New Course Announcement

E&C-ENG 697PR – 01:

ST-Advanced Probability & Applications

Instructor: Hossein Pishro-Nik

This graduate-level course aims at familiarizing the students with some advanced concepts in applied probability and random process, with emphasis on their applications in science, engineering, and finance. The goal is to help graduate students to use stochastic tools in their research. The topics can be of interest to students in engineering/computer science, mathematics, and management.

Tentative Topics:

- Poisson and Renewal Processes
- Markov Chains
- Martingales
- Random Walks
- Brownian Motion
- Ito's Lemma and Stochastic Differential Equations
- Applications:
  - Queuing theory
  - Random graphs and applications to communication networks
  - Numerical methods and Monte Carlo Simulations
  - Stochastic calculus for finance

The topics can be adjusted based on backgrounds of the students and their research interests. The course consists of lectures, homework, and project. Grading is based on homework (35%), project (35%), exam (20%) and class participation (10%). Students are encouraged to choose projects related to their research. Prerequisite: An undergraduate course in probability.