Fall 2024

ME 304-101: Fluid Mechanics

Farid Alisafaei

ME 304 – Section 102 - Fluid Mechanics

Location ME 224

Thursday: 6:00 PM - 8:50 PM

Instructor: Farid Alisafaei, farid.alisafaei@njit.edu

Office Hours: Thursday 4:00-6:00 PM

Office Location: MEC 324B

Course Description: This course covers an introduction to the basic principles of fluid statics and dynamics, conservation of mass, momentum, and energy, control-volume analysis, and viscous incompressible flow.

Computer usage: Some problems may require software such as MATLAB.

Recommended reference: B. R. Munson, D. F. Young, T. H. Okiishhi's. Fundamentals of Fluid Mechanics, by Philip M. Gerhart, Andrew L. Gerhart, John I. Hochstein 8th Edition, Wiley, NY, 2016.

Grading:

Assignment and class exercises: 30%

Tests and Quizzes: 40%

Final exam: 30%

Syllabus / Lecture schedule:

Class	Chapter	Topic
1	1	Introduction
2	2	Fluid statics
3	3	Bernoulli's equation
4	3,4	Bernoulli's equation, Fluid kinematics
5	4	Fluid kinematics
6	5	Control volume analysis (conservation of mass)
7	5	Control volume analysis (momentum)
8	5	Control volume analysis (energy)
9	6	Differential analysis of fluid flow
10	7	Dimensional analysis
11-12	8	Pipe flows
13-14	9	Drag

Academic Integrity:

Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at:

https://www5.njit.edu/policies/sites/policies/files/NJIT-University-Policy-on-Academic-Integrity.pdf

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu

Use of generative AI tools:

The usage of artificial intelligence (AI) is permitted in this course and no citation is necessary. If you have any questions or concerns about AI technology use in this class, please reach out to your instructor prior to submitting any assignments.