ECE 316 Probability Theory and Random Processes  
(Winter 2010)

Instructor:  Professor Weihua Zhuang, EIT4159, x35354, wzhuang@uwaterloo.ca

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Lectures:  9:30-10:20am @ E2-1303  
Tuesdays, Wednesdays, and Fridays  
Thursdays, Jan. 07, Jan. 21, Feb.04 (if necessary, Mar. 04, Mar. 18, Apr. 01)

Tutorial:  Section 1:  3:30-4:20pm, Tuesdays @ RCH 106  
Section 2:  2:30-3:20pm, Tuesdays @ RCH 109  
Section 3:  2:30-3:20pm, Thursdays @ RCH 109

Office Hour:  Tuesdays, 12:30am-1:30pm (W. Zhuang, EIT 4159)  
Wednesdays, 12:00noon-1:00pm (Khadige, EIT 4139)  
Thursdays, 5:00pm-6:00pm (Mehrdad, EIT 3136)

Website:  http://bbcrlab-pc24.uwaterloo.ca

Course Description:  Ensemble model of randomness. Conditional probability, independence, and Bayes’ theorem. Random variables, probability mass and probability density. Expected values. Collections of random variables, joint and marginal probability, correlation and regression. Confidence intervals. Random processes, stationarity and ergodicity, power spectral density.

Prerequisite:  MATH 117 and Math 119.


Outline:  
1. Basic probability (Chapters 1-2);  
2. Conditional probability, Bayes’ theorem, and independence (Chapter 2);  
3. Random variables and their distributions (Chapter 3);  
4. Functions of Random Variable and Expectations (Chapter 4);  
4. Two random variables and their distributions (Chapters 5 and 6);  
5. Collections of random variables and the central limit theorem (Chapters 8);  
6. Random processes (Chapters 12 and 14).

Homework Assignments:  Please work on all the regular problems given at the end of each textbook chapter (studied in the lectures). Solutions will be posted on the course website.

Tutorials:  The tutorials will be conducted by the TAs for the purposes of (1) answering questions about the course materials, (2) providing example problems that illustrate applications of the theory learned in the lectures and detailing methods of assignment solutions, and (3) elaborating the course materials if necessary.

Tutorial materials will be posted on the course website. Please bring a copy when coming to the tutorial.

Grading:  Midterm=30% and Final Exam=70%.