Course ME 50500 – Intermediate Heat Transfer

Type of Course Elective for ME program (Group 1)
Required for MSE-ME concentration


Credits 3

Contact Hours 3

Prerequisite Courses ME 32100

Corequisite Courses None

Prerequisites by Topics Heat Transfer


Course Objectives To enhance student’s knowledge of the fundamentals of conduction and convection heat transfer; to provide practice in approaching heat transfer problems analytically; and to continue their exposure to practical heat transfer/phase change applications, such as heat exchangers.

Course Outcomes Students who successfully complete this course will have demonstrated an ability to:

1. Analyze and solve variable cross-section fin problems. (1)
2. Apply separation of variables to steady-state and transient heat conduction problems in Cartesian and cylindrical coordinate systems. (1)
3. Apply separation of variables to steady-state conduction with heat generation. (1)
4. Analyze and solve boundary layer problems. (1)
5. Solve internal and external flow, forced convection problems. (1)
6. Solve external flow natural convection problems. (1)
7. Identify different regimes of boiling and condensation. (1)
8. Recognize, model, and solve radiation heat transfer problems. (1)

Lecture Topics
1. Introduction, review
2. Steady-state conduction
3. Transient conduction
4. Forced Convection
5. Free Convection
6. Radiation
7. Boiling and condensation

Computer Usage
Low

Laboratory Experience
None

Design Experience
None

Coordinator
Hosni Abu-Mulaweh, Ph.D.

Date
26 February 2018