DEE 1316: Probability and Statistics (Spring 2011)

Time: 9:00 – 9:50am, Monday; 10:10 –12:00am, Wednesday (Feb. 21 – June 24); ED301

Instructor: Hsueh-Ming Hang 杭學鳴 (x31861) hmhang@mail.nctu.edu.tw

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Objectives: This course gives an introduction to basic concepts and computations of elementary probability theory. We cover the following topics: axioms of probability, joint and conditional probability, random variables, functions of one and two random variables, expected value and moments, central limit theorem, laws of large numbers, and basic statistical analysis tools. They constitute the fundamental knowledge of electrical engineering and computer science disciplines, particularly in the areas of communications, networking and signal processing.

Classnotes: Hsueh-Ming Hang 杭學鳴 (modified from Profs. Feng-Tsun Chien (簡鳳村教授) and Tzuhsien Sang (桑梓賢教授)) http://cwww.ee.nctu.edu.tw/

Reference Web: MIT Open Course Ware
http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-041-probabilistic-systems-analysis-and-applied-probability-spring-2006/

Textbook: D. P. Bertsekas and J. N. Tsitskilis, ***Introduction to Probability***, Athena Scientific, 2nd edition, 2008

Recommended Readings:

(1) R.V. Hogg and E.A. Tanis, *Probability and Statistical Inference*, 8th ed., Pearson, 2010.

(2) H. Stark and J.W. Woods, *Probability, Random Processes with Applications to Signal Processing*, 3rd ed., Prentice-Hall, 2002.

Grading: **Homework: 20 %**
Quiz 1 and **Quiz 2: 10%** each
Midterm: **30%** (2 hours, closed book)
Final Examine: 30% (2 hours, closed book)
(The same set of homework problems and exams are given to both Chinese and English classes.)

Background: Calculus, Linear algebra

Contents:

1. Probability Basics
2. Discrete Random Variables
3. Continuous Random Variables
4. Joint Distribution and Function of Random Variables
5. Limit Theorems
6. Fundamentals of Statistics