thermal Energy Conversion, solar energy, biomass, biochemical conversion, biogas generation, geothermal energy tidal energy, Hydroelectricity.

UNIT III 15 Hrs

Wind and Tidal Energy Harvesting

Fundamentals of Wind energy: Wind Turbines and different electrical machines, Power electronic interfaces, and grid interconnection topologies, Ocean Energy Potential against Wind and Solar Energy, Wave Characteris-tics and Statistics, Wave Energy Devices, Tide characteristics and Statistics, Tide Energy Technologies, Ocean Thermal Energy.

Suggested Readings:

1. Non-conventional energy sources - G. D. Rai - Khanna Publishers, New Delhi, 1988.
2. Renewable Energy, Power for a sustainable future, Godfrey Boyle, Oxford University Press, 2004.
3. Renewable Energy, Stephen Peake, 4th Edition, Oxford University Press, 2018.