University of California, Berkeley

Department of Mechanical Engineering

ME106- Fluid Mechanics- Fall 2018

Lectures: MWF 14:00-15:00, North Gate 105.

Instructor: Professor Reza Alam
Office Hours: Mondays 3:00pm - 4:00pm or by appointment
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GSI: Mehdi Mirzakhanloo <m.mirzakhanloo@berkeley.edu>

GSI-Office Hours: Tuesdays, 12:30-13:30pm.

Schedule (tentative)

Wk	Topics	Text
0	Introduction, Dimensions, Units	Ch. 1
1	Viscosity, Surface Tension	Ch. 1
2.	Hydrostatics,	Ch. 2
3	Flow Kinematics	Ch. 4
4	Flow Dynamics	Ch. 3
5	Control Volume	Ch. 4,5
6	Transport Theorem (Midterm 1)	Ch. 4,5
7	Energy and Momentum Equations	Ch. 5
8	Inviscid & Potential Flow	Ch. 6
9	Viscous-fluid Flow	Ch. 6
10	Similitude	Ch. 7
11	Internal Flow, Turbulent Flow	Ch. 8
12	External Flow, Boundary Layer (Midterm 2)	Ch. 9
13	Separation, Drag and Lift	Ch.9
14	Compressible Flow	Ch. 11
15	Review	
16	Final Exam	

COURSE

You are expected to be proficient in the fundamentals of solid mechanics (MEC85) or equivalent. Mechanics II (Dynamics) ME104 is not required and can be taken concurrently. You are also expected to be prepared in mathematics at the level of Math 53 and 54, or equivalent. In particular, you should be comfortable with vector calculus and differential equations.

You are expected to attend both lectures and discussion sections. If you miss important announcements, it is your responsibility to obtain the missed information from your classmates, or the course web page (bcourses) if appropriate.

We will cover the following topics: fluid properties, hydrostatics, balance equations, analytical description of simple flows, flow measurement, empirical description of engineering flows, pipe flow, similitude, compressible flows, and many engineering applications

GRADING (tentative)

	Homewoks/Projects	20%
	Midterm quizzes (2)	20% each (total 40%)
	Final exam (Dec 14)	40%
TOTAL		100%

POLICY

There is no tolerance for academic misconduct. All assigned material is to be done independently except any group homework, if that should be assigned. Unless you have a good reason, no late assignment will be accepted, no makeup will be given. The exams will be closed book unless agreed otherwise.

TEXTBOOK

Munson, B.R., Okiishi, T.H., Huebsch, W.W., and Rothmayer, A.P., "Fundamentals of Fluid Mechanics", 7th Edition, 2013, John Wiley & Sons.

REFERENCES (Bechtel Engineering Library Reserve)

1- Fundamentals of fluid mechanics, Munson et al., TA357 .M86 2013, 2hrs
2- A brief introduction to fluid mechanics, Young et al, TA357 .Y68 2011. 2hrs
3- Fundamentals of fluid mechanics, Munson, TA357 .M86 2009, 2hrs
4- Fundamentals of fluid mechanics, Munson, TA357 .M86 2006, 2hrs
5- Student solutions manual & study guide to accompany Fundamentals of fluid mechanics, sixth edition, Munson, TA357 .M86 2009 manual, 2hrs
6- Introduction to fluid mechanics, Fox et al, TA357 .F69 2011, 1day
7- Fluid mechanics, White, TA357 .W48 2011, 1day
8- Fluid mechanics : fundamentals and applications, Çengel, TA357 .C43 2010, 1day

2018 Fall Semester

Fall Semester Begins	Wednesday, August 15, 2018
Convocation	Monday, August 20, 2018
Instruction Begins	Wednesday, August 22, 2018
Academic and Administrative Holiday	Monday, September 3, 2018
Academic and Administrative Holiday	Monday, November 12, 2018
Non-Instructional Day	Wednesday, November 21, 2018
Academic and Administrative Holiday	Thursday, November 22 & Friday, November 23, 2018
Formal Classes End	Friday, November 30, 2018
Reading/Review/Recitation Week	Monday, December 3–Friday, December 7, 2018
Last Day of Instruction	Friday, December 7, 2018
Final Examinations	Monday, December 10–Friday, December 14, 2018
Fall Semester Ends	Friday, December 14, 2018
Winter Commencement	To Be Determined, https://commencement.berkeley.edu/
Academic and Administrative Holiday	Monday, December 24 & Tuesday, December 25, 2018
Academic and Administrative Holiday	Monday, December 31, 2018 & Tuesday, January 1, 2019