Course Title	Course Code	Credit Hours
Engineering Thermodynamics	AE-242	3-1

Textbook:

- Yunus A. Cengel,.and Michael A. Boles, “Thermodynamics: An Engineering Approach”, McGraw-Hill Education

Reference Books/Materials:

- Michael J. Moran, Howard N. Shapiro, Daisie D. Boettner, and Margaret B. Bailey, “Fundamentals of Engineering Thermodynamics”, Wiley
- EASA Part-66 Category B1 Maintenance License Module 2, “Physics”
- EASA Part-66 Category B1 Maintenance License Module 16, “Piston Engines”

Course Objectives:

This course aims to introduce students to the basic concepts of engineering thermodynamics including topics on energy, its transfer, transformations, and related processes by adopting a macroscopic approach. The concepts of energy in the form of heat, work and mass transfer, laws of thermodynamics and their applications are also introduced.

Course Outline:

- Systems and Control Volumes, System Properties
- State and Equilibrium, Processes & Cycles
- Temperature and Zeroth Law of Thermodynamics
- Pressure and its Measurement
- Forms of Energy
- Energy Transfer by Heat
- Energy Transfer by Work
- Mechanical Forms of Work
- First Law of Thermodynamics
- Pure Substance and its Phases
- Phase change Processes of Pure Substances

- Property Diagrams of Phase Change Processes
- Property Tables
- Ideal Gas Equation of State
- Energy Analysis of Closed Systems; Mass and Energy Analysis of Control Volumes
- Second Law of Thermodynamics
- Carnot Cycle; Carnot Principles; Carnot Heat Engine
- Entropy: Entropy change of Pure Substance Isentropic Process
- Entropy Change of Liquid and Solids; Entropy Change of Ideal Gases