Fluid Mechanics

EGN 3353C Section 178D (Class 12164)
Class Periods: MWF7, 1:55 – 2:45 am
Location: MAE-A 0303
Academic Term: Fall 2025

Instructor

- Z. Hugh Fan, Ph.D.
- Office location: LAR 223
- E-mail address: hfan@ufl.edu
- Telephone: 352-846-3021
- Office Hours: Tuesdays 10:00 – 11:00 am, and Fridays F8, 3:00 pm – 3:50 pm

Teaching Assistants

- To be determined (Please see the update on the Canvas website, http://elearning.ufl.edu/)

Course Description

Statics and dynamics of incompressible fluids. Application to viscous and inviscid flows. Dimensional analysis. Compressible flow. Credits: 3

Course Pre-Requisites / Co-Requisites

MAC 2313, EGM 2511 and EML 3100, or EML 3007

Course Objectives

This course provides an introduction to fluid mechanics. It stresses fundamental engineering science principles applied to fluid mechanical systems. Students will learn the governing integral and differential equations for viscous and inviscid fluids and will apply these equations to internal and external flows. Upon completion of this course, students are expected to have developed a working understanding of the basic theory of incompressible and compressible fluid mechanics. Students will learn problem-solving techniques and have the opportunity to apply these techniques to a variety of problems.

Materials and Supply Fees: None

Professional Component (ABET):

This course utilizes fundamentals of mathematics, physics, and chemistry to develop analytical methodologies for engineers to utilize for design and analysis work of fluid machines and systems.

Mathematics	35%
Physical Sciences	50%
Engineering Design	10%
Social Sciences & Humanities	5%

Relation to Program Outcomes (ABET):

Outcome	Coverage*
1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	high
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	low
3. an ability to communicate effectively with a range of audiences	low
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies	

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not part of the course.

Required Textbooks and Software

Philip Gerhart, Andrew Gerhart, John Hochstein, "Munson, Young, and Okishii's Fundamentals of Fluid Mechanics," 9th Edition, Wiley, ISBN-9781119598114

- This course is participating in UF All Access, which is a program designed to provide the most affordable option for students: https://www.bsd.ufl.edu/allaccess. The required course material is delivered digitally through WileyPlus, containing a fully searchable e-text and the required homework for this course. You purchase an access code at a discounted price through UF All Access.
- This link authorizes the cost of the access code to be charged directly to your student financials account.

Recommended Materials

Reading assignment and the recommended materials are posted on the course website, http://elearning.ufl.edu/

Course Schedule

Course schedule is available at http://elearning.ufl.edu/

Attendance Policy and Class Expectations

Attendance is mandatory. Excused absences will be given for documented medical reasons, UF related travel, or other acceptable reasons defined by UF policy. You should notify the instructor about all planned absences as early as possible prior to the class and about all unplanned absences as soon as conditions permit. Documentation must be in the form of a doctor's note, or letter from the sponsor of the travel. During class, cell phones must be turned off or muted, no eating.

Make-up Policy: No late assignments will be accepted. Makeup exams are not normally allowed. If you cannot attend an exam or cannot meet a due date, you must contact the instructor at least 1 week prior to the exam or due date. Failure to contact the instructor prior to the exam will result in a zero on that exam. Arrangements will be made for students involved in conflicting official university activities or others defined by the UF policy.

Evaluation of Grades

a. Online homework 20%
b. During-term exams/quizzes 55%
c. Final exam 25%

- There will be three during-term exams, impromptu quizzes, and a final exam. The during-term exam dates are tentatively planned as stated in the course schedule while the final exam is scheduled by the registrar. All exams will be cumulative but may emphasize the most recently covered materials.
- If a student feels that an exam or homework is graded unfairly, or if there is an error in the grading, it should be brought to the attention of the instructor within two weeks after the graded material is handed back. Scores will not be reconsidered beyond the two-week period.

Grading Scale: 90-100: A; 87-89: A-; 84-86: B+; 80-83: B; 77-79: B-; 74-76: C+; 70-73: C; 67-69: C-; 64-66: D+; 60-63: D; 57-59: D-; and 0-56: E. More information on UF grading policy may be found at: https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/.

Academic Policies & Resources

Please access this link for academic policies and campus resources: https://go.ufl.edu/syllabuspolicies.

Commitment to a Positive Learning Environment

The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University's core values. If you feel like your performance in class is being impacted, please contact your instructor or any of the following: Your academic advisor or Undergraduate Program Coordinator; HWCOE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu; Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@ufl.edu.

Notes on Homework Problems

- Homework (HW) problems are an essential element of this course. In general, students can expect to have two HWs assigned for each week. See the e-learning site and schedule for HW assignments. HW will be submitted via the WileyPlus web site and grading is automated to allow immediate feedback.
- Students are encouraged to discuss the general principles involved in the homework sets with one another, but the detailed solution of each problem should be completed individually. Submitting a HW solution that is directly copied from another source such as Chegg® is considered a violation of the honesty policy.
- Before solving a problem, students should draw a **schematic** of the physical problem to be considered and think about the appropriate **assumptions** and mathematical formulation for the basic laws that you consider necessary for solutions.