(082-E&E-03-03) RENEWABLE ENERGY ENGINEERING AND MANAGEMENT

Significance of the Program

Due to an increase in energy crisis and prominent issues of global climate change issues, renewable energy has occupied the centre stage in recent years. This has resulted in an increased demand for engineers in renewable energy with an adequate holistic understanding of technology, its management and allied policy-regulatory framework. The country has a target of renewable energy capacity of 500 MW by 2030. The Indian PSU have committed to increase renewable energy capacity systems to eliminate the carbon dioxide emissions and contribute to governments renewable energy plans. Over the next decade statistics indicate a continuous growth in the popularity of Renewable energy. M. Tech in Renewable energy program lays an excellent foundation for students who would like to take up a career in the green energy sector. The program also includes courses on energy policy, economics, and management, enabling students to understand the social, health and environmental implications of renewable energy systems.

Career Options

Pursuing an advanced degree in Renewable Energy, students can explore the following opportunities in Industries/Research.

- Energy Sector
- Solar Power Plants
- R&D
- Wind Power Plants
- Biomass Companies
- Nuclear Power Plants
- Environment Protection Agencies
- Architecture Firms
- Energy Storage and Transportation Companies
- Senior Analyst/Analyst
- Senior Electrical Design Engineering Professionals
- Manager Business Development
- Renewable Energy Data Processing Specialist

Program Objectives

1. To provide skilled personnel with integrated learning of design, modeling and performance analysis to academia and industry in the area of renewable energy and environment.
2. Possess technical competence in the fields of Renewable Energy & allied disciplines for providing engineering solutions which are technically sound and environment friendly.
3. To provide an academic ambience that allows to develop good scientific and technical skills in students to enable them to provide sustainable and cost-efficient innovative solutions to society.
4. To inculcate in students professional and ethical attitude, teamwork skills, multidisciplinary approach, and an ability to engage in independent and life-long learning.

Outcomes of the Program

- To design, commission and operate renewable energy and allied systems.
- To design, implement and perform analysis using cutting edge technologies for harnessing renewable energy in multi-disciplinary applications.
- To enrich the students with interdisciplinary knowledge to establish as an entrepreneur and industry centric in renewable energy.
- To inculcate students in professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach and an ability to relate renewable energy engineering issues to broader social context.
- To learn to write, communicate and deliver a good technical report/document effectively.
- To independently carry out research in the area of renewable energy.

Major Course Outline

1. Photovoltaic Systems
2. Energy Management
3. Energy Economics
4. Energy Storage Technology
5. Wind Energy Systems
6. Renewable Integration Markets
7. Hydrogen Energy Technology
8. Smart Grid Systems
9. Modeling and Optimization of Energy Systems

10. Bio-energy Systems
11. Power Electronics for Energy Systems
12. Energy Forecasting and Modeling