

CE 309: Fluid Mechanics
SGM 601, MWF 11:00-11:50

Instructor

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Topics

Fluid statics; relative velocity field; total acceleration; divergence theorem; conservation of mass, energy, and momentum applied to engineering problems in laminar and turbulent flow.

Prerequisites: Math 126, Pre- or Co-requisite: CE 325

Text Book: Engineering Fluid Mechanics, Ninth Edition, 2009, by Crowe, Elger, Williams, and Roberson, John Wiley & Sons, Inc.

Topics Covered:

1. Introduction and Properties of Fluid
2. The Basic Equations: Continuity equation, Equation of motion with or without viscosity, Hydro & Aerostatics, Boundary conditions.
3. The Bernoulli Equation and Its Application to Fluid Flow problems
4. Momentum Theorems
5. Dimensional Analysis and Similitude
6. Element of Potential Flow and Boundary Layer Concepts
7. Analysis of Flows in Pipes
8. Analysis of Flow in Channels
9. Compressible Flow
10. Experimental and Computational Fluid Mechanics, Demonstrations of flows in flume

Home Work: 6-8 problems each week, due one week from the assigned date. Posted on Wednesday afternoon, due the following Wednesday by 5 pm in KAP 224D.

Grading

Quizzes (15%), Exam 1 (15%), Exam 2 (20%), Homework (15%), Final Exam (35%)

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *Scampus*, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: <http://www.usc.edu/dept/publications/SCAMPUS/gov/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review,

should there be any suspicion of academic dishonesty. The Review process can be found at:
<http://www.usc.edu/student-affairs/SJACS/>.