

CIV 420 - Hydraulics

Current Catalog Description: Fundamentals of hydraulics. Open channel hydraulics, sediment transportation in open channels. Coastal engineering hydraulics. Simulation in hydraulics. Water resources planning and management, storm sewers and flood detention. River flood waves. Storm analysis, intensity, and frequency. Stochastic hydraulics and risk assessments. Eco-hydraulics. Modeling and computer applications.

Prerequisite: CIV 364 or MEC 364; CIV major

Corequisite: None

Textbooks and/or Other Required Material: Required Texts:
Chaundhry, M.H. 2008. Open Channel Flow, 2nd Ed., Springer; ISBN: 9 78---0---387--- 30174---7

This course is: Required

- Topics Covered:**
1. Principles of flow in open channels
 2. Conservation laws
 3. Critical flow
 4. Uniform flow
 5. Gradually varied flow
 6. Flow through hydraulic structures
 7. Pipe Flow
 8. Analytical & Numerical Techniques

Course Learning and Student Outcomes:

Course Learning Objectives	ABET Student Outcomes
Apply conservation laws to characterize flow and associated forces on structures.	
Be able to analyze critical flow in channels and through hydraulic structures.	1, 2
Be able to determine uniform flow characteristics in channels.	1, 2
Be able to identify, analyze and determine water surface profiles for gradually varied flow,	1, 2
Learn analytical and numerical techniques and utilize spreadsheet / MATLAB to solve flow equations.	1, 2, 6
Learn how to communicate technical problems and solutions related to hydraulic engineering, with general audience.	1,2
	3

Prepared by: Ali Farhadzadeh (2020)