

## FALL 2025 : ELEC 7410: Stochastic Signal and System Analysis

T Th 9:30 am – 10:45 am Broun 306

**Instructor:** Prof. J.K. Tugnait 313 Broun, 4-1846, tugnajk@auburn.edu  
Office Hours: By appointment; please email.

### Prerequisites by topic:

1. Basic probability theory.
2. Fourier and Z transforms.
3. Linear system analysis.

### Course Goals:

1. To gain in-depth understanding of fundamentals of probability and its applications.
2. To gain in-depth understanding of fundamentals of random variables and its applications.
3. To gain in-depth understanding of fundamentals of stochastic processes and its applications.

**Textbook:** J.A. Gubner, *Probability and Random Processes for Electrical & Computer Engineers*. Cambridge U. Press, 2006.

**Refs.:** H. Pishro-Nik, *Introduction to Probability, Statistics, and Random Processes*, available at <https://www.probabilitycourse.com>, Kappa Research LLC, 2014.  
A. Papoulis and S.U. Pillai, *Probability, Random Variables, and Stochastic Processes*, fourth ed., McGraw-Hill, 2002.  
H. Stark & J.W. Woods, *Probability and Random Processes with Applications to Signal Processing*, third ed., Prentice-Hall, 2002.  
A. Leon-Garcia, *Probability and Random Processes for Electrical Engineering*, third ed., Addison-Wesley, 2008.

### Grading Basis:

Homework* :	20 %	
Test I (in class & take-home) :	25 %	( Oct. 2, 2025 )
Test II (Take-home) :	25 %	( Nov. 20, 2025 )
Final :	30 %	( Take-home Dec. 4, 2025)

\*Any late homework submission will incur 15% penalty per day, with any fraction of a day counted as full day.

## TEXT COVERAGE

Parts of chapters 1 through 5 (“undergraduate”), chapters 8,9,10, and parts of chapters 11 through 14 (“graduate”) of *Gubner*.

**ELEC 7410. Stochastic Signal and System Analysis (3).** Lec. 3. Pr., Departmental approval. Applications of probability, random variables and stochastic processes in electrical engineering.