



Fluid Mechanics

CIVILEN 3130

Credit Hours:

3.00 - 3.00

Course Levels:

Undergraduate (1000-5000 level)

Course Components:

Recitation
Lecture

Course Description:

An introduction to fluid mechanics; topics include: fluid properties; fluid statics; flow concepts; continuity, energy, and momentum equations; dimensional analysis; basic pipe flow; lab experiments.

Prerequisites and Co-requisites:

Prereq: MechEng 2010 or 2040, and enrollment in CivilEn, EnvEng, or FABEng major; or permission of instructor.

Course Goals / Objectives:

- Develop an understanding of the properties of fluids and the principles of fluid static and dynamic behavior with application of this knowledge to solving practical problems, particularly those arising in civil engineering
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Course Topics:

- Fluid Mechanics Basics: General introduction; Definition of a fluid; the continuum concept; system of units; Fluid properties and definitions: viscosity, surface tension, etc
 - Fluid Statics: Force, stress and pressure at a point; Basic equation of fluid statics; Pressure measurements; Forces on submerged surfaces and bodies; Relative equilibrium
 - Fluid Dynamics I: Inviscid Flow; Flow concepts and kinematics; Basic equations of fluid flow: conservation of mass, energy, momentum
 - Fluid Dynamics II: Viscous Flow; Dimensional Analysis and Similitude; Viscous flow in pipes
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Designation:
Required