

National Institute of Technical Teachers Training and Research Bhopal

Programme Plan: RENEWABLE ENERGY TECHNOLOGIES (EEE-05)

1. **Rationale:** Energy is the golden thread that connects economic growth with social equity creating an environment that allows the world to flourish. Development is not possible without energy and sustainable development is not possible without utilizing sustainable and renewable energy resources effectively. Renewable energy as a means to enable sustainable development is becoming a significant consideration in the planning and development of the modern energy systems.

In this modern era, fossil fuels are depleting fast due to over-exploitation, besides increasing the environmental protection costs. Search for renewable energy sources and their technology development is of paramount importance to have a balanced and buoyant environment for better quality of life. Energy supply from renewable sources is therefore an essential part of every country's strategy, especially when there is a serious threat of environment degradation and challenge for maintaining sustainability of fossil fuels. Therefore, this training programme is intended to discuss the various technologies that are applicable to the different sources of renewable energy like Solar Energy, Bio Energy, Micro Hydro Energy, Ocean Energy, Geothermal energy, Hydrogen Energy, Fuel Cell Technology and Nuclear Energy etc. This programme will also enable the participants to realize the potential of renewable energy systems for sustainable development and its contribution for overcoming the effects of climate change.

2. Programme Outcomes:

The participants of the programme will be able to:

- Describe the role that various renewable energy sources play in advancing the sustainable development goals.
- Explain the working of solar and wind power technologies.
- Describe the different types of Bio Energy technologies.
- Compare the characteristics of ocean energy and technologies used to harness it.
- Explain the working principle of different types of Geothermal Technologies.
- Compare the working principle of different types of fuel cell Technology.

3. Programme Contents:

Overview of renewable energy sources, Solar energy and PV Systems, Solar Thermal Systems, Bio Energy, Wind power technologies, geothermal energy technologies, Small Hydro technologies, ocean energy technologies, Hydrogen Energy and fuel cell technology etc.

4. Instructional Strategy: Following participative strategies will be employed:

- Input sessions
- Individual Assignment and Practice
- Discussions

- Plenary session for presentation

5. **Dates and Venue:** 12 to 16 June 2023, NITTTR, Bhopal

6. **Target Group:** Faculty members of Electrical, Electronics and allied discipline.

7. **Coordinator: Dr. A. S. Walkey**, Professor and Head, Department of Electrical and Electronics Engineering Education and Dean (Estate and Infrastructure Management)

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8. **Co- Coordinator: Prof. (Mrs.) Susan. S. Mathew**, Associate Professor, Department of Electrical and Electronics Engineering Education and Associate Dean (Academic and Research)

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Bhopal**

Renewable Energy Technologies (EEE-05)

During 12th -16th June 2023

Venue: NITTTR, Bhopal

TENTATIVE SCHEDULE

Day/Date	Session I 10.00-11.30	Session II 11.45-1.30	Session III 2.00-3.30	Session IV 3.45-5.30
Monday 12-06-2023	Registration Programme Overview	Overview of Renewable Energy Sources	Solar Energy and PV Systems	Task -1 Solar PV systems
Tuesday 13-06-2023	Solar Thermal Systems and Sizing of Solar PV Systems	Task -2 Sizing of Solar PV systems	Bio fuels	Task-3- Bio fuels
Wednesday 14-06-2023	Wind Power Technology	Task-4 - Wind power Technology	Geothermal energy Technologies	Task -5 Geothermal Energy
Thursday 15-06-2023	Small Hydro Power plants	Task -6 Micro hydro power plants	Hydrogen Energy Fuel cell Technology	Task -7 Hydrogen Energy and fuel cell Technology
Friday 16-06-2023	Ocean Energy Technologies	Applications of IoT in Renewable Energy Systems	Achievement Test	Feedback & Valedictory Session

Coordinator: - Dr. A.S. Walkey, Professor & Head, DEEEE

Faculty: - Prof. (Mrs.) Susan S. Mathew, Associate Professor, DEEEE.