

Annexure 7.2.1: Describe two best practices successfully implemented by the Institution as per NAAC format provided in the Manual.

Presentation of Best Practices In Department of Electrical Engineering

1. Title of the Practice

M.Tech. (Power and Energy Systems)

2. Objectives of the Practice

- To equip the students about the latest technologies of renewable energy.
- To make the students industry ready as demanded by the growing sector of renewable energy.
- To ensure that the students undertake and complete the project and dissertation in thrust area of renewable energy.

Outcomes: PG programme according to National Solar Energy Mission

Concepts of this Practice: National Solar Energy Mission-2010 and updates as per Ministry of New and Renewable energy.

3. The Context

The department introduced this programs of two year duration M.Tech (Power and Energy Systems) PG program with effect from academic session 2024-2025. Observing the acute demand of energy professionals, it was felt that there is acute shortage of such professional engineers in the market. National Solar mission 2010 states that the total grid connected electric power capacity is to be increased to 175 GW by the completion of 2022. Further to this this target has been revised to 500 GW of renewable energy to be achieved by 2030. As on 30th September 2025, this target of renewable energy has been achieved by installing 247 GW. Out of which 127 GW is being catered by installing solar power capacity for financial year 2024-2025 (Reference: Ministry of new and renewable energy, Government of India) whereas 53 GW of electric power is being generated by wind energy power plants. In addition, depleting fossil fuel resources is raising the constraint to select the alternate energy sources for meeting the increasing load demand. Thus, our department took this initiative to introduce the new PG programme, that is, M.Tech. (Power and Energy Systems) as per UGC/AICTE norms. The curriculum had been designed in such a way that the incumbent student can learn and practise the theory courses in computer-based laboratories. This way, the student can develop the hybrid models comprising solar, wind, and biomass energy. Effectiveness of such created models is ensured by the availability of Matlab software in the computer laboratory of the department. Labs curriculum was designed to make the student capable of using multiple tools of power electronics, control systems, optimization and electric power systems. It is also ensured that the post-graduate students undertake and complete their research work in new areas of renewable energy: development of artificial intelligence based controlling techniques, smart grids, hybrid energy systems and micro grids. For this, students are motivated to carry and publish their research work in reputed publishing houses: IEEE, Elsevier, Springer, Wiley, Taylor & Francis amongst others. This way, the student can test the developed system effectively and efficiently.

4. The Practice

M.Tech. (Power and Energy Systems) has been commenced with effect from session August 2024-2025 academic session.


5. Evidence of Success

As a result of introduction of this new program the department received the overwhelming response in the new admissions of 2024-2025 academic session. Around 4 students took the admission of this new program in the session.

6. Problems Encountered and Resources Required

New curriculum had been designed and passed from Board of studies for M.Tech. (Power and Energy Systems). Matlab software had been installed in the computer laboratory for carrying out the experiments of laboratories. Onwards, most of the faculty members of the department started publishing their research work in renewable energy technologies.

7. Notes (Optional)-Nil


Head
Department of Electrical Engineering
I. K. Gujral Punjab Technical University
Kaourthala-141006
