SYLLABUS

CE 522 FREE SURFACE HYDRODYNAMICS SPRING 2012

January 9, 2012

GENERAL DESCRIPTION:

This course deals with the mechanics of free surface flow. In Part 1 the one dimensional flow assumption is used to study flow in flumes, conduits, canals, and rivers. Following a review of uniform flow, the course covers gradually varied flow, rapidly varied flow, supercritical flow, unsteady flow, and the HEC-RAS computer program. Part 2 deals with unsteady flow and surface waves. In all cases the emphasis is on fundamental principles rather than special design techniques.

PREREQUISITE: CE 322 or consent of the

instructor. TEXTBOOKS:

1. Chaudhry, 2008. *Open-Channel Flow 2nd ed.*, Springer.

2. *HEC-RAS User's Manual*, latest version. U.S. Army Corps of Engineers. Download (free) from the following website.

   http://www.hec.usace.army.mil/software/hec-ras/hecras-download.html

REFERENCES:

1. Chow, 1959. *Open Channel Hydraulics*, McGraw-Hill.

2. Henderson, 1966. *Open Channel Flow*, Macmillan.

3. Sturm, 2001. *Open Channel Hydraulics*, McGraw-Hill.

4. Townson, 1991. *Free-Surface Hydraulics*, Routledge, Chapman, and Hall.

5. Chanson, 1999. *The Hydraulics of Open Channel Flow*, Wiley.

6. Jain, 2001. *Open-Channel Flow*, Wiley.

7. Gray, 2000. *A First Course in Fluid Mechanics for Civil Engineers*, Water Resources Publications, Highlands Ranch, Colorado. www.wrpllc.com/books/fcfm.html.

GRADING:	3 tests*	51 %
	project	20 %
	homeworks	20 %
	class participation	9 %

*Test dates: F, Feb. 10; F, March 23; F, April 20

ATTENDANCE POLICY:

Attendance in lecture is not required, but is strongly encouraged. If you are absent when called on, your class participation grade will suffer.

INSTRUCTOR: Dr. Donald D. Gray, P.E.
Room 641a ESB
304-293-9933
dgray@mix.wvu.edu

OFFICE HOURS: TBA

CLASS HOURS: MWF, 10:00 - 10:50 AM, Room 207

ESB REGULATIONS:

1. All submitted work must be done in a professional manner. Work in an orderly, systematic fashion using sketches, definitions of symbols, and explanatory sentences as appropriate. Use one side of the page and staple multisheet assignments. Do not fold your papers. Box your answers and put your name and the date on each sheet. Illegible work will not be graded.

2. Discussion of homework problems among students is encouraged, but students must submit their own solutions except for group assignments. Copying someone else's solution is dishonest, and all involved will receive a zero.

3. Assignments are due at the start of the designated period. Late assignments will not be accepted.

4. Makeup tests will be allowed only in exceptional cases of documented illness or emergency.

5. Information about the project will be given later.