

CE 321

Fluid Mechanics for Civil Engineers

Fall 2018

Instructor: Seung Ho Hong, ESB 531, sehong@mail.wvu.edu

Office Hours: M 1:00-2:00 pm, W 1:00-2:00 pm, or by appointment.

Required Text: D.D. Gray, *A first Course in Fluid Mechanics for Civil engineers*, 2nd Edition, Water Resources Publications, Highlands Ranch, CO.

Prerequisites: MATH 261, MAE 242

Required course for BSCE.

Homework: Homework problems will be assigned and collected at the beginning of the course period. Due date will be given on each assignment (usually due on a weekly basis). Late homework will not be accepted without prior approval. You may to work in groups, but independent homework solutions must be turned it. Homework must be prepared and presented in a professional manner as explained in below.

1. All homework solutions must be neatly and clearly presented in an orderly fashion on 8.5 x 11 inch paper.
2. Write on one side of the paper only.
3. Name on top of right corner.
4. Pages secured with a staple.

Your graded assignments will be returned within a week of the date of submission. THIS IS AN IMPORTANT COURSE POLICY.

Exams: There will be three mid-semester exams and a comprehensive final. All exams are closed book, however one page (8-1/2 by 11) (Single side) of equations is allowed. All exams are mandatory. There is no substitution to exams. If you have had any emergency, contact me immediately. You can use calculators, but use of cell phones, computers, and any other equipment with wireless connection is prohibited.

Grade: Your final grade will be based on graded homework problems (15%), three mid-semester exams (20% each), and final exam (25%). The final letter grade assigned based on the following scale: 90.0-100% = A; 80.0-89.9% = B; 70.0-79.9% = C; 60.0-69.9% = D; 0-59.9% = F.

Expected learning outcomes: Having successfully completed this course, the student will be able to:

	Student Outcome
Describe basic fluid properties and understand how these influence fluid statics and movement (e.g. density, specific weight, specific gravity, and viscosity);	A
Calculate pressure distributions in a static fluid and evaluate forces on surface/objects submerged in a fluid;	A,E
Calculate flow characteristics (e.g. pressure, discharge, velocity);	E,K
Apply mass and momentum conservation equations; and,	
Determine energy losses in pipe flows.	

Honor code:

1. Plagiarizing is defined by Webster's dictionary as "to seal and pass off (the ideas or words of another) as one's own: use (another's production) without crediting the source." If caught plagiarizing, you will be dealt with according to the WVU Academic Honor Code.
2. When working on homework, you may work with other students in the class. However, you must turn in separate versions of the homework with the following written on it: your name and the names of everyone you collaborated with.
3. Cheating off of another person's test is unethical and unacceptable. Cheating off of anyone else's work is a direct violation of the WVU Academic Honor Code, and will be dealt with accordingly.
4. Unauthorized use of any previous semester course materials, such as tests, homework, and any other coursework, other than that provided by the instructor, is prohibited in this course. Using these materials will be considered a direct violation of academic policy and will be dealt with according to the WVU Academic Honor Code.

Course topics:

1. Fluid properties, statics, and kinematics.
2. Conservation laws for mass, momentum, and mechanical energy.
3. Concepts of piezometric head and grade lines.
4. Dimensional analysis and similitude.
5. Weir and orifice flow.
6. Introduction to flow in pipes and open channels.