

# Minor in Energy and Environment

## Motivation:

Addressing the growing demands of energy and managing its undesirable impact on the environment is a major challenge that is faced today. Consequently, improving existing energy utilization and developing new methods for energy sourcing are needed. To this end, evaluating the present state of energy sources, and understanding the processes involved in conversion, transmission, utilization, and storage are vital.

A minor in Energy and Environment is offered by IIT Dharwad to provide the requisite knowledge in the above aspects. The breadth of the topics is covered as part of compulsory core courses while the electives offer emphasis in focused areas. The focus areas span energy conversion methods, electrical energy transmission, energy storage, and detailed applications. Economic analysis that helps in technology selection and the policies to ensure implementation are also part of the curriculum.

## List of Courses and Guidelines:

The minor program is proposed in the form of a set of courses, totaling 30 credits, which must be done in addition to the minimum course requirement of their department-specific degree. Of the 30 credits, one core course (six credits) is mandatory for all students. The remaining 24 credits must be completed by selecting the courses offered from the list of electives for Energy and Environment.

The table below is the template of the courses for this minor.

Course name	Credits	Offered semester
Energy Sources and Sustainability	6	Odd

## Electives:

Course name	Credits	Theme
Power Plant Engineering	6	Conventional Energy
Systems and Energy Efficiency in Buildings	6	Conventional energy
Solar Energy Collector Systems	6	Renewable energy
Wind Turbine Design and Operation	6	Renewable energy
Atmosphere and Ocean Dynamics	6	Renewable energy
Energy and Environment Lab	3	Renewable energy
Bioenergy and Biofuels	6	Renewable energy
Electric and Hybrid Vehicles	6	Renewable energy

Only the courses present in the list of electives for Energy and Environment will count towards the credits for minor in Energy and Environment. If a course from said list is part of the compulsory course for a certain department, the credits will be counted towards the credits of the basic degree and not minor in Energy and Environment. For example, an EE student (who takes Introduction to Power Systems, Introduction to Power Electronics, Introduction to Electrical Machines as part of their department core courses), must pick other courses from the list to earn elective credits.

Similarly, an ME student (who studies Thermodynamics, Applied Thermodynamics, Fluid Mechanics, Heat Transfer as part of their department core courses) must pick other courses from the list to earn the elective credits.

The B.Tech. (ME) student opting for the courses listed in the minor and completing these 30 credits in addition to the requirements of the BTech degree would be eligible to receive B.Tech. Mechanical with Honors in Energy and Environment. Only the other branch students who complete the credit requirements would be eligible to receive a Minor in Energy and Environment.