

SYLLABUS

CERTIFICATE COURSE: NON-CONVENTIONAL ENERGY RESOURCES

COURSE CODE	HOURS	TIME
PHYNCER 23-24	30	3.30-4.30 PM

CO1: Understand conventional and non-conventional energy resources

CO2: Overview of Solar and wind energy technologies

CO3: Understand biomass production, hydropower and tidal Energy

CO4: Outline of fuel cells and super capacitors

UNIT 1 - Conventional and non-conventional energy resources 8 Hrs

Introduction, Energy usage, Energy sources, Classification of energy sources, Non-conventional energy sources

UNIT 2 – Solar and wind energy technologies 9 Hrs

Solar cells and its characteristic, Photo voltaic devices, Wind energy, accessibility of wind energy in India, Wind machines, Wind machine characteristics and usage

UNIT 3 – Biomass, hydropower and tidal energy 8 Hrs

Photosynthesis, Biogas production, Biogas plants, Hydropower, Principle of hydropower technology, Tides as energy source, Mechanics of tidal power and its limitations

UNIT 4 – Fuel cells and super capacitors 5 Hrs

Fuel cells, Working principle of fuel cells, Electrochemical devices, Super capacitors, Working principle of supercapacitors

Books & Reference:

P. D. Dunn, Renewable Energies: Sources, Conversion and Application, P. Peregrinus Ltd, London, 1986.

J. W. Twidell and A. D. Weer, Renewable Energy Sources, ELBS, 2nd Edition, Taylor & Francis, 2006.

S. Rao and B. B. Parulekar, Energy Technology- Non conventional, Renewable and Conventional 3rd Edition, Khanna Pub, 1999.

B.T. Nijaguna, Biogas Technology, New Age International Pub, 2002.