ECE 4110/5110 Monday, 08/21/23

Random Signals in Communication and Signal Processing

Dr. Kevin Tang Handout 1

Instructor:

Kevin Tang, atang@ece.cornell.edu, 337 Rhodes Hall. Office hour: Tuesday (13:00-14:00)

Teaching Assistants:

Faraz Farahvash (ff227) Office hour: Friday (15:00 - 16:00), location: TBD

Time and Location:

Lectures: Monday and Wednesday 13:25-14:40, Hollister Hall 320

Recitation: Friday 10:10-11:00, Phillips Hall 307

Grading Policy:

Grade only. Homework Sets (70%), Exams (30%). Late submissions **WILL NOT** be accepted. Grades **CAN NOT** be changed after a week from the time the homework/exam is given back.

Textbooks and References

- Introduction to Probability, 2nd Edition, by Dimitri P. Bertsekas and John N. Tsitsiklis
- Probability and Random Processes, 3rd Edition, by Geoffrey Grimmett and David Stirzaker
- Probability, Random Variables and Stochastic Processes, 4th Edition, by Athanasios Papoulis and S. Unnikrishna Pillai
- Introduction to Probability Models, by Sheldon M. Ross

Course Website:

Canvas (ECE 4110/5110-Fall 2023)

Collaboration Policy: If you get stuck with an assignment, you can discuss them with others. However each of you is expected to write down your own solutions. No collaboration is allowed during the exams.

Tentative Plan

Table 1: Tentative Plan

Week	Monday	Wednesday
1 (08/21/23 - 08/27/23)	Probability Review	Gaussian Vectors
2 (08/28/22 - 09/03/23)	Transforms	Limit Theorems
3 (09/04/23 - 09/10/23)	Labor Day	Random Walk
4 (09/11/23 - 09/17/23)	The Bernoulli Process	The Poisson Process
5 (09/18/23 - 09/24/23)	Discrete-time Markov Chains	Classification of States
6 (09/25/23 - 10/01/23)	Steady-state Distributions	Application Examples
7 (10/02/23 - 10/08/23)	Continuous-Time Markov Chains	Birth-death Processes
8 (10/09/23 - 10/15/23)	Fall break	Markov Chain Monte Carlo
9 (10/16/23 - 10/22/23)	Exam 1	Stationary Processes
10 (10/23/23 - 10/29/23)	Spectrum Representation	Gaussian processes
11 (10/30/23 - 11/05/23)	Filtering	Estimation
12 (11/06/23 - 11/12/23)	Smoothing	Prediction
13 (11/13/23 - 11/19/23)	Other topics	Other topics
14 (11/20/23 - 11/26/23)	Other topics	Thanksgiving
15 (11/27/23 - 12/03/23)	Other topics	Exam 2