

ME307 Energy Conversion Devices

Credit: 4

Approval: Approved in 3rd Senate

Prerequisite: Fluid Mechanics

Students intended for: B.Tech

Elective or Core: Core

Semester: Odd/Even

Course objective: The course is designed to give undergraduate students in Mechanical Engineering experience in applying principles of basic engineering science to the design and analysis of various types of turbomachinery.

Course content:

Thermodynamics, Thermal power plants: Gas and steam power cycles, Regenerative and reheat cycles, Turbo Machinery: Classification Similitude and specific speeds, Euler turbine equation, Velocity triangles. Turbine and compressor cascades. Axial-flow turbines and compressors: Stage efficiency and characteristics, Radial equilibrium, Governing. Fans, blowers and compressors: Slip factor, performance characteristics. Hydraulic Machines; Pelton wheel, Francis and Kaplan turbines, Draft tubes, Pumps, Cavitation, Fluid coupling and torque converter, Introduction to IC engine. Use of Computer Aided Engineering (CAE) in turbomachinery design.

Suggested Books

- S.L. Dixon, Fluid Mechanics, Thermodynamics of Turbomachinery, Third Edition, Pergamon Press, 1998.
- Turbines Compressors And Fans 4th edition, S M. Yahya, 2010
- Fundamentals Of Turbomachinery, B. K. Venkanna, 2009