



Open Channel Hydraulics

CIVILEN 5220

Credit Hours:

3.00 - 3.00

Course Levels:

Undergraduate (1000-5000 level)

Graduate (5000-8000 level)

Course Components:

Lecture

Course Description:

Flow classifications, channel properties, energy and momentum principles, critical flow, uniform flow formulas, erodible and nonerodible channel design, and gradually-varied profile computations.

Prerequisites and Co-requisites:

Prereq: 3160 (516) or EnvEng 516; and Math 2177, or 2415 and 2568.

Course Goals / Objectives:

- To gain an ability to analyze and design open channels
 - To gain an ability to understand the practice of modeling rivers and the fundamentals of the HEC-RAS computer program - the industry standard for open channel hydraulics
 - To understand the dynamics of a river system
 - To understand the fundamental hydraulic equations to facilitate more in-depth investigation during one's career or with additional coursework
 - To understand the application of theory to real-world situations by analyzing several case studies
-

Course Topics:

- Fundamentals of hydraulics
 - Specific energy
 - Weirs
 - Uniform flow
 - HEC-RAS model
 - Channel design (grass, riprap)
 - Geomorphology
 - Gradually varied flow
 - Momentum
 - Gradually varied flow using HEC-RAS
 - River modeling
 - River and bridge modeling using HEC-RAS
 - Stilling basins, bridges, unsteady flow
-

Designation:

Elective