

Course Number: EN 505P

Course Name: Energy Systems Laboratory

Credits: 0-0-4-2 (L-T-P-C)

Prerequisites: None

Intended for: Core for M.Tech. Energy Engineering

Distribution: Core

Semester: Odd/Even

Preamble: The basic objective of this laboratory is to provide students a feel of actual systems and experience with some simple measurements in for characterising conventional as well as non-conventional energy sources and conversion methods.

List of Experiments:

1. Study of properties of fuel oils & biomass, calorific value of Biomass samples
2. Testing of Gasifier: Effect of feedstock on heat output and pollutants
3. Energy conservation study of IC Engine
4. Fabrication of photovoltaic solar cell
5. Performance assessment of PV modules: I-V Characteristics and Efficiency of a Solar PV cell
6. Measurement of Solar Radiation and study of efficiency of a Flat Plate Solar Collector
7. Piezo-electric energy harvesting: comparison of conversion efficiency of different materials and effect of vibration frequency on conversion efficiency
8. Electrical machines characteristics
9. Pollutant level measurement
10. Boiler, Pump & motor efficiency testing
11. Characterization of Refrigeration system
12. Study of fuel cells and measurement of their efficiency
13. Implementation of a solar powered pump
14. Design and implementation of a solar powered home with 24/7 availability of electricity
15. Visit of Hydro-electric power plant
16. Visit of Thermal power plant