

ESE 306: Random Signals and Systems

Spring 2017

Instructor	Vibha Mane Light Engineering, Room 258A Email: vibha.mane@stonybrook.edu Office Hours: Posted on Blackboard
Teaching Assistants:	Posted on Blackboard
Class Meetings	MW 5:30 – 6:50 pm, Light Engineering Room 102
Recitation Meetings	M 11 – 11:53 am, Old Engineering, Room 143
Grading	Matlab Project: 14 Quizzes: 20 Midterm: 30 Final: 36
Textbook	R. D. Yates and D. J. Goodman, Probability and Stochastic Processes, Wiley, 2004.
Additional Reading	S. Ross, A First Course in Probability, Prentice Hall, 2009.
Syllabus	Basic Concepts of Probability: Probability Axioms, Conditional Probability, Independence, Bayes Theorem. Discrete Random Variables: Probability Mass Function and Cumulative Distribution Function; Functions of Random Variables; Bernoulli, Binomial, Poisson and Geometric Random Variables; Expectations of Random Variables. Continuous Random Variables: Probability Density Function and Cumulative Distribution Functions; Functions of Random Variables; Uniform, Exponential, Gaussian, Beta and Gamma Distributions; Expectations of Random Variables. Jointly distributed random variables: Joint Cumulative Distribution

Functions; Joint Probability Mass Functions; Joint Probability Density Functions; Conditional Distributions; Independence; Sums of Random Variables.

Random Vectors: Probability Models of N Random Variables; Marginals; Independence; Correlation Matrices; Gaussian Random Vectors.

Stochastic Processes: Poisson Process; Brownian motion, Gaussian Processes, Stationary Processes.

Random Signal Processing: Linear Filtering; Power Spectral Density; Frequency Domain Filter Relationships.

Statistical Inference: Hypothesis Testing; Point Estimates; Confidence Intervals.

Academic Integrity

Each student must pursue his or her academic goals honestly, and be personally accountable for all submitted work. Representing another person's work as your own is wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website.

Americans with Disability Act

If you have a physical, psychological, medical or learning disability, that may impact your coursework, please contact Disability Support Services, ECC (Educational Communication Center) Building, Room 128, phone 631-632-6748. They will determine with you, what accommodation, if any, are necessary and appropriate. All information and documentation is confidential.