

CE 402 – OPEN CHANNEL HYDRAULICS

- Type (check one):** Required: _____ Elective: X
- 2005-2006 Catalog Data:** CE 402. Open Channel Hydraulics. Study of open channel fluid conveyance systems. Special emphasis on the design and analysis of natural and artificial channels. Characteristics of flow systems. Prerequisite: CE 313 or equivalent. *One semester; three credits.*
- Prerequisites:** CE 313 or equivalent
- Co-Requisites:** None
- Textbook:** M. Chaudhry, *Open-Channel Flow*, Prentice-Hall, 1993.
- Other Required Materials:** U.S. Army Corps of Engineers, *HEC-RAS River Analysis System*, V. 3.0
- Other References:** None
- Instructor:** Dr. L. Yu Lin, Professor of Civil and Environmental Engineering
- Course Objectives:** To develop the analysis and design parameters that are used in solution of open channel flow conditions.
- Prerequisites by Topics:**
1. Basic Calculus: Integration and Differentiation
 2. Fundamental Principles of Hydraulics
 3. Ability to Use a Spreadsheet
- Topics:**
1. Basic Concepts of Open Channels
 2. Energy and Momentum Principle
 3. Channels Under Critical Flow Conditions
 4. Channels Under Uniform Flow Conditions
 5. Channel Design Under Uniform Flow Conditions
 6. Gradually Varied Flow
 7. Channel Design for Gradually Varied Flow
 8. HEC-1 and HEC-2 in Design
- Class Schedule:** Three 50-minute sessions per week.

Prepared by: Dr. L. Yu Lin, P.E. **Date:** August 2005

**PROFESSIONAL COMPONENT:
CE 402 – OPEN CHANNEL HYDRAULICS**

Category (check one)	<input type="checkbox"/> Math/Basic Science <input checked="" type="checkbox"/> Engineering <input type="checkbox"/> General Education <input type="checkbox"/> Other
Design (check one)	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Some <input type="checkbox"/> None
Realistic Constraints (check all that apply)	<input type="checkbox"/> Economic <input checked="" type="checkbox"/> Environmental <input type="checkbox"/> Sustainability <input type="checkbox"/> Manufacturability <input type="checkbox"/> Ethical <input type="checkbox"/> Health & Safety <input type="checkbox"/> Social <input type="checkbox"/> Political

Relationship to Program Outcomes:

Check all that apply:

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs
- (d) an ability to function on multi-disciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
- (i) a recognition of the need for and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice