DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

Course	ECE 30200 - Probabilistic Methods in Electrical Engineering
Type of Course	Required for the CmpE and EE programs
Catalog Description	An introductory treatment of probability theory including distribution and density functions, moments, and random variables. Applications of normal and exponential distributions. Estimation of means, variances, correlation, and spectral density functions. Random processes and response of linear systems to random inputs.
Credits	3
Contact Hours	3
Prerequisite Courses	MA 36300
Corequisite Courses	ECE 30100
Textbook	A. Leon-Garcia, *Probability, Statistics, and Random Processes for Electrical Engineering*, Pearson, Current Edition.
Course Objectives	This course is designed to serve as an introduction to the concepts of probabilities and their applications to engineering problems.
Course Outcomes	On successful completion of this course, students should be able to:

1. Model uncertainties with probability theory and solve basic probability problems (1).
2. Describe different types of random variables and solve problems with important distribution functions (1).
3. Solve problems with joint distributions of two random variables (1).
4. Derive the distributions of functions of random variables (1).
5. Solve problems with conditional probability models (1).
6. Compute point estimates and confidence intervals for parameters of interest (1).
7. Perform simple statistical inference such as hypothesis testing in the presence of uncertainty (1).
8. Understand the statistical properties, such as mean, autocorrelation, and autocovariance, of random processes (1)

Lecture Topics	1. Experiments, models, and probabilities
	2. Sequential experiments
	3. Discrete random variables
	4. Continuous random variables
	5. Multiple random variables
	6. Probability models of derived random variables
	7. Conditional probability models
	8. Point estimates and confidence intervals
	9. Hypothesis testing
	10. Random processes

Computer Usage   Low

Laboratory Experience   None

Design Experience   None

Coordinator   Chao Chen, Ph.D.

Date   09/27/2018