

Course Title Thermodynamics-I	Course Code ME-130	Credit Hours 3 – 0
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Text Book:

- Yunus A. Cengel, Michael A., Thermodynamics: An Engineering Approach, McGraw-Hill

Reference Books:

- M. J. Moran and H. O. Shapiro, Fundamentals of Engineering Thermodynamics, John Wiley & Sons.
- T. D. Eastop and A. McConkey, Applied Thermodynamics and Engineering, Pearson.

Course Objective:

To provide engineers with a foundational understanding of thermodynamic principles and their applications in engineering systems

Course Outline:

- Introduction and Basic Concepts: First law of thermodynamics and its applications, System and boundary, Specific volume, pressure and temperature
- Energy, Energy Transfer, and General Energy Analysis: Equilibrium state, processes
- Properties of Pure Substances: Phase change processes, P-v-T relation, Property diagrams, Equation of state, specific heats, Compressibility polytropic process relation.
- Energy Analysis of Closed Systems
- Mass and Energy Analysis of Control Volumes: Energy analysis of power, refrigeration and heat pump cycles
- The Second Law of Thermodynamics: Spontaneous and non-spontaneous processes, Thermodynamic cycles, irreversible and reversible process, and Carnot cycle, Clausius inequality.
- Entropy change, T-s diagram, entropy generation, Increase of entropy principle, entropy rate balance of closed systems and control volumes, Isentropic efficiencies

Description	Percentage Weightage (%)
Assignments	05-10%
Quizzes	10-15%
Mid Semester Exams	30-40%
End Semester ASSESSMENTS Exam	40-50%

