



ME 1071: Applied Fluid Mechanics

(Modifications to this syllabus may be required during the semester. Any changes to the syllabus will be posted on the course website and announced in class)

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Office Hours: Mondays, Tuesdays and Wednesdays 12:45pm-13:45pm

Teaching Assistant: Name: Eva, (Ying Chou)

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Lecture Times:

Wed. 13:50 - 16:25 PM @ Room 203, Zone 4 (45 mins per session, 3 sessions in a row)

Catalog Description: 3 Credits; this course is an advanced mechanical engineering approach to the study of fluid flow and fluid systems. Topics covered will include internal and external flow conditions for system design and implementation, fluid machinery, open channel flow and compressible flow conditions. Students will also be introduced to CFD for Navier-Stokes solutions to fluid applications.

Prerequisites: ME 0071

Required Text:

Fluid Mechanics, 9th Edition, SI Version – Fox, McDonald, Pritchard, Mitchell

Additional Text:

Fluid Mechanics Fundamentals and Applications, Cengel and Cimbala

Course Objectives:

- Apply differential equation solutions to fluid in motion applications.
- Develop an advanced understanding of fluid motion and apply them to engineering applications.
- Applying fluid flow characteristics to internal and external flow conditions
- Understand problem solving techniques for potential flow and Navier-Stokes equations..
- Understand compressible flow conditions and engineering applications of gas dynamics.
- Applying advanced fluid flow solution techniques to real world applications (i.e. CFD)



Course Outline:

Internal Incompressible Viscous Flow (Ch. 8)
External Incompressible Viscous Flow (Ch. 9)
Compressible Flow (Ch.12)
Computational Fluid Dynamics (Ch. 5)
Fluid Machinery (Ch. 10)
Flow in Open Channels (Ch. 11)

Examination Schedule:

Exam I on Wednesday October 16th
Exam II on Wednesday November 27th
Final Exam on Friday December 27th
Exams will be during normal lecture time

Course Grading:

- Homework: 20% ... *Short Quiz during each lecture based on homework assigned in previous lecture*
- Exam I: 20%
- Exam II: 20%
- Final Exam: 40%

Grading Scale: A 10-point scale will be used as a baseline for final grades (A, A- > 90, 89 > B+, B, B- >80, etc.). An additional curve may be applied, as determined by the overall final grade distribution of the class. Grades of A-, B+, B-, etc. will be determined at the instructor's discretion.

Class Policies: Regular class attendance is expected and encouraged. Each student is responsible for all of the material presented in class and in the reading assignments. Exams will emphasize treatment of material covered in lectures. In general, no late assignments will be accepted or makeup exams given. Exceptions will be made for a valid excuse consistent with University Policy. If you cannot attend an exam or meet a due date, you must contact the instructor prior to the exam or due date. Arrangements will be made for students on a case by case basis. (Failure to contact the instructor prior to the exam or assignment due date will result in a zero on that exam/assignment.)

Academic Integrity Policy: “Violations of academic integrity include, but are not limited to, cheating, plagiarism, or misrepresentation in oral or written form. Such violations will be dealt with severely, in accordance with University policy. Plagiarism means representing someone else’s idea or writing as if it were your own. If you use someone else’s ideas or writing, be sure the source is clearly designated.” It is expected that students adhere to the academic integrity policy that is presented in the Student’s Honor Code of Conduct / Student Handbook.



Week #	Date	Lecture # & Homework #	Chapters Covered	Quiz # / Based on Homework #
1	Sep - 04	1	8	-
2	Sep - 11	2	8	1 / 1
3	Sep - 18	3	8	2 / 2
4	Sep - 25	4	9	3 / 3
5	Oct - 02	No Class	-	-
6	Oct - 09	Test 1 Review	-	4 / 4
7	Oct - 16	Test 1	-	-
8	Oct - 23	5	9	-
9	Oct - 30	6	12	5 / 5
10	Nov - 06	7	12	6 / 6
11	Nov - 13	8	5 - CFD	7 / 7
12	Nov - 20	Test 2 Review	-	8 / 8
13	Nov - 27	Test 2	-	-
14	Dec - 04	9	5 - CFD	-
15	Dec - 11	10	10	9 / 9
16	Dec - 18	11	11	10 / 10
17	Dec - 25	Final Exam Review	-	11 / 11
18	Dec - 27	Final Exam	-	-