CE502 INTRODUCTION TO FLUID MECHANICS, FALL 2006

(Rev. 8-18-2006)

MWF, 9:00 - 9:50 a.m., B105 Eng. Bldg.

I. INSTRUCTOR

Dr. B. Bienkiewicz, Prof. & Dir.
Wind Eng. & Fluids Lab., Civil Eng. Dept. (www.windlab.colostate.edu)
Office: Rm. A207B, Eng. Bldg., Tel: 491-2026 (ERC A125, Tel/Voice:491-8232).

II. PRIMARY TEXT

Wilcox, D.C., Basic Fluid Mechanics, 2nd Ed., DCW Industries, Inc., La Canada, CA.

III. OTHER REFERENCES

Will be specified at a later time.

IV. COURSE OBJECTIVES

1. To develop understanding of the physical principles governing the state and dynamic behavior of fluids at an intermediate level.
2. To develop analytic and mathematical skills appropriate to solve problems of fluid dynamics
3. To relate the discussed principles and skills to practical engineering problems involving fluid dynamics phenomena

V. READING ASSIGNMENT

In order to gain better benefit from the lecture, you should read the assigned sections before coming to class.

VI. PROBLEM ASSIGNMENT

Homework problem sets will be assigned and collected for grading. The problems will be chosen from the textbook or provided in class. Due date for the problems will be specified. Late submission of the problems will be penalized.

VII. EXAMINATIONS

There will be two tests and a final comprehensive exam. The tests will usually be open book, but closed notes and homework solutions.

VIII. REVIEW PAPER

Students are expected to select and prepare a written review of one (or more) published paper(s) addressing problem(s) of fluid mechanics. Each student will make a short (5 min.) oral presentation of the review.

IX. GRADING

Homework	25%
Test 1	20%
Test 2	20%
Final Exam	30%
Review Paper	5%
Total	100%

CE 502 - INTRODUCTION TO FLUID MECHANICS, FALL 2006
(Rev. 8-18-2006)

WEEK	TOPIC	CHAPTER
1	Overview, Fluid Properties	1
2	Dimensional Analysis	2
3	Equations of Motion	4, 5
4	Equations of Motion	4, 5
5	Integral Analysis	6, 7
6.	Vorticity & Viscosity	10
7.	Potential Flow	11
8.	Computational Methods	11
9.	Viscous Effects	12
10	Navier- Stokes Eq. & Solutions I	12, 13
11.	Navier-Stokes Solutions II	13
12.	Boundary Layer & Turbulence	14
13	THANKSGIVING BREAK	
14	Turbulent Boundary Layer	14
15	Statistical Theory of Turbulence	14
16	Turbulence Models for CFD	
	Final Exam – Fri., Dec. 15, 7:00a-9:00a.	