

GUJARAT TECHNOLOGICAL UNIVERSITY
B.E. SEMESTER : VI
ENVIRONMENTAL SCIENCE AND ENGINEERING

Subject Name: Energy & Environment

Subject Code:163703

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam(E)	University Exam(P)	Mid Sem Exam(Theory) (M)	Practical (Internal)
4	2	0	6	70	0	30	50

Sr No	Course Contents
1	Fundamental Concepts of Energy: Laws of thermodynamics as applied to energy transformations, Heat transfer and insulation.
2	Energy Sources: Conventional - Fossil fuel, Hydro-power and nuclear power, Non-conventional - Solar, geothermal and ocean, flow and fund energy resources
3	Energy Conversion Systems: Fuels and combustion processes, Environmental aspects and their management in energy conversion systems - Thermal power plants, nuclear power plants and hydel power plants, Fuel cell technology.
4	Non-Conventional Energy Resources: Solar energy conversion systems, Solar photo-voltaic and solar thermal, Ocean thermal energy conversion (OTEC) Systems. Wind farms, Tidal energy conversion, Mini and micro hydel power plants, Energy storage technology.
5	Energy Management - Problems and Prospects: Energy management strategies both at generation and demand ends, Need for appropriate technologies, Strategies for energy conversion, Energy efficiency, Energy management in domestic, industrial sector, commercial establishments and transport sector. Energy Audit as a tool for energy efficiency and conservation.

TEXT BOOKS:

1. Banerjee, B.P., Handbook of Energy and Environment, Oxford University Press (2005).
2. Mitch, W.J., Bosserman, R.W., and Klopatic J.M, Energy and Ecological Modeling, Elsevier (1994).
3. Smith, J. M. and vanNess, H. C., Introduction to Chemical Engineering Thermodynamics, McGraw-Hill (1959)