Course

ECE 30200 - Probabilistic Methods in Electrical Engineering

Type of Course

Required for the CmpE and EE programs

Catalog Description


Credits

3

Contact Hours

3

Prerequisite Courses

MA 36300

Corequisite Courses

ECE 30100

Textbook


Course Objectives

This course is designed to serve as an introduction to experiments, models and probabilities. The following topics will be covered: probability models defined on abstract sets; individual discrete and continuous random variables; pairs of random variables including joint probability functions, conditional probability functions, correlation, and covariance; a brief introduction to stochastic processes with an emphasis on the Poisson process.

Course Outcomes

Students who successfully complete this course will have demonstrated:

1. An understanding of the basic concepts of probability models defined on abstract sets. (a, e)
2. An understanding of the three axioms of probability. (a, e)
3. An understanding of the law of total probability, Bayes’ theorem, and independence. (a, e)
4. An understanding of counting methods and application to independent trials. (a, e)
5. An understanding of probability mass functions and probability density functions. (a, e)
6. An understanding of derived random variables and random variables conditioned on events. (a, e)
7. An understanding of pairs of random variables, including joint probability functions, conditional probability functions, correlation, and covariance. (a, e)
8. An understanding of the basic concepts of stochastic processes. (a, e)
9. An understanding of the Poisson process and its properties. (a, e)

Lecture Topics
1. Experiments, models, and probability
2. Discrete random variables
3. Continuous random variables
4. Pairs of random variables
5. Stochastic processes

Computer Usage
Low

Laboratory Experience
None

Design Experience
None

Coordinator
Chao Chen, Ph.D.

Date
03/02/2018