

In The Name of God, The Merciful, The Compassionate

Stochastic Processes
Department of Computer Engineering
Sharif University of Technology
Fall 2005 – CE 40-695

Instructors:

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Office Hours: Tuesday 12:30 – 1:30, or by appointment

Course Website: <http://www.aictc.ir/>
<http://ce.sharif.edu/courses/84-85/1/ce695/>

Course Objectives: To make acquainted the graduate students with the fundamental concepts of stochastic processes and their applications in Engineering.

Course Textbook: A. Papoulis and S. Pillai, Probability, Random Variables and Stochastic Processes, 4th Edition, McGraw Hill, 2002.

Reference Book: S. Ross, Probability Models for Computer Science, Harcourt Academic Press, 2002.

Grading: There will be Homework, Quizzes, Mid-Term and Final Exams. The grade will be determined by:

Homework: 10%

Quiz: 15%

Project: 15%

Mid-Term Exam: 30%

Final Exam: 30%

Prerequisites: Probability Theory.

Course Description: The course includes fundamental concepts of Probability Theory, Stochastic Processes, Stochastic Linear Systems, Stationary and Ergodic Processes, Power Spectral Density, Estimation Theory, Spectral Estimation, Markov processes, Markov Chains and fundamentals of Queuing Systems.

Tentative Course Outline:

Week	Date	Topic	Readings	HW/Quiz
1	84/7/3	Overview of The Course	Handout	-
	84/7/5	Review of Probability Theory	Handout	HW#1
2	84/7/10	Stochastic Processes I	Handout	HW#2
	84/7/12	Stochastic Processes II	Handout	Quiz#1
3	84/7/17	Stochastic Processes III	Handout	HW#3
	84/7/19	Stationary Stochastic Processes	Handout	-
4	84/7/24	Stationarity & Ergodicity	Handout	HW#4
	84/7/26	Statistics of Stochastic Processes	Handout	Quiz#2
5	84/8/1	Applications of Stochastic Processes I	Handout	HW#5
	84/8/3	Applications of Stochastic Processes II	Handout	-
6	84/8/8	Stochastic Linear Systems I	Handout	Hw#6
	84/8/10	Stochastic Linear Systems II	Handout	Quiz#3
7	84/8/15	Power Spectral Density I	Handout	HW#7
	84/8/17	Power Spectral Density II	Handout	-
8	84/8/22	Estimation Theory I Basic Concepts	Handout	HW#8
	84/8/24	Estimation Theory II Classical Estimation	Handout	Quiz#4
9	84/8/29	Estimation Theory III	Handout	Projects Assigned
	84/9/1	Midterm Exam	Handout	Midterm Exam
10	84/9/6	Estimation Theory IV Bayesian Estimation	Handout	-
	84/9/8	Prediction/Detection I	Handout	
11	84/9/13	Prediction/Detection II	Handout	HW#9
	84/9/15	Spectrum Estimation I	Handout	Quiz#5
12	84/9/20	Spectrum Estimation II	Handout	HW#10
	84/9/22	Markov Chains	Handout	-
13	84/9/27	Markov Processes	Handout	HW#11
	84/9/29	Queueing Theory I	Handout	Quiz#6
14	84/10/4	Queueing Theory II	Handout	HW#12
	84/10/6	Applications of Stochastic Processes III	Handout	-
15	84/10/11	Applications of Stochastic Processes IV	Handout	-