GUJARAT TECHNOLOGICAL UNIVERSITY
M.E.in Energy Engineering
Semester: I

Subject Name: **Energy Conversion Systems**
Subject Code : **713902**

Sr. No	Course Content
1.	**Classification of Energy Sources:** Principle fuels for energy conversion, Energy Sources: prospecting, extraction and resource assessment and their peculiar characteristics. Primary energy sources, Conversion of primary into secondary energy sources such as Electricity, Hydrogen and Nuclear energy etc.
2.	**Thermal Energy :** Steam power plant cycle, Rankine cycle, Reheat cycle, Regenerative cycle, Thermal and Mechanical Energy Utility systems, Boilers -Types, combustion in boilers, performance evaluation, analysis of losses, feed water treatment, blow down, Introduction to FBC Boilers, mechanism and Operational Features of FBC, retrofitting FBC system to conventional boilers, Steam turbines: Classification, impulse turbine, reaction turbine, compound turbine, performance evolution, energy losses in turbine and governing, turbine auxiliary system, Advances in thermal energy
3.	**Nuclear Energy :** Energy Conversion through fission and fusion, Nuclear reactor: PWR, BWR, GCR, HTGR, HWR, LMFBR, Advances in nuclear energy
4.	**Co-generation, Tri-generation & Waste Energy Recovery :** Co-generation & Tri-generation: Definition, need, application, advantages, classification, saving Potential, Waste Heat Recovery: Concept of conversion efficiency, energy waste, waste heat recovery classification, advantages and applications, commercially viable waste heat recovery devices.

Reference Books:

1. Rajmohan Gupta, “Steam Turbine”, Oxford & IBH Publishing Co. Pvt. Ltd.
2. P. K. Nag, “Power Plant Engineering”, Tata McGraw Hill Publications.
3. R. Yadav, “Steam Turbine”, Khanna Publishers.
4. Ganesan, “Gas Turbine”, McGraw Hill
5. Dr. Meherwan P. Boyce, P.E., “Gas Turbine Engineering Handbook”, 3rd edition
6. Arora and Domkundwar “Power Plant Engineering”, Dhanpatrai and Sons
7. Direct Energy Conversion : W.R.Corliss
8. Practical Heat Recovery – Boyen J.L. John Wiley, New York, USA1976