



The University of Texas at El Paso

Department of Electrical and Computer Engineering

EE 5300 - Probability & Random Processes

Spring 2022 Monday and Wednesday 3:00-4:20 PM

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Office: Engineering Building, Room A-334

Office Hours: TBD

Course Description: This course gives an introduction to probability and random processes for first-year graduate students in electrical engineering. The topics discussed here include an introduction to probability, random variables, functions of random variables, expectation, parameter estimation, power spectral density, random processes.

Textbook (Optional): S. M. Kay, "Intuitive Probability and Random Processes Using Matlab," Springer, New York, NY, 2005.

Software Needed: Matlab. You could access Matlab through UTEP here for free: https://www.utep.edu/technologysupport/ServiceCatalog/SOFTWARE_PAGES/soft_matlab.html

Learning Outcomes:

1. Apply knowledge of basic probability to solve problems in the description of single and multiple random variables, conditional probability, parameter estimation.
2. Formulate and apply limit theorems to approximate probabilities and moments of independent identically distributed (id) random variables.
3. Identify, and formulate different types of id stationary random processes, and estimate their moments (mean and covariance sequences).
4. Solve problems involving wide sense stationary random processes, autocorrelation sequences and power spectral densities.
5. Solve problems involving the output of linear shift invariant systems to wide sense stationary random processes (autocorrelation sequence and power spectral density), Wiener filtering problems.
6. Identify, formulate and solve problems in Gaussian, Poisson and Markov random processes.
7. Use scientific programming language to interpret mathematical equations, to illustrate, describe, simulate and solve theoretical and real-world problems, in probability and random processes.
8. Use scientific programming language to analyze and interpret random variables and random processes.



Grading Policy:

90 – 100	A
80 – 89	B
70 – 79	C
60 – 70	D
< 60	F

Homework	40% (Late submissions will not be accepted; the lowest score will be dropped.)
Two Exams	25% each
Attendance	10% (each unexcused absence takes 3%.)

Policy on Scholastic Dishonesty:

Students are expected to be above reproach in all scholastic activities. Students who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and dismissal from the university. Scholastic dishonesty includes but is not limited to reproducing test or quiz materials from memory, copy/paste or Xerox, cheating, plagiarism, collusion, the submission for credit or any work or materials that are attributable in whole or in part to another person, taking an examination for another person, and any act designed to give unfair advantage to a student or the attempt to commit such acts. Regents' Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22. See detailed procedure in the Handbook of Operating Procedures (HOP) available in the Office of the Dean of Students.

Policy on Accommodations:

If you have a condition, which may affect your ability to perform successfully in this course, you are encouraged to discuss this in confidence with me and/or the director of the Disabled Student Services. Written guidelines r/t accommodations from The Center for Accommodations and Support Services (CASS) must be submitted to the course manager in two weeks after the start of the course. If you have a disability and need classroom accommodations, please contact CASS at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass. *CASS' Staff are the only individuals who can validate and if need be, authorize accommodations for students with disabilities.*

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COVID-19 Precautions

Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations. Face covering is strongly recommended during class.