

Topic Name: Basic Concepts & First Law of Thermodynamics

Relevant Course Name: Engineering Thermodynamics

Relevant Department: Mechanical Engineering

Relevant Semester: B.Tech 1st & 2nd Year

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Topic Description and Outline:

Heat and Work

- Definition of Thermodynamic Work
- Units for Work
- Forms of Work
- Definition of Heat
- Inter Convertibility of Heat/work into Work/heat
- Governing Principles
- Sign Convention

First Law of Thermodynamics : Basics

- Statement of First Law of Thermodynamics :
- First Law for Cyclic Process
- First Law for Change of State of A System :
- Internal Energy, A New Thermodynamic Property
- Enthalpy
- The Constant Volume and Constant Pressure Specific Heats
- The internal Energy, Enthalpy and Specific Heats of An Ideal Gas.

First Law of Thermodynamics : Flow Devices

- First Law as a Rate Equation
- First Law Applied to a Control Volume

- The SSSF and USUF Processes.
- Case Study of Engineering Devices