MATH 271E Probability and Statistics

Spring 2020

Class location and meeting time: EEB 2106, W: 12.30-15.30

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Office Hours: W:11.00-12.30 or by appointment

Course Aims and Outcomes:

Aims: Uncertainty plays an important role in engineering problems in the fields of signal processing, communications, control, finance, and other disciplines. The course is designed to give the student the basic knowledge of probability and statistics and its applications.

Specific Learning Outcomes: By the end of this course, students will:

- Know basics of probability theory
- Learn discrete and continuous random variables
- Learn limit theorems
- Learn hypothesis testing, linear regression, parameter estimation

Format and Procedures:

Lecture: 14 weeks

Course Requirements:

Class attendance and participation policy: Not mandatory but highly recommended

Recommended Books:

- A. L. Garcia, Probability, Statistics, and Random Processes For Electrical Engineering, Pearson, (3rd Edition), 2008
- D. C. Montgomery, G. C: Runger, Applied Statistics and Probability for Engineers, John Wiley & Sons, 3rd Edition, 2003
- D. B. Bertsekas, J. N. Tsitsiklis, 'Introduction to Probability', Athena-Scientific, 2nd Edition

- R. D. Yates, D. J. Goodman, Probability and Stochastic Processes: Friendly Introduction for Electrical and Computer Engineers, John Wiley & Sons, 2nd Edition, 2004
- A. H. Kayran, M. N. Yücel, Olasılık Teorisi ve Stokastik Süreçler, Papatya Bilim, 2014

Grading Procedure:

Homeworks: 3, 9%
Quizzes: 3, 21%
Midterm Exam: 30%
Final Exam: 40%

Academic Integrity:

Each student in this course is expected to abide by the Istanbul Technical University Code of Academic Integrity. Any work submitted by a student in this course for academic credit will be the student's own work.

Tentative Course Outline:

- Probability: probability models, conditioning, Bayes rule, independence
- Discrete and continuous random variables
- Multiple random variables, joint and conditional densities
- Transformation of random variables
- Limit Theorems: Law of large numbers, central limit theorem
- Introduction to Statistics
- Parameter estimation, linear regression, hypothesis testing.

Exam	Quiz I	Quiz II	Quiz III	Midterm
Day	W4	W7	W13	W10