Syllabus

CGN5930: Unsteady flows in Rivers and Pipe Networks (Spring 2019)

Depart. of Civil and Environmental Engineering, Florida International University

Instructor: Arturo S. Leon, Ph.D., P.E., D.WRE
Instructor Office: Engineering Center EC 3361
Instructor Email: arleon@fiu.edu
Course webpage (For software and recorded material from previous class offerings):
http://web.eng.fiu.edu/arleon/Teaching_unsteady_rivers.html
Meeting time/room for Lectures: Wednesday 5:00PM - 7:40PM
Classroom: EC 3278 (Computer Lab)
Instructor office hours: Wednesday/Thursday 3:00PM - 5:00PM
Prerequisites: Basic calculus, fluid mechanics and basic programming (any language)

Suggested books (not required)

1. Chanson, H. (2008) "The hydraulics of open channel flow", Elsevier, Second Edition
2. Chaudhry, M. H. (1979) "Applied hydraulic transients", Van Nostrand

Course Description

This course will cover the introduction and analysis of unsteady open-channel flows (e.g., rivers and canals) and pressurized flows (e.g., full-pipe flows). Emphasis is given to theory and application of computational procedures for river routing, flooding, and storm-water conveyance. The course will focus primarily on one- and two-dimensional unsteady flows.

Course Learning Outcomes: At the end of this course, all students should be able to:

1. Apply theory and numerical models for solving one-dimensional **steady open-channel flows**;
2. Apply theory and numerical models for solving one-dimensional **unsteady open-channel flows**;
3. Apply theory and numerical models for solving one-dimensional **unsteady pressurized flows**;
4. Apply theory and numerical models for solving **two-dimensional unsteady open-channel flows**.

Academic Misconduct:
Academic or scholarly dishonesty is an act of deception in which a student seeks to claim credit for the work or effort of another person, or uses unauthorized materials or fabricated information in any academic work or research, either through the student's own efforts or the efforts of another. FIU Students are expected to uphold the standards of academic integrity and the policies of the University regarding conduct. Cheating and plagiarism will not be tolerated; these offenses could result in failing the course, and suspension or expulsion from the University. Refer to the FIU Student Code of Conduct for full details on what constitutes academic dishonesty and misconduct, as well as the procedures for resolution of pertaining matters within the University judiciary procedures - http://integrity.fiu.edu/

Lectures: Handouts containing the slides presented in the lectures will be made available to the students.

Student Attendance: Required. Students are allowed to miss at most one class.

FIU Policies: The instructor will comply and enforce all applicable FIU's Policies. Students are responsible for knowing all applicable academic policies and their requirements. Students should also refer, for details, to the *FIU Student Handbook* (which includes the Student Code of Conduct) at https://studentaffairs.fiu.edu/about/student-handbook/index.php

Homework (HW): Four homeworks will be assigned. Homeworks are due at the **beginning of the class** on the due date (see course schedule)**.** Late homeworks **will not** be accepted. If you will be out of town, make arrangements to have a friend turn in your homework for you. Feel free to discuss your solutions with your classmates. However, **you need to submit an individual** homework. **Group submissions will not be accepted.**

Final Exam: The final exam will be comprehensive and will test general understanding of the course.

Grading:	**Homework** ……..……..……..…	30%
	Final project ……..……	40%
	Final Exam ……..……..…	30%

Letter grades will be based on the weighted average specified above and assigned as follows:

92.0 or higher	A
90.0 – 91.99	A-
88.0 – 89.99	B+
82.0 - 87.99	B
80.0 – 81.99	B-
78.0 – 79.99	C+
65.0 - 77.99	C
45.0 - 64.99	D
44.99 or lower	F

Class Schedule (Tentative)

Week	Wednesday	Activity	HW
1	1/9/2019	Lecture: Steady open-channel flow	
2	1/16/2019	Lecture: Steady open-channel flow	
3	1/23/2019	Computer lab - HEC-GeoRAS with ArcGIS and HEC- RAS for **steady open-channel flow**	HW1 out
4	1/30/2019	Lecture: Unsteady open-channel flow	
5	2/6/2019	Lecture: Unsteady open-channel flow	
6	2/13/2019	Computer lab - HEC-GeoRAS and HEC-RAS for **unsteady open-channel flows**	HW1 due, HW2 out
7	2/20/2019	Lecture: Unsteady open-channel flow	
8	2/27/2019	Lecture: Unsteady open-channel flow	
9	3/6/2019	Computer Lab - HEC-RAS 2D	HW2 due, HW3 out
10	3/13/2019	Spring Break (No class)	
11	3/20/2019	Lecture: Unsteady open-channel flow	
12	3/27/2019	Lecture: Unsteady flow in pipe networks	HW3 due, HW4 out
13	4/3/2019	Computer Lab - Illinois Transient Model	
14	4/10/2019	Lecture: Unsteady flow in pipe networks	
15	4/17/2019	Lecture: Unsteady flow in pipe networks	HW4 due
Final Exam	Apr 22, 2019 - Apr 27. Final Exam is scheduled by the University		