Sungkyunkwan University (SKKU) International Summer Semester (ISS) 2024

Heat Transfer

Prof. Kotiba Hamad, Sungkyunkwan University

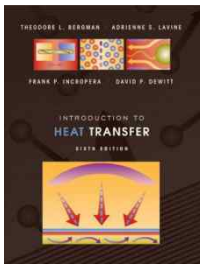
SHORT COURSE DESCRIPTION

In this course, the fundamentals and methods of heat transfer will be presented. In this regard, several topics will be covered by this course including; Fourier's law, conduction processes, thermal resistance, fins, heat equation and lumped capacitance, elementary convection, thermal radiation, and basic concepts of heat exchangers.

READING MATERIALS

Readings are from the required textbook:

- Bergman, Theodore L., Adrienne S. Lavine, Frank P. Incropera, et al. Introduction to Heat Transfer. Wiley, 2011. ISBN: 9780470501962.



A PDF copy of this book will be provided before the start of the ISS.

Readings:

Lecture	***Chapter***
1-4	Chapter 1: Introduction Chapter 2: Introduction to Conduction Chapter 3: One-Dimensional, Steady-State Conduction
4-10	Chapter 3: One-Dimensional, Steady-State Conduction
10-12	Chapter 5: Transient Conduction
11, 12	Chapter 11: Heat exchangers

COURSE REQUIREMENTS AND GRADING

Assignment: 10%
Attendance: 10% (at least 80% of class participation required for pass)
Exams (Midterm and final): 80%
Grade: Pass/Fail.

COURSE SCHEDULE

– WEEK I –

Monday (1 July) ***Introduction to Heat Transfer, Conduction, Fourier's Law (Lecture 1)***

Tuesday (2 July) ***Conduction, Convection, and Radiation (Lecture 2)***

Wednesday (3 July) ***Thermal Resistance Networks (Lecture 3)***

Thursday (4 July) ***Heat Transfer Enhancement-Fins & Extended Surfaces (Lecture 4)***

– WEEK II –

Monday (8 July) ***Heat Transfer Enhancement-Fins & Extended Surfaces (Lecture 5)***

Tuesday (9 July) ***Heat Transfer Enhancement-Fins & Extended Surfaces (Lecture 6)***

Wednesday (10 July) ***Midterm***

Thursday (11 July) ***Time-dependent Heat Transfer: Heat equations (Lecture 8)***

– WEEK III –

Monday (15 July) ***Convection, Heat (Lecture 9)***

Tuesday (16 July) ***Convection, Heat (Lecture 10)***

Wednesday (17 July) ***Heat Exchangers, Introduction to Phase Change (Lecture 11)***

Thursday (18 July) ***Heat Exchangers, Introduction to Phase Change (Lecture 12)***

– WEEK IV–

Monday (23 July) ***Heat Exchangers, Introduction to Phase Change (Lecture 12)***

Tuesday (24 July) ***Review (Lecture 13)***

Wednesday (25 July) ***Final Exam***