

ECE-340
Spring 2008
Probabilistic Methods in Engineering (3 credits)
M, W 3:00-4:15 PM
Room: Dane Smith Hall 325

Syllabus

Course Goals: To introduce the student to basic theoretical concepts and computational tools in probability and statistics with emphasis on their role in solving engineering problems.

Course Catalog Description: Introduction to probability, random variables and random processes. Distributions and density functions, expectations and correlation, autocorrelation functions and power spectral densities for wide-sense stationary processes; confidence intervals; transmission of random signals through linear systems.

Prerequisites: ECE314.

Textbook: Probability and Random Processes for Electrical Engineering, 3rd ed., Alberto Leon-Garcia, Addison Wesley, 2008.

Instructor: Prof. Vince Calhoun

Office: ECE 224B/Pete & Nancy Domenici Hall

Office hours: by appointment; walk-in's OK too.

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Course Requirements

1) Conduct:

Students are expected to comply with the Student Code of Conduct found in the UNM Student Handbook. In particular, exchange of information during exams and quizzes is strictly prohibited.

2) Verbal and written communication:

Oral and written communications are important in the educational setting. Each student is expected to participate in classroom discussions. Students are also expected to exhibit good writing when working homework assignments, quizzes and examinations.

3) Homework:

Homework assignments will include problems from the text as well as special problems. Some problems may require the use of MATLAB, which is available in the ECE Computer labs. Computer-aided simulation and analysis (using MATLAB) of random phenomena will be an integral part of the course for two reasons: First, simulation of practical problems will provide motivation and give a realistic and enjoyable feel to the concept of chance. Second, it will help develop the basic computer tools necessary for the simulation and analysis of some problems that cannot be solved analytically. Completing homework assignments is a key component of this course, as it will help master the course

material and prepare for the exams. Late submissions are generally not accepted unless under extreme conditions. Solutions will be provided when the assignments are graded and returned.

4) Examinations:

There will be two required midterms and a final. Make-up exams are given only under extreme conditions (such as in a medical emergency).

5) Quizzes:

There will be a 5-minute quiz every Wed in the beginning of the class period (with the exception of the first week of class). Each quiz will be on the material covered in the two lectures before the quiz. The purpose is to encourage students to read the class notes and be in synch with the course.

6) Attendance:

Attendance is mandatory. Missing more than two lectures requires the permission of the instructor.

7) Small-group project:

Groups of 2-3 students will be required to work on a small project comprising experimentation (of a random phenomenon) and analysis of results. The specifics of the project will be announced approximately 8 weeks before the due date, which will be on the final class period. Each group will be asked to prepare a brief report. Tools learned in class should be used to complete the design. The use of Matlab will be required to complete the project.

Grading:

10% Completion of homework assignments

10% Weekly 5-minute quizzes every Wednesday at the beginning of class (with the exception of the first week of class)

20% First Exam, **Wednesday, Feb. 27**

20% Second Exam, **Wednesday, Apr. 9**

30% Final Exam: **Wednesday, May 14, 3-5 PM**, Room TBA

10% Project (details to be announced)

Tentative grade assignment:

90-100 (A);

80-89 (B);

70-79 (C);

60-69 (D);

59 or below (F).

Some important dates:

Last day to drop without a grade: Feb 29th

Spring break: March 16-23

ECE 340 Schedule: Spring 2008

Lecture	Date	Topic	Assignment	Other
1	Jan 23	Intro/Ch 1		
2	Jan 28	2.1-2.2		
3	Jan 30	2.3-2.4	Quiz	
4	Feb 4	2.5-2.6	HW1 due	Lecturer Jean Liu
5	Feb 6	3.1-3.2	Quiz	Lecturer Jean Liu
6	Feb 11	3.3	HW2 due	Lecturer Jean Liu
7	Feb 13	3.4	Quiz	Lecturer Jean Liu
8	Feb 18	3.5		
9	Feb 20	4.1-4.3	Quiz; HW3 due	
10	Feb 25	4.4-4.5		
E1	Feb 27		Exam #1	
11	Mar 3	4.6-4.7		
12	Mar 5	5.1-5.2	Quiz	
13	Mar 10	5.3-5.4	HW4 due	
14	Mar 12	5.5-5.7	Quiz	
N	Mar 17	NO CLASS		
N	Mar 19	NO CLASS		
15	Mar 24	5.8-5.9	HW5 due	
16	Mar 26	6.1-6.2	Quiz	
17	Mar 31	6.3-6.4		
18	Apr 2	7.1-7.2	Quiz; HW6 due	
19	Apr 7	7.3		
E2	Apr 9		Exam #2	
20	Apr 14	8.1-8.2		
21	Apr 16	8.3	Quiz	
22	Apr 21	8.4-8.5	HW7 due	
23	Apr 23	8.6	Quiz	
24	Apr 28	9.1-9.2		
25	Apr 30	9.3-9.6	Quiz	
26	May 5	10.1-10.2	Term Project Due	
27	May 7	TBA		
F	May 14		Final Exam	
	May 12-16	FINALS WEEK		