

Class: **CE 717 03(3-0-0) RIVER MECHANICS - Spring 2009**

Professor: P.Y. Julien Eng. Bldg., Room A207H, pierre@engr.colostate.edu
Engineering Research Center, Room B205, 491-8450

Description: Analysis of rivers, mechanics of water and sediment transport emphasizing alluvial systems, channel stabilization, control, response.

Prerequisite: CE716 or the equivalent.

Course Topic Outline: River basins; review of steady and unsteady flow in rivers; river equilibrium; river dynamics; aggradation and degradation; local scour; engineering analysis of fluvial systems; river stabilization; river dynamics and response; river engineering; navigation and dredging; physical and mathematical river models; and waves and tides in river estuaries.

Lectures: Tuesday -Thursday, 3:30 - 4:45 pm, Wagar 107B

Office Hours: Campus - to be announced in class
ERC - afternoons of MWF

Web-page: The course's web page is
http://www.engr.colostate.edu/~pierre/ce_old/classes/ce717/ce717.html

Computer Model: The purpose is to develop modeling skills for one-dimensional flows in rivers. The assignments require programming and calculations of aggradation-degradation and advection-dispersion in rivers.

Field Trip: The purpose is to develop observational skills in the river environment. Your team assignment is to observe and report on river stabilization measures of the South Platte River near Denver.

Text: P. Julien, "River Mechanics", Cambridge University Press, 2002

Evaluation:	Homeworks (6)	60%
	Field Trip Report	10%
	Computer Problems (2)	30%

CE 717 – RIVER MECHANICS

SPRING, 2009

		Assignment On web	Tentative DUE date
Jan. 20	Introduction	Comp. Prob. A	
Jan. 27	Numerical Modeling	Comp. Prob. B	
Feb. 3	Numerical Modeling	Hw # 1	Comp. Prob. A
Feb. 10	Erosion and Sediment Yield		
Feb. 17	At-a-station Hydraulic Geometry	Hw # 2	Comp. Prob. B
Feb. 24	Unsteady Flow		Hw # 1
March 3	River Stability and Equilibrium	Hw # 3	Hw # 2
March 10	River Response	Field Trip	Hw # 3
March 16	SPRING BREAK		
March 24	River Dynamics		
March 31	Riverbank Stabilization	Hw # 4	Field Report
April 7	River Engineering		
April 14	Local Scour		Hw # 4
April 21	Physical Modeling	Hw # 5	
April 28	Waves and Tides	Hw # 6	
May 5	Guest Lectures		Hw # 5
May 11	FINALS WEEK		Hw # 6

CE 717 - SUGGESTED READING		
AUTHOR	TITLE	CALL NO.
VANONI	Sedimentation Engineering	TA 7/A5/#54
SIMONS	Sediment Transport Technology	TC 175.2/S57/1977
GRAF	Hydraulics of Sediment Transport	TC 175.2/G7
RICHARDSON	Highways in the River Environment	TA 7/C6/#49
SHEN	River Mechanics, Vol. 1 & 2	TC 175/S49
RAUDKIVI	Loose Boundary Hydraulics	TC 175.2/R3/1967
SHEN	Sedimentation Symposium	TC 175/S488
SIMONS	Resistance to Flow in Alluvial Channels	119/16/#422-J
BOGARDI	Sediment Transport in Alluvial Streams	TC 175.2/B6413
BLENCH	Mobile-Bed Fluviology	TC 175.2/B55
YALIN	Mechanics of Sediment transport	TC 175.2/Y35/1977
SHEN	Modeling of Rivers	GB 201.72/M35M6
ELLIOTT	River Meandering	GB 1205/C67/1983
SHEN	Environmental Impact of Rivers	TC 177/S48
SIMONS	Engineering Analysis of Fluvial Systems	TC 405/E54
HEY	Gravel-Bed Rivers	TC 175/G73/1982
SCHUMM	The Fluvial System	GB 561/S35
CHOW	Open Channel Hydraulics	TC 175/C45
SHEN	Institute of River Mechanics	TA 7/C612
FISCHER et al.	Mixing in Inland & Coastal Waters	TC 171/M57
ROZOVSKII	Flow of Water in Bends of Open Channels	TC 175/R683
ROUSE	Advanced Fluid Mechanics	QA 90/R58
HENDERSON	Open Channel Flow	TC 175/H45
YEVJEVICH	Unsteady Flow in Open Channels	TC 175/I57
WANG	International Symposium on River Sedimentation III	TC 175.2/I58
JULIEN	Essays on River Mechanics	TA 7/C6