CEE 310: Fluid Mechanics – Fall 2013

Lecture: Tuesday/Thursday 11:00-11:50am. Engineering Hall 1227
Labs: Tues 1:20-3:15, Wed 3:30-5:25, Thur 1:20-3:15. Engineering Hall 1269

Course Webpage: https://learnuw.wisc.edu/

Instructor:	Dr. Paul Block	**Teaching Assistant**: Ms. Pearl May
Office Hours:	Thursday 12-2, EH1269D	Mon 5-7pm and Fri 1-3pm, 1269 EH
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Course Learning Objectives:

- Properties of water and how their changes affect the behavior of the medium
- Principles of hydrostatics, including forces on planes and manometry
- Characteristics and differences between laminar and turbulent flow
- Principles of conservation of mass and resulting continuity relationships
- Principle of conservation of momentum and impulse-momentum applications
- Ideal (frictionless) Bernoulli and Euler equations
- Energy and hydraulic grade lines
- Principles of Work-Energy equation
- Relationship of friction, turbulence and head loss in real fluids, pipe flow
- Drag and Lift

Text: "Fundamentals of Fluid Mechanics", 7th Ed., Wiley (2013).
Munson, Okiishi, Huebsch, Rothmayer

Evaluation:

Homework:	15%	Exam 1:	20%
Lab Reports:	10%	Exam 2:	20%
Quizzes:	15%	Exam 3:	20%

Homework:
Homework assignments will be posted on the course webpage, and due at the start of class. Typically you will have one week to complete. Late homework may not be accepted, and if so, will be marked down 50%. Solutions will be provided on the course webpage. You may confer with others, however your submission should be uniquely yours. Think through and understand each concept from a fundamental level to prepare you for the exams. Each problem should start with a brief problem statement and include sketches as necessary. Neat, orderly, professional submissions are expected.

Lab Reports:
Handouts will be provided in lab (and also posted on the course webpage.) These need to be completed and returned by lab the following week. All experimental work should be completed during your lab session, however you may complete additional calculations, etc. on your own time.

Quizzes:
Quizzes will be given at the start of most lab session, typically consisting of 3-4 problems. Questions will be based on a lab video you must watch prior to attending lab and the prior week's homework assignment.

Exams:
Exams will be held during special evening sessions, open book (course text only), open notes.

Academic Policies:

Class Attendance:
You are expected to attend all lectures and lab sessions. In the event that you will be absent, please email the TA or me *in advance* as a courtesy. You will also be responsible for obtaining notes, etc. from a classmate.

Non-discriminating Environment:
The UW-Madison is committed to creating a dynamic, diverse, and welcoming learning environment for all students and has a non-discrimination policy that reflects this philosophy. Disrespectful behavior or comments addressed toward any group or individual, regardless of race/ethnicity, sexuality, gender, religion, ability, or any other difference is deemed unacceptable in this class, and will be addressed by the professor.

Academic Integrity:
As a UW-Madison student, you have the right to expect that you and other students will be graded fairly. You also have an obligation to conduct your academic work with honesty and integrity according to University standards. Academic honesty requires that the coursework you present to the professor honestly and accurately represent you own academic efforts. Work submitted under a student's name must be solely the work of that student and be carried out as prescribed by the professor. Additional information from the Dean of Students is available online: http://students.wisc.edu/doso/acadintegrity.html

Students with Disabilities:
If you need accommodations for a physical or learning disability, please see me or the TA. The McBurney Disability Resource Center (http://www.mcburney.wisc.edu) is available for consultation, diagnosis, and assistance.

The instructor reserves the right to modify this syllabus as circumstances warrant.

CEE 310: Fluid Mechanics
Fall 2013
Course Schedule

Week	Date	Lecture Topic T Th	Reading	Lab session (Lab due)	HW# (Due Date)
1	Sep 3, 5	Introduction + Fluid Properties	Chp 1	Lab 0	
2	Sep 10, 12	Fluid statics	2.1 - 2.7	Lab 1	1 (Sep 10)
3	Sep 17, 19	Fluid statics	2.8 - 2.9	Lab 1	2 (Sep 17)
4	Sep 24, 26	Fluid statics	2.10 - 2.11	Lab 2 (Lab 1)	3 (Sep 24)
5	Oct 1, 3	Fluid kinematics	4.1 - 4.2	Lab 2	4 (Oct 1)
6	Oct 8, 10	Bernoulli equation	Chp 3	Disc. (Lab 2)	5 (Oct 8)
7	Oct 14	First Exam: 7:00-9:00pm. *Room TBA*			
	Oct 15, 17	Control volumes and RTT	4.3 - 4.4	Disc.	6 (Oct 17)
8	Oct 22, 24	Conservation of mass	5.1	Lab 3	7 (Oct 22)
9	Oct 29, 31	Conservation of momentum	5.2	Lab 3	8 (Oct 29)
10	Nov 5, 7	Conservation of energy	5.3	Lab 4 (Lab 3)	9 (Nov 5)
11	Nov 12, 14	Dimensional analysis	Chp 7	Lab 4	10 (Nov 12)
12	Nov 18	Second Exam: 7:00-9:00pm. *Room TBA*			
	Nov 19, 21	Flow in conduits	8.1 - 8.2	Disc. (Lab 4)	11 (Nov 21)
13	Nov 26	Flow in conduits	8.3 - 8.5	*No Lab*	12 (Nov 26)
14	Dec 3, 5	Drag and lift	Chp 9	Lab 5	13 (Dec 3)
15	Dec 10,12	Open channel flow	Chp 10	Lab 5	14 (Dec 10)
	Dec 17	Third Exam: 2:25-4:25pm. *Room TBA*		(Lab 5 due)	