CHBE 3205 Syllabus

Fluid Mechanics, Section R, 2 credit hours

Summer 2026

Instructor Information

Instructor: Benjamin Galfond

General Course Information

Description

The basic principles of fluid mechanics are introduced and the analysis and design of equipment using these principles is practiced.

Course Learning Outcomes

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

1) Apply the macroscopic balances of mass, momentum, and energy, as well as the differential continuity equation and the equations of motion to simple systems using both Cartesian and polar coordinates, using both analytical and numerical methods.
2) Apply the concepts of boundary layer flow to interpret local momentum transfer and drag/friction in geometries for which analytical solutions are not readily available.
3) Design/simulate the operation of process piping systems (estimate frictional losses, size pipes, size pumps, etc.) for the specific flow of liquids and gases, using analytical as well as numerical methods.
4) Design/simulate the operation of packed beds, fluidized beds, and filters for specified fluid flow rates.
5) Design flow models and interpret experimental data using dimensional analysis.
6) Work in teams to perform experimental characterization of frictional losses in system containing pump and tubing.

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:

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

Homework	20%
Concept Checks	20%
Midterm Exam	20%
Project	15%
Final Exam	25%

The letter grade cutoffs in this class are 90%+ for A, 80%+ for B, 70%+ for C, 60%+ for D, based on the overall score based on the relative weights above. These cutoff points may be lowered (resulting in a higher grade for some students) but will never be increased.

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.