CIVE 510 – Applied Hydraulic Design, Fall 2008

MW 11:00 – 11:50, T 9:00 – 12:00

SYLLABUS

INSTRUCTOR: Christopher I. Thornton, Ph.D. P.E.

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OFFICE HOURS: TBA

OBJECTIVE: The objective of this course is to develop an understanding of the application and limits of procedures and techniques that practicing engineers employ in conducting hydraulic design. Many federal manuals have been prepared by the Army Corps of Engineers, Federal Highway Administration and the Bureau of Reclamation that provide concise methodologies for solving a wide range of engineering problems. Throughout this course, we will utilize the information in several of these documents to build a foundation for applying engineering judgment and developing proficiency in utilizing empirical methodologies.

TEXTBOOK: No formal textbook will be required for this class. However, the following references are suggested:

1. EM-1601 – Design of Floodway Channels
2. USBR – Computing Degradation and Local Scour
3. HEC-14 – Design of Energy Dissipaters
4. HEC-15 – Design of Roadside Channels with Flexible Linings
5. HEC-18 – Evaluating Scour at Bridges
6. HEC-20 – Stream Stability at Highway Structures
7. HEC-23 – Bridge Scour and Stream Instability Countermeasures
8. HDS-5 – Hydraulic Design of Highway Culverts

CONTENT: Techniques and methodologies associated with used in the practice of Hydraulic Engineering. Emphasis on channel design, scour calculations, erosion control, riprap sizing and culvert hydraulics. Specific topics to include:

1. System Stability
2. Channel Design
3. Riprap Sizing
4. Degradation Scour
5. Bridge Scour
6. Scour Countermeasures
7. In-stream Flow Structures
8. Erosion Control Products
9. Culvert Design

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SYLLABUS (Cont.)

HOME WORK: Homework, laboratory and field assignments will be assigned throughout the course. Every assigned problem will be graded. Homework submissions are to be individual or specified group depending on assignment. Please do your own work.

No credit will be given for late homework assignments. I do understand that situations arise however. Consult with me ***prior*** to the assignment being due

EXAMS: At least one exam will be given throughout the course of the semester. Exams will be 1 hour each and can include any topic covered in class. ***Unexcused absences will result in an automatic grade of zero for missed examinations.***

FINAL EXAM: A comprehensive final exam will be given on **Wednesday, December 17 @ 3:40 – 5:40**

MISSED EXAMS: Make-up exams will be given shortly after the scheduled exams for those with an ***excused absence*** on a scheduled exam date. You ***must*** inform me of this in advance of the missed exam.

MISSED CLASS: Believe me, I understand! Please see me during office hours to get missed material.

GRADING:

Exams	20%
Homework	20%
Laboratory and Field Exercises	50%
Participation:	10%

WEB SITE: http://www.engr.colostate.edu/CIVE510/website.html

CIVE 510 – Applied Hydraulic Design
COURSE OUTLINE

DATE	DAY	SUBJECT
25-Aug	M	Intro
27-Aug	W	Background Hydraulics
29-Aug	F	Manual introduction
1-Sep	M	No Class
2-Sep	T	**Lab Tour/Hydraulics**
3-Sep	W	Roughness
8-Sep	M	Field Assignments
9-Sep	T	**Lab 1 - Roughness**
10-Sep	W	Open
15-Sep	M	EM 1601
16-Sep	T	**EM 1601**
17-Sep	W	EM 1601
22-Sep	M	EM 1601
23-Sep	T	**Lab 2 - Transitions**
24-Sep	W	Rock
29-Sep	M	Scour
30-Sep	T	**Field Work**
1-Oct	W	Open
6-Oct	M	Scour
7-Oct	T	**HEC-18**
8-Oct	W	Open
13-Oct	M	Rock
14-Oct	T	**Lab 3 - Rock**
15-Oct	W	Open
20-Oct	M	HEC-18
21-Oct	T	**Erosion Control**
22-Oct	W	Open
27-Oct	M	HEC-23
28-Oct	T	**Problem Session**
29-Oct	W	Open
3-Nov	M	HEC-23
4-Nov	T	**Exam**
5-Nov	W	Open
10-Nov	M	Energy Dissapaters
11-Nov	T	**Lab 4 - Scour**
12-Nov	W	Open
17-Nov	M	HDS-5
18-Nov	T	**Lab 5 - Culverts**
19-Nov	W	Open
24-Nov	M	**Thanksgiving**
25-Nov	T	**Thanksgiving**
26-Nov	W	**Thanksgiving**
1-Dec	M	Review
2-Dec	T	**Presentations**
3-Dec	W	Presentations
8-Dec	M	Open
9-Dec	T	Open
10-Dec	W	Open
17-Dec	W	**Final Exam**

CIVE 510 – Applied Hydraulic Design
Class meeting Time

	Monday	Tuesday	Wednesday	Thursday	Friday
9:00-9:50		**ERC**			
10:00-10:50		**ERC**			
11:00-11:50	**B3 ENG**	**ERC**	**B3 ENG**		
1:10-2:00					
2:10-3:00					
3:10-4:00					
4:10-5:00					