ME 431 - Heat Transfer

Hour: Lecture: 2 Hrs. Tutorial: 2 Hrs. Credit: 3.
Coordinator: Mohamed Elsayed

Text Book:

- J.P. Holman, "Heat Transfer", McGraw – Hill, latest edition.

Reference Books:

- V.P Mikhenks "Heat Transfer"
- Kern Donald "Process Heat Transfer" McGraw Hill
- Fogiel M " The Essentials of Heat Transfer" Vol 1 &2 Research and Education Association

Specific course information

a. Steady state conduction, one dimension unsteady state conduction. Principles of convection. Natural convection systems. Radiation heat transfer, Design of surface heat exchangers
b. Prerequisite: ME 333 or ME 231
c. Designation: Required

Specific goals for the course:

- Design and conduct experiments, and collect, analyze and interpret data.
- Design a system, process, or component to meet desired needs subject to given constraints. Analyze and evaluate alternative solutions.
- An ability to function on multidisciplinary teams.
- Use oral, written, and audio-visual techniques effectively for successful communication.
- Ability to visualize the impact of the Mechanical technological development on the environment

Course instruction outcomes:

- The students will be familiar with the general principles of heat transfer method, processes, heat exchangers design.

Student outcomes:

B, C, D, G

Topics Covered:

- Review of Heat Transfer
- Steady State Conduction in One Dimension

- General Conduction Equations – External Surfaces
- Steady State Conduction in Two Dimensions
- Empirical Relations for Forced Convection
- Natural Convection Systems
- Radiation Heat Transfer
- Design of surface heat exchangers
- Design of compact heat exchangers

Course / credit hours	Math & Basic Sciences	Engineering Topics	General Education
Heat transfer (ME431)/3		3	