It is the responsibility of the student to read and understand this course syllabus.

**Class Times**

<table>
<thead>
<tr>
<th>Section</th>
<th>Lecture room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon and Thur 04:00-5:25pm</td>
<td>CKB 317</td>
</tr>
</tbody>
</table>

**Office Hours**

M from 1:30pm to 3:30pm by appointment only.
Prerequisites
ME 236: Dynamics
ME 311: Thermodynamics I

Main topics
Introduction to the basic principles of conservation of mass, momentum, and energy as they apply to engineering systems which utilize fluids. Some of the topics are dimensional analysis, theoretical and empirical analysis of one-dimensional compressible and incompressible flow, empirical analysis of external and internal flows, and elementary boundary layer theory.

Course material and outcome
You will learn how to address a problem involving the motion of viscous newtonian fluids (gases and liquids) within and around solid bodies. In particular, you will learn how to calculate the forces that a fluid at rest or in motion generates on the solid walls of a body in contact with it. The course will cover the fundamental laws of fluid mechanics (including, but limited to, the Bernoulli and Navier-Stokes equations), fundamentals of hydraulics, energy conservation and dissipation, and fundamentals of fluid machinery (pumps, compressors, turbines). The course is taught at a junior and senior undergraduate level; the understanding of the concept of partial derivatives and differentials is expected because of the large amount of equations that will be either derived or provided during the course of the semester.

Suggested literature
This course uses an OAT (Open Affordable Textbook). About OpenTextbook: An “open” textbook means that its authors have made it free to own, share, and adapt for non-commercial purposes. Instead of having to buy it, you can just read it online, download it to an electronic device (like a computer or e-reader), or print out some or all of it. The book for this course is "Lecture notes in fluid mechanics: ME304", by Simone Marras.

REQUIRED AND/OR SUPPLEMENTAL READING MATERIALS Open textbook or Open Educational Resources (OER) will be used for this course. Electronic links to all OER are on the Moodle course page. There is no traditional textbook for this course. All course materials (readings, videos, podcasts, images, etc.) will be available via web link or by download from the course Moodle page. Open textbook or Open Educational Resources (OER) will be used for this course and are provided on the weekly assignments schedule.

The theoretical foundations of the course will be presented in the "Lecture notes of fluid mechanics: ME304" provided weekly via Moodle by the instructor. The exercises will be mostly taken from the 8th edition of "Munson, Young and Okiishi’s Fundamentals of fluid mechanics" by Gerhart et al., any previous edition can be used. However, in the case of using a different edition, it is the student’s responsibility to find the problems number equivalence to be in sync with the 8th edition.
Knowledge expectations

In addition to a sound knowledge and understanding of the material taught in the pre-requisites, to be proficient in this class the student is expected to have a solid background and sound understanding of calculus and vector calculus. If you are lacking in any of these subjects, please, review them thoroughly as most of the course will be based on concepts from both subjects.

Repeating Students

Students repeating the course are required to repeat the entire course. Assignments and reports cannot be transferred from previous semesters.

Grading

Note that late assignments, reports, etc., will not be accepted after the final exam begins. The following weights will be used in determination of the final course grade:

- Test 1: 30%. Material between week 1 and 5
- Test 2: 30%. Material between week 6 and 9
- Test 3 (final): 30%. Material between week 10 and 14
- HW/Quizzes/class Participation/etc.: 10%

A Superior
B+ Excellent
B Very Good
C+ Good
C Acceptable
D Minimum
F Inadequate

The final exam is not comprehensive and only covers the last part of the program. However, if the student missed either Test 1 or Test 2, the final exam will also include the material not previously tested.

An unsatisfactory grade in Test 1 and/or Test 2 can be recovered by obtaining a satisfactory grade in a previously agreed cumulative Test 3 (i.e. Final) that, in this case, would also contain questions on the topics covered by tests 1 and/or 2.

If you do take a mid-term exam and submit it to me for grading, there is no way back and the exam will be graded. You are free to leave the room at any time during an exam and not submit the exam if you believe that your grade will not be sufficiently good. The part that you missed will be added to your final exam.

The following conditions will cause loss of points:

- Wrong units.
- Wrong numerical results.
- Lack of explicit formula and solution procedure (i.e. I will not give credits/points if you do not show what formula you are using.
- Ambiguous sentences and explanations.
Allowed and not allowed material during testing:
One US-letter sheet of paper written on one side only and containing only the formulas that you think are necessary to solve the problems. Programmable calculators are NOT allowed. Cellular phones, computers of any type, tablet, etc. are NOT allowed during exams and class.

Personal matters and health issues
The instructor should not be exposed to family matters, health, hospitalization, or other serious personal matters. Should a serious event happen, please, communicate the issue directly and solely to the Dean of Students who will advise on how to proceed.

NJIT honor code
The NJIT honor code will be upheld and any violations will be brought to the attention of the dean of students. Mobile phones and similar electronic devices are expected to remain silent and not in use — the sight of a mobile phone during an exam will result in a final grade of F for the class.

Statement on 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: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.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”

Communication
This course will make use of Moodle and/or official NJIT e-mail for dissemination of various materials. You will be regularly contacted via email at your NJIT email address. I will respond to questions sent by e-mail if and only if the answer cannot be found on this syllabus. I do not communicate by telephone.

Problem Sets
Homework will be often assigned but not always graded. It is the student’s responsibility to come see me during office hours if having trouble with the solution of homework problems. If you come requiring help, it is your responsibility to have solved the problem by yourself first because I will not solve it for you at office hours; I will explain how to do it to get you going.
Requirements for students

For best understanding of the material, the student is advised to attend all classes. As soon as possible after missing a lecture, it is the responsibility of the student to study the missed material from the book(s) or from the notes of a fellow student.

Should a mid-term exam be missed due to unforeseen and serious circumstances (that must be verified by the Dean of Students), it is the responsibility of the student to inform the instructor immediately and discuss a possible re-testing date. Rescheduling maybe either granted or not based on the circumstances and the evaluation of the situation by the Dean of Students.

After being scheduled, a personalized exam will **NOT** be granted at a different date for any of the reasons listed below or reasons that have not been previously justified to the Dean of Students:
- Participation to a conference.
- Travel (personal or professional).
- Celebrations of any sort the days preceding the exam.
- Health or personal issues.

If the student misses any of the Tests, it is his responsibility to contact the instructor and request that the missed part is added as an additional section to be solved in the **final exam**.

It is the responsibility of the student to inform the dean of students of any missed Test or other mandatory materials.
Reports placed under doorways and not submitted during the class period are not the responsibility of the instructor if lost.
If you feel you are not going to pass this course, please reach out to your instructor with adequate time before the drop date.