CEE518: RELIABILITY AND DESIGN

Autumn Quarter 2011
MWF 9:30 - 10:20 AM, More 221

Instructor:
Professor D.A. Reed
263 Wilcox Hall
reed@uw.edu
543-0351 (Voice mail)

Course Description:
Introduction to the theory of structural reliability and its application to design procedures in civil engineering, including probability theory; assessment of uncertainties; code specification (first-order, second-moment format) and the related concept of risk and the influence of socioeconomic factors, load combinations, and probabilities of damage.

Learning Objectives:

1. Students should be able to define the term "structural reliability".
2. Students should be able to identify the most common probability distributions employed in civil engineering.
3. Students should have the ability to use statistical tools to fit distributions to data with a knowledge of goodness of fit parameters.
4. Students should be able to characterize structural systems and apply relevant techniques to estimate the reliability of these systems.
5. Students should be able to define the term "reliability index".
6. Students should be able to derive the reliability index for various design scenarios.
7. Students should be able to explain how reliability concepts are incorporated into the ASCE-7 design standard.
8. Students should be able to undertake Monte Carlo simulation.

Course Topics:

1. Modeling uncertainty.
2. Probability distributions.
3. Determination of distributions from data.
4. Fundamentals of reliability analysis.
5. Simulation techniques.

Website:
http://courses.washington.edu/cee518
Notes, homework assignments and solution sets are posted here.

Text:
Probability, Reliability and Statistical Methods in Engineering Design by A. Haldar and S. Mahadevan.

Grading:

Homework Assignments	25%
Project	25%
Quizzes	50%

Homework is due on the date designated. Ten percent of the grade is deducted for each day the homework is late.

The project is due on the last day of class, December 9th. I will work with you to select an appropriate topic. For example, "Statistical Analysis of Nude vs. Clothed Skier Performance" is not an appropriate topic. The project report should consist of no more than eight double-spaced pages of Times New Roman 11 font. A style template will be made available on the class website. Please submit via E-mail.

Tentative Schedule:

Weeks	*Chapters in H&M and other comments*
Sept. 28	1-3
Oct. 3	3,4
Oct. 10	4,5
Oct. 17	5
Oct. 24	Quiz 1 [Tentative date] as I will be at a professional meeting on 25-27 October.
Oct.31	6,7
Nov. 7	7
Nov. 14	7,8
Nov. 21	Thanksgiving break on the 27th
Nov. 28	9, 11
Dec. 5	Review; project due on Dec. 9th.
Dec. 14th, 8:30-10:20 AM	Quiz 2

Academic Accommodations Due to a Disability:
If you would like to request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, 543-8924 (V/TDD). If you have a letter from Disabled Student Services indicating you have a disability that requires academic accommodations, please present the letter to me so that we can discuss the accommodations you might need for class.