



RENEWABLE ENERGY ENGINEERING: SOLAR, WIND AND BIOMASS ENERGY SYSTEMS

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TYPE OF COURSE : Rerun | Elective | UG/PG

COURSE DURATION : 12 Weeks (24 Jan' 22 - 15 Apr' 22)

EXAM DATE : 23 Apr 2022

INTENDED AUDIENCE : 1. BTech/MTech/PhD students or faculties interested in acquiring knowledge of solar, wind and biomass renewable energy systems 2. Chemical engineer/Mechanical engineer or Biosciences and Bioengineer designing renewable energy systems such as solar, wind and biomass systems 3. Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories working in the area of energy engineering.

INDUSTRIES APPLICABLE TO : General Energy, Siemens Corporate Research, Regen Powertech Pvt. Ltd., Enercon India Pvt. Ltd., Wind World India Ltd. (WWI), Suzlon Energy Limited, Indosolar Ltd., Vikram Solar Pvt. Ltd., Kotak Urja Pvt. Ltd

COURSE OUTLINE :

In this course an attempt has been made to standardize the course material and to emphasize on the fundamental of non-conventional energy sources (solar, wind, and biomass). Harnessing the energy through these sources using efficient technologies is expected to play an important role in serving as clean energy source for mankind.

ABOUT INSTRUCTOR :

Prof. Vaibhav V. Goud is Professor in the Department of Chemical Engineering, Indian Institute of Technology Guwahati, India since 2018. Principal research interests of Dr. Goud are in the fields of reaction engineering, renewable energy, supercritical fluids, bio lubricants. He has published more than 120 papers in international peer reviewed journals and made presentations of his research in several national/ international conferences.

Prof. R. Anandalakshmi is an Associate Professor in the Department of Chemical Engineering, Indian Institute of Technology, Guwahati. Her research interests are in the area of Computational Heat Transfer and Fluid Flow, Process Modeling and Simulation, Solar Thermal Energy Conversion, Energy Efficient Design of Thermal Systems, Microwave Assisted Food and Material Processing, Food Packaging and Preservation, Refrigeration and Air-conditioning Systems

COURSE PLAN :

Week 1: Solar Energy: Basics and Concepts

Week 2: Non-Concentrating Solar Collectors

Week 3: Non-Concentrating Solar Collectors (Contd.)

Week 4: Concentrating Solar Collectors

Week 5: Storage Systems: Thermal Energy Storage Systems and Solar Energy Utilization Methods

Week 6: Biomass types and characterization

Week 7: Biochemical conversion processes

Week 8: Biochemical conversion processes (Contd.)

Week 9: Bioconversion of substrates into alcohol and thermo-chemical conversion of biomass

Week 10: Bioconversion of substrates into alcohol and thermo-chemical conversion of biomass (Contd.)

Week 11: Wind Energy: Basics: Turbine terms, types and theories

Week 12: Characteristics and Power Generation from Wind Energy