Course Title	Course Code	Credit Hours
Heat and Mass Transfer	AE-343	3-1

Textbook:

- Yunus A. Çengel and Afshin Jahanshahi Ghajar, “Heat and Mass Transfer”, McGraw-Hill Education

Reference Books/Materials:

- F. P. Incropera and D.P. Dewitt, “Fundamentals of Heat Transfer”, Wiley
- Jack Philip. Holman, “Heat Transfer”, McGraw Hill

Course Objectives:

This course aims to introduce students to the fundamental principles of Heat and Mass Transfer, focusing on their application in engineering contexts. It covers essential concepts and techniques for practical problem-solving.

Course Outline:

- Understanding Different Modes of Heat Transfer I.e. Conduction, Convection and Radiation
- Developing the Sense of Solving Common Engineering Problem in Heat Transfer
- Understanding the Multidimensionality and Time Dependence of Heat Transfer
- Obtain the Differential Equation of Heat Conduction in Various Coordinate Systems, and Simplify it for Steady One-Dimensional case
- Identify the Thermal Conditions on Surfaces, and Express them Mathematically as Boundary and Initial Conditions
- Solve One-Dimensional Heat Conduction Problems and obtain the Temperature Distributions within a Medium and the Heat
- Analyze Steady Heat Conduction in Plane Walls
- Solving the Problems using Thermal Resistance Networks Analogy Concept
- Solve one-dimensional, Steady Conduction Heat Transfer Problems in various Geometries

- Heat Transfer Form Finned Surface
- Boundary Conditions at Fin Tip
- Fin Efficiency and Fin Effectiveness
- Distinguish Between Internal & External flow
- External Forced Convection: Internal Forced Convection
- Evaluate drag and heat transfer Associated with Flow Over Flat Plat for Laminar & Turbulent flow
- Determine the Pressure drop & Heat Transfer Coefficient Associated with Flow across a Tube Bank for both In-line & Staggered Configuration
- Heat Exchangers
- Fundamentals of Thermal Radiation

  Mass Transfer