CHBE 3215 Syllabus

Heat and Mass Transfer, Section A, 4 credit hours

Fall 2026

Instructor Information

Instructor: Zhaohui (Julene) Tong

General Course Information

Description

This course introduces the fundamental concepts of heat and mass transfer as well as their use in typical engineering applications.

Course Learning Outcomes

By the end of this course, a student should be able to:

1) Apply Fourier's law of heat conduction to homogeneous and heterogeneous objects of various geometries, using analytical and numerical methods.
2) Estimate temperature profiles and heat transfer rates inside/from/to objects such as tanks, pipes and buildings for steady-state and transient conductive heat transfer.
3) Apply principles of radiative heat transfer to engineering problems.
4) Determine concentration profiles and mass transfer rates using Fick's law for diffusive mass transfer at steady state and in transient processes, using analytical and numerical methods.
5) Understand the theoretical basis of convective heat and mass transfer, and to use the analogies between momentum, heat, and mass transfer to interrelate rate constants.
6) Analyze situations involving convective heat and mass transfer through natural and forced convection (internal and external flow).
7) Analyze (incl. through numerical methods) systems that involve multiple individual heat and/or mass transfer processes to obtain overall transfer coefficients and apply these in a variety of design applications, including heat exchangers and multi-phase mass transfer processes.

Required Course Materials

Fundamentals of Momentum, Heat and Mass Transfer, 7th edition, J.R. Welty, G.L. Rorrer and D.G. Foster, John Wiley & Sons Inc. (2019)

Grading Policy:

*[**CHBE recommendation**:*
List the full list of assignments and assessments, including the relative weights. You are welcome to use the statement about grade cut-offs below, which gives some flexibility to lower the bars later, or define your own]

In this course the following graded assessments and assignments are used to determine the course grade:

Homework	15%
Superquizzes	20%
Midterm Exam	25%
Project	8%
Final Exam	30%
Participation	2%

Grade distribution follows a standard scale: A (≥90%), B (≥80%), C (≥70%), and D (≥60%). The instructor reserves the right to lower these cutoffs; however, the cutoff points will not be increased under any circumstances.

Course Policies

Attendance and/or Participation

Your academic success will depend strongly on the level of engagement with the course material. Actively participating in all lectures and taking advantage of other learning opportunities offered (e.g. assignments, office hours) is critical for successful attainment of the learning outcomes. The Georgia Tech Catalog describes policies around "approved Institute activities" (e.g., field trips and athletic events) and accommodations around religious observances.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code and the student Code of Conduct.

Cases of suspected cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Core IMPACTS

Not applicable for this course.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.