Middle East Technical University
Department of Electrical and Electronics Engineering

EE 230 Spring 2011

PROBABILITY AND RANDOM VARIABLES

Instructors and Schedule

Section	Instructor	Office		
1	Aydın Alatan	C 204	Tue 13:^{40}-15:^{30} EA 209	Fri. 12:^{40}-13:^{30} EA 209
2	Fatih Kamışlı	C 108	Tue 13:^{40}-15:^{30} EA 312	Fri. 12:^{40}-13:^{30} EA 312
3	Ali Özgür Yılmaz	EZ 11	Tue 13:^{40}-15:^{30} EA 310	Fri. 12:^{40}-13:^{30} EA 310
4	Tolga Çiloğlu	D 206	Mon 15:^{40}-16:^{30} EA 312	Thu 13^{40}-15:^{30} EA 310
5	Elif Uysal-Bıyıkoğlu	D 208	Mon 15:^{40}-16:^{30} EA 310	Thu 13^{40}-15:^{30} EA 207

Textbook

- *Introduction to Probability*, 2nd Edition, Dimitri Bertsekas, John N. Tsitsiklis, Athena Scientific, 2008.

References

- *A First Course in Probability*, S.Ross, MacMillan Publishing Co
- *Probability and Random Processes with Applications to Signal Processing. 3rd Edition, H. Stark, J.W.Woods*, Prentice Hall, 2002**.**
- *Probability Random Variables and Stochastic Processes*, A.Papoulis, McGraw Hill
- *Probability Random Variables and Random Signal Principles*, P.Z.Peebles, McGraw Hill
- *Introduction to Probability and Statistical Applications*, P.L.Meyer, Addison-Wesley.

Course Outline

1. Sample Space and Probability (~9 lectures)
   a. Sets
   b. Probabilistic Models
   c. Conditional Probability
   d. Total Probability and Bayes's Theorem
   e. Independence
   f. Counting
2. Discrete Random Variables (~9 lectures)
   a. Basic Concepts
   b. Probability Mass Function
   c. Functions of Random Variables
   d. Expectation, Mean and Variance
   e. Joint PMFs of multiple random variables
   f. Conditioning
   g. Independence
3. General Random Variables (~9 lectures)
   a. Continuous Random Variables and PDFs
   b. Cumulative Distribution Functions
   c. Normal Random Variables
   d. Joint PDFs of Multiple Random Variables
   e. Conditioning
   f. The continuous Bayes's Rule
4. Further Topics on Random Variables (~9 lectures)
   a. Derived Distributions
   b. Covariance and Correlation
   c. Conditional Expectation and Variance
   d. Transforms
   e. Sums of Independent Random Variables
   f. Sum of a Random Number of Independent Random Variables
5. Limit Theorems (~3 lectures)
   a. The Markov and Chebychev Inequalities
   b. The Weak Law of Large Numbers
   c. Convergence in Probability
   d. The Central Limit Theorem
6. The Bernoulli and Poisson Processes (~3 lectures)
   a. The Bernoulli Process
   b. Poisson Process

Homeworks and Project

10 homework assignments with 3 questions on each.
1 Project

Grading Policy

Midterm Examinations: TBD% (TBD % + TBD %)
Final Examination: TBD %
Homework +Project+ Attendance: TBD%