
Syllabus for the Fluid Mechanics course MECH 3315.002.25F

Course Information – Fall 2025

Class Section: MECH 3315.002.25F
Course Title: Fluid Mechanics
Class Level: Undergraduate
Class Credits: 3 Credits
Room: ECSW 3.250, Tuesday, Thursday, 4:00 pm – 5:15 pm
Instruction Mode: Face-to-Face
Activity Type: Lecture
Class/Course Number: 85504/012613
Starts: August 25, 2025
Ends: December 16, 2025

Professor Contact Information

Prof. Giacomo Valerio Iungo
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Office hours: Tuesday s 3:00 pm – 4:00 pm through MS Teams. No appointment is necessary; simply click [here](#) to join the meeting during the designated time (https://teams.microsoft.com/l/meetup-join/19%3ameeting_OTExODEyNDEtOTU2MS00YTI4LWI3NGMtNmI1YmExYWQyYjAy%40thread.v2/0?context=%7b%22Tid%22%3a%228d281d1d-9c4d-4bf7-b16e-032d15de9f6c%22%2c%22Oid%22%3a%22bd2fla42-ae04-4921-a6a9-ad17cd100c9a%22%7d).
For meetings outside of office hours or in-person meetings, send an email to the instructor.

Course prerequisite: MECH 2330 (Dynamics) and ENGR 3300 (Advanced Engineering Mathematics). **Co-requisite:** MECH 3310 (Thermodynamics)

Course Description:

In this course, we will study the physics governing the motion of fluids at an introductory level. We will familiarize with basic concepts in fluid mechanics, such as continuum, velocity field, and vorticity. We will apply the principle of the mass conservation and the Newton's law to describe the fluid motion and solve basic engineering problems. After studying simple cases of fluid motion for inviscid fluids, we will consider viscosity for internal flows (e.g. pipe flows), external flows (airfoils and bluff bodies), and flows with a free surface. Then dimensional analysis will be presented, which is very useful to understand the role of different parameters for complicated problems.

Course Learning Outcomes

- C1864: Derive the governing equations of fluid mechanics, and use the equations to reason about fluid flows.
 - C1865: Explain the concept of control volume and apply it to solve fluid mechanics problems in inertial frames.
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- C1866: Identify key non-dimensional parameters for given systems and use such numbers to characterize the systems.
 - C1867: Explain the role of fluids in real life situations.
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Textbooks and Materials

Lectures will be posted in eLearning Lecture slides will be provided by the instructor.

Required Texts

R.W. Fox & A.T. McDonald's, Introduction to Fluid Mechanics 9th or 8th Edition, P.J. Pritchard, John Wiley, New York, 2009, ISBN 13: 978-0470547557.

Suggested Readings/Texts

G. Buresti. Elements of Fluid Dynamics. Imperial College Press Fluid Mechanics, Volume 3, 2012, ISBN 13 978-1848168893

Textbooks and some other bookstore materials can be ordered online or purchased at the [UT Dallas Bookstore](#).

Academic Calendar

The following is a schedule of class topics. The study materials, homework, quizzes, tests due dates are subject to change. It is your responsibility to keep up with changes announced. The deadline for quizzes and homework is typically the next Monday of the respective week at 8:00 am CST. Nonetheless, deadlines will be confirmed for each assignment.

Topic	Date	Graded Deliverables	Grade %	Study Materials
1	Aug. 25 - 29	--	--	Introduction, Fluid Definition, Fluid Motion Lines
2	Sept. 1 - 5	Homework/Quiz 1	8%	Basic Equations: Fluid Statics
3	Sept. 8 - 12	--	--	Basic Laws, Characterization of Fluid Motion, Total Derivative, Reynolds Transport Theorem
4	Sept. 15 - 19	Homework/Quiz 2	8%	Mass Conservation
5	Sept. 22 - 26	--	--	Momentum Equation
6	Sept. 29 - Oct. 3	--	--	Energy Equation, Review Topics 1-6
	Oct. 6 - 9	Mid-Term Test	25%	
7	Oct. 13 - 17	--	--	Differential Formulation, Stream Function
8	Oct. 20- 24	Homework/Quiz 3	8%	Vorticity, Kelvin-Stokes theorem
9	Oct. 27 - 31	--	--	Differential formulation, Momentum Equation
10	Nov. 3 - 7	Homework/Quiz 4		Incompressible flows, Irrotational Flows, Velocity Potential
11	Nov. 10 - 14	--	--	Dimensional Analysis
12	Nov. 17 - 21	Homework/Quiz 5	8%	Internal Incompressible Viscous Flows
	Dec. 1 - 5	Final exam, To be defined	35%	Comprehensive exam, Review Topics 1-12

Grading Policy

Student performance will be evaluated using homework sets, quizzes, a midterm and final exams.

[40%] Homework/Quizzes:

- They will typically be available during the entire week and they will close the following Monday at 8:00 am CST.
- The homework/quizzes are multiple choices or true/false questions, or problems provided as a single pdf file. They will be available in eLearning in the folder Quizzes/Homework/Tests
- Quizzes can be taken remotely using any computer or device with access to eLearning.

[60%] Mid-term and Final Exams:

- The exams will be provided in Elearning and it will include both online questions and problems for which you will upload your answers as a unique pdf file.
 - The mid-term exam [25%] and the final exam [35%] will include problems, theoretical and conceptual questions, true/false questions, multiple choice questions. The mid-term exam will cover topics 1 to 6. The final exam is comprehensive and will cover topics discussed throughout the entire course.
 - The exams are closed notes, closed books.
 - The exams will be available in eLearning in the folder Quizzes/Homework/Tests. You will upload your responses as a single pdf file.
 - Make-up exams will only be allowed in case of illness, attendance of a university sponsored event (such as an athletic activity), or under unusual circumstances. For each case, you are required to provide proper documentation (such as doctor's note or a note from your athletic advisor).
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Overall grading:

- [A+] 95-100
- [A] 90-94
- [A-] 85-89
- [B+] 80-84
- [B] 75-79
- [B-] 70-74
- [C+] 65-69
- [C] 60-64
- [C-] 55-59
- [D+] 50-54
- [D] 45-49
- [D-] 40-44
- [F] <40

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.

[Registrar's Intranet](#): please log in with your UTD NetID and password to access this site. Information that faculty need about grading, scheduling, and other essential aspects of our responsibilities related to teaching are made available and updated regularly in the Registrar's Intranet. This source of information can only be accessed by logging in with your UTD NetID and password. Many important faculty questions are answered here, and this is information that faculty members are expected to know and understand.

[FERPA Guidelines](#): you will be asked to log in before you access the FERPA Guidelines webpage on the Registrar's Intranet. If faculty have additional questions about FERPA guidance, please contact the Office of the Registrar at records@utdallas.edu for the proper student consent forms and further instructions.

[UT System Resources for Creating Accessible Course Content](#): designed to assist faculty with developing course content

Student Resources

[Student Resources](#): a variety of resources are available to help students to obtain counseling, health care, and academic support.

Class Participation

Regular class participation is expected. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

Academic Support Resources

The information contained in the following link lists the University’s academic support resources for all students.

Please see <http://go.utdallas.edu/academic-support-resources>.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University’s policies and procedures segment of the course syllabus. Please review the catalog sections regarding the [credit/no credit](#) or [pass/fail](#) grading option and withdrawal from class.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.