

Class: **CIVE 717 03(3-0-0) RIVER MECHANICS - Spring 2018**

Professor: P.Y. Julien, Eng. Bldg., 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 flow and flood propagation 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, Eddy 103

Office Hours: Campus – Tuesday 1:30-3:15 and Thurs. 2:30-3:15.
ERC – Wednesday afternoons

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 computer modeling skills and calculate the changes in bed elevation profiles with time.

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:	Homework (6)	60%
	Field Trip Report	15%
	Computer Problem	15%
	Class Participation	10%

CE 717 – RIVER MECHANICS
SPRING, 2018 – TENTATIVE SCHEDULE

		Assignment On web	Tentative DUE date
Jan. 15	Introduction	Comp. Prob.	
Jan. 22	Upland Erosion	Hw # 1	
Jan. 29	Sources and Yield		Comp. Prob.
Feb. 5	At-a-station Hydraulic Geometry	Hw # 2	Hw # 1
Feb. 12	Flow in Bends		
Feb. 19	Unsteady Flow	Hw # 3	Hw # 2
Feb. 26	River Stability and Equilibrium		
March 5	River Response	Field Trip	Hw # 3
March 12	SPRING BREAK		
March 19	River Dynamics	Hw # 4	
March 26	Riverbank Stabilization		Field Report
April 2	Physical Modeling	Hw # 5	Hw # 4
April 9	Local Scour		
April 16	River Engineering	Hw # 6	Hw # 5
April 23	Waves and Tides		
April 30	Guest Lectures		Hw # 6
May 7	FINALS WEEK	No final	

CE 717 - SUGGESTED READING*For your information only*

AUTHOR	TITLE ...	Library 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