ME 3340 Syllabus

Fluid Mechanics, Section C, 3 Credits

Fall 2026

Instructor Information

Instructor: Alexander Alexeev

Email: alexander.alexeev@me.gatech.edu

General Course Information

Description

The fundamentals of fluid mechanics. Topics include fluid statics; control-volume analysis; the Navier-Stokes equations; similitude; viscous, inviscid and turbulent flows; boundary layers.

Course Learning Outcomes

Outcome 1: To develop a student's understanding of the basic principles of fluid mechanics.

1.1 The student will demonstrate an ability to recognize the type of fluid flow that is occurring in a particular physical system.

1.2 The student will demonstrate an ability to choose the appropriate fluid mechanical principles needed to analyze fluid-flow situations.

Outcome 2: To develop a student's skills in analyzing fluid flows through the proper use of modeling and the application of basic fluid-flow principles.

2.1 The student will demonstrate an ability to apply appropriate simplifying assumptions and basic fluid-flow principles to formulate a mathematical description of a simple fluid-flow system.

2.2 The student will demonstrate an ability to solve and analyze the mathematical equations for a simple fluid flow system.

Outcome 3: To provide the student with some specific knowledge regarding fluid-flow phenomena observed in mechanical engineering systems, such as flow in a pipe, boundary-layer flows, drag, etc.

3.1 The student will be able to recognize basic flow phenomena that are present in a typical engineering system.

3.2 The student will demonstrate knowledge of important practical results in common fluid flows and their physical implications.

Required Course Materials

"Fundamentals of Fluid Mechanics" by Munson, Okiishi, Huebsch, and Rothmayer.

The material presented in the lectures may differ from that in the text, particularly in style and level of mathematical rigor. You will be responsible for what is covered in the lectures. It is to your advantage to attend every class and take careful notes.

Grading Policy:

Homework assignments: Weekly homework assignments will be provided during the semester. These assignments do not need to be submitted and will not be graded. They are intended to support your learning of the course material and help you prepare for quizzes.

Quizzes: Six quizzes will be given during regular class hours. One make-up quiz will be given by the end of the semester during regular class hours. Additional make-up quizzes will be allowed only for approved Institute activities or religious observances.

Final exam: The final exam will be optional. The exam will be closed book and closed notes. No electronic devices (including calculators) will be allowed during the exam.

Course grade: If a student chooses not to take the final exam, the course grade will be based solely on the quizzes (16.7% each). If the final exam is taken, the course grade will be calculated from the final exam (50%) and the four best quizzes (12.5% each).

A>90; B>80; C>70; D>60

Description of Graded Components

All quizzes and exams will be closed book and closed notes. No electronic devices (including calculators) will be allowed. All grading questions must be brought up within TWO WEEKS after the grades are posted.

Course Policies

Attendance and/or Participation

You are expected to attend and participate in lecture. Class attendance and participation may be considered in the assignment of final grades.

Recitation sessions

Optional 1-hour recitations sessions will be offered. These sessions will involve problem-solving studios with a graduate TA on content that is covered in the course that week.

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.

Any student suspected of 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

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.

Pre- &/or Co-Requisites

Prerequisites: ME 2202 Dynamics of Rigid Bodies, MATH 2401 Calculus III (C or better), and MATH 2403 Differential Equations (C or better)

Corequisites: ME 3322 Thermodynamics

Extra Credit Opportunities

Students have the option to work on an optional project.

Campus Resources for Students

Undergraduate Student Academic Success Resources:

Academic Support: Academic Success and Advising (a unit in the Office of Undergraduate Education & Student Success) provides free support for your courses. Students can attend scheduled supplemental review (PLUS) sessions, stop by Drop-In Tutoring, or schedule a one-on-one appointment through Knack. To explore what options work best for you, please visit us online at success.gatech.edu/tutoring, email us at tutoring@gatech.edu, or come see us at Clough Undergraduate Learning Commons, Suite 283.