

# CE 466 Design of Free-Surface Hydraulic Systems

Spring 2007

## Catalog Description:

Hydrologic and hydraulic design for uniform and non-uniform flows, channel transitions, sedimentation controls, design discharge for tributary watersheds, flood routing, detention basin design, computer-aided design.

Instructor: Robert M. Ayer, Ph.D., PE

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Phone: (661) 297 - 0119

Time: 6:30 – 9:10 pm Tuesday

Textbook: Open Channel Flow by F. M. Henderson

Prerequisite: CE 309 or ENE 410

## Topics:

1. Review of basic principles of fluid mechanics
2. Specific energy and its relationship to critical, subcritical, and supercritical flows
3. Application of specific energy to channel transition analysis and design.
4. Momentum principle in open channels, hydraulic jump, specific force
5. Design of energy dissipaters, stilling basins.
6. Open channel flow resistance, uniform and non-uniform computations, water surface profiles.
7. Design of channels for uniform and non-uniform flow
8. Analysis and design of open channel control
9. Analysis and design of open channel transitions, culverts.
10. Design and analysis involving bridge piers.
11. Sediment flows and design of movable-bed channels
12. Introduction to coastal engineering, design of coastal structures.

## Grading:

One problem will be selected randomly from the homework and will be assigned as the quiz for the following week. Only hand calculators will be allowed for purposes of the quiz. The quiz results will be reported and returned the following week. The final grade will be based on the sum of the quiz scores, overall class performance, and professional standards adjudged by the instructor. All quizzes will count equally. All quizzes will be closed book, unless specific material is allowed at the instructor's discretion.

Calendar:

Class #	Date
1	01/09/07
2	01/16/07
3	01/23/07
4	01/30/07
5	02/06/07
6	02/13/07
7	02/20/07
8	02/27/07
9	03/06/07
10	03/20/07
11	03/27/07
12	04/03/07
13	04/10/07
14	04/17/07
15	04/24/24
16	05/08/07

All other relevant deadlines can be found in the Spring 2007 Schedule of Classes, Term 20071. These deadlines are your responsibility to read and understand.

Absence policy: A quiz can only be made up upon verification of an emergency necessitating the absence from class. Medical absences must be accompanied by a physician's note affirming the illness was of a severe nature that precluded your attendance. This does not include notes merely stating that you were *seen* by a doctor.

My signature below signifies that I have read and understand this Course Syllabus.

Name: \_\_\_\_\_

Date: \_\_\_\_\_