



蘇州大學
Soochow University

ENR 312 Heat Transfer

Summer 2024

Course Credits: 4

Contact Hours: 56 hours

Instructor: TBA

Email:TBA

COURSE OBJECTIVES

Heat Transfer is a fundamental course in engineering that explores the mechanisms and principles governing the transfer of thermal energy. This course provides students with an understanding of conduction, convection, and radiation, along with practical applications in various engineering fields. This course also serves as a valuable refresher for practicing engineers seeking to reinforce their understanding of heat transfer fundamentals and technical knowledge.

Upon Completion of this Course, students will be able to:

1. Understand the fundamental principles of heat transfer;
2. Analyze heat conduction, convection, and radiation phenomena;
3. Predict the rate of heat transfer by convection between solid and an internal or external fluid flow;
4. Calculate heat transfer rate and effectiveness of different heat exchangers.

PREREQUISITES

CEN 215 Fluid Mechanics

GRADING

Grades will be determined by accumulating points, with 100 points being the maximum, as follows:

ITEM	POINTS
5 Labs and Reports	50 Points



2 Quizzes	20 Points
Midterm Exam	10 Points
Final Exam	20 Points
Total	100 Points

Late submissions will be graded at the end of the course. Grades will be assigned according to the following rule:

$$A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60 > F.$$

We reserve the right to make adjustments to the overall grading policy.

COURSE MATERIALS

Required Texts:

Fundamentals of Heat and Mass Transfer, Seventh Edition by T. L. Bergman, A. S. Lavine, F. P. Incropera, and D. P. Dewitt (Wiley, 2011).

Recommended (Optional) Texts or Other Materials:

None

COURSE TOPICS

MODULE	TASKS
Module 1	Topics: Topic 1: Introduction to Heat Transfer Topic 2: Physical Origins and Rate Equations Topic 3: Relationship to Thermodynamics Topic 4: Units and Dimensions Assessments: Lab #1 Lab Report #1
Module 2	Topics: Topic 5: Introduction to Conduction Topic 6: One-Dimensional, Steady-State Conduction Topic 7: Two-Dimensional, Steady-State Conduction Topic 8: Transient Conduction Assessments: Lab #2 Lab Report #2 Quiz 1



Module 3	Topics: Topic 9: Introduction to Convection Topic 10: Local and Average Convection Coefficients Topic 11: Laminar and Turbulent Flow Topic 12: The Boundary Layer Equations Assessments: Lab #3 Lab Report #3 Midterm Exam
Module 4	Topics: Topic 13: External Flow/Internal Flow Topic 14: Free Convection Topic 15: Boiling and Condensation Topic 16: Heat Exchangers Assessments: Lab #4 Lab Report #4 Quiz #2
Module 5	Topics: Topic 17: Radiation Heat Fluxes Topic 18: Radiation Intensity Topic 19: Radiation Exchange Between Surfaces Topic 20: Diffusion Mass Transfer Assessments: Lab #5 Lab Report #5 Final Exam

ATTENDANCE

1) Class attendance is required. Missing classes without permission will lead to decrease in overall grade.

Missing less than two classes: no penalty.

Missing more than two classes: 7% will be taken off from the overall grade.

If the instructor reports a student's frequent missing of class to the Soochow University Academic Administration Office, the student might get a written warning and might be prohibited from attending final exam.

2) Participants in this course are expected to arrive in class promptly and adequately prepared. The primary objective of this course is to critically engage with the readings



and the subject matter. Therefore, course participants are expected to have completed the reading prior to class and prepare thoughtful reflections/commentaries to share with fellow colleagues.

LEARNING REQUIREMENTS

- 1) Late assignments are not acceptable and are subjected to grade deductions.
- 2) Assignments submitted in the wrong format will be counted as not submitted.
- 3) Failure to submit or fulfill any required course component results in failure of the class.
- 4) Make-up for midterm and final exams only with valid excuses, as defined by the University.
- 5) In order to earn a Certificate of Completion, participants must thoughtfully complete all assignments by stated deadlines and earn an average quiz score of 50% or greater.

TECHNOLOGY POLICY

The use of electronic devices in class is distracting, both for the user and for the rest of the class. Only non-programmable calculators can be used in the tests and exam. Any attempts to use cell phones and other electronic communication devices will be seemed as cheating. Laptops are discouraged, unless you use them for activities DIRECTLY related to the course (eg., note taking, reading course documents).

ACADEMIC INTEGRITY POLICY

Soochow University highly values the academic integrity and aims to promote the academic fairness, honesty and responsibility. Any academic dishonesty behaviors and any attempts to cheats and plagiarism will be reported to the university administration office. A written warning and the relevant penalties will be imposed. The record might be shown on the official university transcript.

DISABILITY ACCOMMODATION

Soochow University is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at



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Soochow University. Students with disabilities who require accommodations for access to and/or participation in this course are welcome.

Note:

Please contact the University Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material.