CE 213 - Fluid Mechanics

Introduction to Fluid Mechanics

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Nice to meet you!

Nice to meet you!

Nice to meet you!

Let's get to know each other
Why it is important?

FLUID MECHANICS IS EVERYWHERE

**Real-life activities**
- Breathing
- Blood circulation
- Atmospheric pressure at height
- Under water - Scuba diving

**Engineering**
- Fluid-structure interactions
- Pipe networks
- Design of cars
- Submarines
- Fighter jets
- Space shuttles, rockets
Outline

1. Course Contents
2. Class Room Policy
3. Grading Policy
4. What you can expect from me?
5. Meetings/Discussions
## Course Contents

### Fluid Properties
- Density, Viscosity
- Compressibility, Surface tension
- Classification of fluids

### Hydrostatics
- Pressure measurement
- Forces on plane and curved surfaces
- Buoyancy and Stability

### Fluid Dynamics
- Classification of flows
- Continuity equation
- Energy and momentum equations
- Viscous and Turbulent flow
- Boundary layer flow
- Dimensional analysis

### Flow through Pipes
- Major and minor losses
- Pipe networks
- Water Hammer

- Introduction to pumps and turbines
- Introduction to open channel flow
Class Room Policy

DO NOT

- Sleep in class
- Play with your mobile phone or hand-held devices
- Engage in disruptive talking
Grading Policy

How should I evaluate your learning?

- Attendance: 15%
- Mid-term: 30%
- End-semester: 40%
- Assignments: 15%
What you can expect from Me?

- To make myself available to you for any advice
- To assign a grade that will reflect the **amount of learning** you have demonstrated and **nothing else**
Meetings/Discussions

- Please walk-in to my office for any clarifications
- Email me and fix a time if you want detailed clarification
- Course TA will help you with the tutorials
- How should I communicate with you?
In the next Class?
Fluid vs. Solid

- What is Fluid? How it is different from solid?
- Properties of fluid: Density and Viscosity