

Mass Transfer – CHE 6260A (Fall 2026)**Lecture: TBD**

Instructor: Ryan Lively, ryan.lively@chbe.gatech.edu, 404.894.8795, ES&T 2206

Office Hours:
MTBD
Office hours: TBD

Teaching Assistants: TBD

Suggested Textbooks (key passages will be put on the course website):

A.L. Hines and R.N. Maddox, *Mass Transfer: Fundamentals and Applications*, Prentice-Hall, Inc.;
J Crank, *The Mathematics of Diffusion*, Oxford University Press
R. Taylor, R. Krishna, *Multicomponent Mass Transfer*, Wiley
J. Hirschfelder, C.F. Curtiss, R. Bird, *Molecular Theory of Gases and Liquids*, Wiley
R. Bird, W. Stewart, E. Lightfoot, *Transport Phenomena* (either edition, but first edition is better), Wiley
E. Lightfoot, *Transport Phenomena in Living Systems*, Wiley

Website: Canvas (you can access the website on your personal canvas dashboard)

Course Objective: This course will provide a framework to understand and use mass transport to solve problems encountered in chemical engineering research – including your PhD/MS research and later situations as a practicing professional. Mass transport issues often hinder the solution of practical problems related to the creation of new products and processes or the accurate measurement of important parameters like reaction rate constants. An understanding of mass transfer fundamentals can allow simple calculations or experiments to define the importance of these mass transfer issues in the overall problem. Developing and using techniques to avoid bogging down in the solution of unnecessarily complex mass transport problems will be emphasized in this (mostly) practical course.

In addition to standard topics such as diffusion in fluids and interphase mass transfer processes, transport in polymeric media and other solids will be considered in some detail. Some familiarity with undergraduate transport phenomena will be assumed; however, key points will be reviewed as needed. Moreover, a polymer background will not be necessary, since auxiliary handouts will be provided as needed.

Grading System:

Homework: 15% // Quizzes: 15% // Midterm: 30% // Final Exam: 40%

Exams will be in class and open note. They will be comprised of approximately three problems and a handful of true/false questions. The problems will require mathematical derivations and calculations of mass transfer problems; a scientific calculator is recommended. Emphasis will be on the physical understanding and practical use of classical diffusion results, rather than complex mathematical analysis. All equations and derivations must be shown in your solutions. Exam re-grade requests must be submitted in writing the following class period and should explain why the grade is in question. Be aware that the entire exam will be re-graded, not just the problem in question.

We will have short answer/multiple choice quizzes in class once a week or so. These quizzes will cover concepts that we are discussing in class and grappling with on the homework. The objective of the quizzes is to provide regular check-ins with the mass transfer material so that you are ready when the exams are handed out.

Letter grades will be assigned based on the numerical distribution of the class, but 90-100 will always be an A, 80-89 a B, a 70-79 a C, a 60-69 a D, and so forth. The letter grade in class is based on your performance based on course criteria and not solely on your performance relative to your classmates; i.e., there is no pre-determined percentage of A/B/C/D grades.

The Midterm Exam will be handed out during normal class hours.

The Final Exam will be in class during the scheduled time posted on Georgia Tech's website. It is a comprehensive exam covering all aspects of the course.

Honor Code:

Students are expected to follow the Georgia Tech Honor Code at all times. <http://www.honor.gatech.edu>. Copying from other students (current or former—this includes the use of “word”), instructor/TA solutions from previous semesters, solution manuals, or websites is considered an honor code violation.

Statement on the use of Artificial Intelligence (AI):

Large language models and other related model systems – often referred to as AI – are tools that can accelerate, decelerate, enlighten, confuse, sharpen, or blunt high level engineering analysis like that covered in this course. The usage of such tools is permitted on homework assignments. One “best practice” suggestion is to only use AI tools as one of many, and not solely rely on its output to inform your learning – it is easy to offload your critical thinking skills onto the AI. As the majority of the course grade comes from in-class assignments, it is important to develop your independent ability to solve complex problems.

Institute-Approved Absences:

As per Georgia Tech policy, you are permitted to be absent from class to participate in athletic events, official field trips, and religious observances. For planning purposes, please provide me with written notice of your upcoming absence at least two weeks before the event, and ideally within the first two weeks of class. When I receive this notice, you and I will discuss opportunities to make up work you will miss in your absence. Please see <http://catalog.gatech.edu/rules/4/> for more information about receiving official notice from the Registrar about the nature and timing of your upcoming Institute-approved absence.

Health and Well-Being:

Wellness is about maintaining an overall quality of life and the pursuit of optimal emotional, mental, physical, and interpersonal health. Wellness not as the absence of disease, illness, or stress but the presence of purpose in life, active involvement in satisfying work and play, joyful relationships, a healthy body and living environment, and happiness.

The way to achieve wellness is through making proactive, healthy choices. The road to wellness begins with becoming more aware of your present condition, and then making the conscious decision to change the way you live. This includes considering mental health proactively as part of a healthy lifestyle. Georgia Tech has many resources available to you to help get you started:

Campus Resources for Students

- [Counseling Center](#)
 - Crisis Line: 404.894.2575 (M-F 8 a.m. - 5 p.m.)
 - After-hours counselors: 404.894.2204
- [Dean of Students and Student Life](#) (404.894.2565)
 - [Student Temporary Assistance and Resources \(STAR\)](#) (for services like the food pantry, emergency funds, and temporary housing)
- [LGBTQIA Resource Center](#)
- [Office of Institute Diversity](#)
- [Veterans Resource Center](#)

- [Women's Resource Center](#)

Accommodations: The Georgia Institute of Technology encourages qualified persons with disabilities to participate in its programs and activities. If you anticipate needing any type of accommodation in this course or have questions about physical access, please tell the instructor as soon as possible.

Health and Safety: Each of us has a responsibility to ourselves and our fellow Yellow Jackets to be mindful of our shared commitment. If you are feeling unwell, please consider staying home and prioritizing your health. You may request an excused absence by notifying me as soon as possible and providing a brief explanation of your situation. Staying home when sick helps protect the health of classmates and colleagues while allowing you time to recover.

Recordings of Class Sessions and Required Permissions:

Classes may not be recorded by students without the express consent of the instructor unless it is pursuant to an accommodation granted by the Office of Disability services. Class recordings, lectures, presentations, and other materials posted on Canvas are for the sole purpose of educating the students currently enrolled in the course

Students may not record or share the materials or recordings, including screen capturing or automated bots, unless the instructor gives permission. Digitally proctored exams may require students to engage the video camera, but those recordings will not be shared with or disclosed to others without consent unless legally permitted.

The lectures will be recorded and the videos of the lectures will be made available on Canvas seven days before each exam. The hand-written lecture notes will also be uploaded every other week or so to help fill in any gaps in your lecture notes.

Electronic Devices: The following are required technological expectations for this course. If you do not have access to devices and internet that meet these requirements during class times and exams, you may not be able to complete all required items and earn your full grade.

- Computer or tablet with Windows 10, MacOSX 10.13, or ChromeOS 79 and higher
- Broadband internet connection with speed of 1.5 Mbps download, 750 Kbps upload