

San Jose State University
Department Electrical Engineering

Green Sheet Fall 2001

Instructor: Dr. Zachi (Izhak) Baharav
Phone: (650) 485-2908
E-mail: Zachi@labs.agilent.com
Web: look for a link at www.baharav.org
Course: MW, 20:30-21:45, Room E303
Office Hours: MW, 21:45-22:15 (right after class)
(Longer/different time can be coordinated by email, and we will have additional time before the quizzes/finals)

Course coordinator: Prof. Michael O'Flynn

EE 250: Probabilities, Random Variables and Random Processes

EE 250 reviews the material on discrete probability theory, and then covers random variables theory and random processes.

Textbook

“Probability and Random Processes for Electrical Engineering” by Alberto Leon-Garcia, Addison Wesley, 2nd edition.
Random variables and Random processes from Maple Press Text (Notes from Prof. O'Flynn 's course).

Sequence of Lectures

1. Review of discrete probability theory (**Ch. 2**) - 4 lectures.
2. Theory of 1-random variable (**Ch. 3**) – 7 lectures.
 - a. Finding cumulative distribution, density and mass functions for a random variable.
 - b. Given a density or mass function answering probabilistic question about X. Special case: Uniform, Binomial, Gaussian and Piosson random variables.
 - c. The density (or mass) function of a function of random variable.
 - d. “Statistics” of random variable. Time averages of periodic waveforms found statistically. Time average of random waveform.
 - e. The fundamental theorem.
3. Theory of 2 or more random variables (**Ch. 4-5**) – 7 lectures.

- a. Find the joint, cumulative, density and mass functions for two random variables.
 - b. Given the joint density or joint mass function answer any probabilistic question about X and Y, X or Y, or X or Y subject to a condition.
 - c. The density or mass function for a function of random variables whose joint density function is known.
 - d. Second order statistics for 2 random variables
 - e. The joint Gaussian random variable.
4. Theory of Random processes (**Ch. 6**) - 7 lectures.
- a. Definition of a Random process ensemble averages.
 - b. Notation for and classification of random processes.
 - c. “Proving” Processes are non-stationary, first-order stationary, second-order stationary or ergodic.
 - d. Linear systems with random or signal-plus-noise input. Gaussian random processes.
 - e. Queuing systems (time permitting).

Grading

Extra problems (=take home exams)	100 points
2 midterms	200 points
Comprehensive final	250 points

Total	550 points

The take-home-exams and 2 midterms will be synchronized with finishing the material of 1-random variable and 2-random variables.

Note 1.

A minimum commitment of 5 hours of study and problem solving per lecture is required for any satisfactory achievement with the material. **No make-ups are given.**

Note 2.

Please refer to the following calendar for important dates. We might add dates for problem solving sessions. TBD.

Note 3.

Please try and enjoy the course and the exercise your brain gets out of it...

Course Calendar:

August:

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27 C1	28	29 C2	30	31	

September:

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5 C3	6	7	8
9	10 C4	11	12 C5	13	14	15
16	17 C6	18	19 C7	20	21	22
23	24 C8	25	26 C9	27	28	29
30						

October:

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 C10 +T1	2	3 C11	4	5	6
7	8 C12 +Q1	9	10 C13	11	12	13
14	15 C14	16	17 C15	18	19	20
21	22 C16	23	24 C17	25	26	27
28	29 C18	30	31 C19			

November:

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5 C20 +T2	6	7 C21	8	9	10
11	12 C22 +Q2	13	14 C23	15	16	17
18	19 C24	20	21	22	23	24
25	26 C25	27	28 C26	29	30	

December:

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3 C27	4	5 C28	6	7	8
9	10 C29	11	12	13	14	15
16	17	18	19 F1	20 F2	21	22
23	24	25	26	27	28	29
30	31					

c1..c29 – Classes

T1, T2 – Take home exams are handed

Q1, Q2 – Quizze time

F1 – Final exam (Not finalized yet!!

Will be determined a few weeks into the semester).

F2 – Final make-up day

Honor Code

Please read and understand that the following is part of your agreement to be in the class. This is the Electrical Engineering Department honor code.

“I have read the honor code below and agree with its provisions. My continued enrollment in this course constitutes full acceptance of this code.

I will not:

- Take an exam in place of someone else, or have someone take an exam in my place
- Give information or receive information from another person during an exam
- Use more reference material during an exam than is allowed by the instructor
- Obtain a copy of an exam prior to the time it is given
- Alter an exam after it has been graded and return it to the instructor for grading”