**Course Number:** EE250  **Section:** 01  
**Course Title:** Probability, Random Variables and Processes  
**Class Code:** 21223  
**Semester:** Spring 2006  
**Class hours & room:** Monday & Wednesday, 17:30 – 18:45, room ENGR345  
**Prerequisites:** Graduate Standing in EE or Basic knowledge of probability, statistics, and linear systems applied in electrical engineering (equivalent to the completion of EE102 and EE112 with grades C or better)  

**Instructor:** Prof. Thuy T. Le  
**Office Hrs:** Monday & Wednesday: 18:45 – 20:15, ENGR369  
Friday: 10:00 – 12:00 (and by appointment), ENGR369  

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If you need to communicate with me, please try to see me in person during the office hours. If you must send me an email, please clearly specify your full-name, course, section, etc. I will not respond to email that I do not know the author or emails that have no manners.

**Course Description**

This course is the first graduate course in probability and random process in electrical engineering. The course concerns the characterization and probabilistic analysis of random signals. We will first review undergraduate topics in probability and statistics, paying particular attention to the multivariate Gaussian density. We then develop the theory of random processes and their characterization by autocorrelation functions and spectral densities, focusing on stationary Gaussian processes. The theory is then applied to the determination of optimum linear systems. Our goal is to develop a thorough understanding of the principles of random processes and knowledge of applying them to some problems in electrical engineering. The course objectives are:

- To obtain a broad mastery of probability theory and statistical data analysis and to appreciate their importance within many engineering disciplines.
- To obtain a broad mastery of random signal processing and analysis.
- To apply random signal processing methods to some problems in electrical engineering.


**Lecture Note:** "EE250 Lecture Notes," by Thuy T. Le  
Maple Press – 481 E. San Carlos St. San Jose, CA 95112 (408) 297-1001  
(Corner of San Carlos and 10th Street)
Lectures
The course will follow selected subjects as listed on the course schedule in this green-sheet and summarized in lecture presentations. Additional theory and examples will be given and discussed in class as much as time permits.
− Students are responsible for the reading the text, handouts, lecture presentations, etc.
− Students are responsible for following up and keeping track of the in-class lecture materials.
− Students are responsible for finding and reading additional books, papers, examples, etc. in order to gain more understanding of the materials discussed in the lectures.

Exams
There will be 2 midterm exams and a comprehensive final exam. The dates of the midterm and final exams are as below. Since make-up exams will NOT be allowed, please make sure that you are able to attend all exams at the indicated scheduled times from the beginning of the semester in order to register for the course.
1st Midterm Exam: Wednesday March 01, 2006, 17:30 – 18:45
2nd Midterm Exam: Wednesday April 12, 2006, 17:30 – 18:45
Final Exam: Monday May 22, 2006, 17:15 – 19:30
− All exams are closed-book exams.
− One sheet (8.5x11) of hand-written notes is allowed for the 1st midterm exam, two sheets for the 2nd midterm exam, and three sheets for the final exam.
− Only basic calculator is allowed during the exams
− There will be no make-up exams (in very special circumstances, written excuse and official proofs are required for making-up exams).
− Exam solutions will be discussed in class after the exam dates. Written solutions will NOT be distributed.

Homework Assignments
Homework assignments will be given periodically and will be automatically due in one week from the assigned date. Homework solutions will be made available after the due date.
− NO late submission will be accepted (absolutely!).
− There is no make-up homework.
− Each homework assignment will be graded as 1 or 0 point only.
− To get credit for your homework assignments, submissions must be neat, clean, and must be done professionally and seriously. Your official name (not nickname), course #, section # (EE250, Section 1), and homework # must be visibly shown on each homework.

Grading Policy
The overall course grades (letter-grades) will be assigned based on the overall class distribution. The weights of the homework assignments and the exams are listed as below:
− Homework assignments: 10%
− 1st Midterm exam: 15%
− 2nd Midterm exam: 25%
− Comprehensive final exam: 50%
Tentative Lecture Topics and Course Schedule

Green-sheet, policy, and introduction
Chapter 1: Probability Models in Electrical Engineering (Introduction)
   Review of Set Theory
Chapter 2: Basic Concepts of Probability Theory (Review)
Chapter 3: Random Variables: 3.1 – 3.7 and 3.9 only (Review)
   First Midterm Exam (15%)
Chapter 4: Multiple Random Variables (4.1 – 4.8)
Chapter 5: Sum of Random Variables and Long-Term Average (5.1 – 5.3)
   Second Midterm Exam (25%)
Chapter 6: Random Process (6.1 – 6.7)
Chapter 7: Analysis and Processing of Random Signals (7.1 – 7.4)
Chapter 8: Markov Chains (8.1 – 8.3)
   Comprehensive Final Exam (50%)

Some Important Dates

Wed, January 25: First day of instruction
Mon, February 6: Last day to drop or withdraw without a "W" grade
Mon, February 13: Last day to add courses
   Last day to request grade options - Academic Renewal, CR/NC, Audit
Wed, March 01: 1st Midterm examination, 17:30 – 18:45
Mon - Fri, March. 27-31: Spring Break
Wed, April 12: 2nd Midterm examination, 17:30 – 18:45
Tue, May 16: Last day of instruction
Wed, May 17: Study/Conference Day - no classes or exams
Mon, May 22: Final examination (17:15 – 19:30)

UNIVERSITY AND DEPARTMENT POLICY INFORMATION

Academic integrity statement from Office of Judicial Affairs:

Your own commitment to learning, as evidenced by your enrollment at San José State University and the University’s Academic Integrity Policy requires you to be honest in all your academic course work. Faculty are required to report all infractions to the Office of Judicial Affairs. The policy on academic integrity can be found at http://www2.sjsu.edu/senate/S04-12.pdf

Campus policy in compliance with the Americans with Disabilities Act:

If you need course adaptations or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities register with DRC to establish a record of their disability.
EE HONOR CODE

EE@SJSU
Honesty and Respect for Others and Public Property

The Electrical Engineering Department will enforce the following Honor Code that must be read and accepted by all students.

“I have read the Honor Code 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 then return it to the instructor for re-grading
– Leave the exam room without returning the exam to the instructor.”

Measures Dealing with Occurrences of Cheating

– Department policy mandates that the student or students involved in cheating will receive an “F” on that evaluation instrument (paper, exam, project, homework, etc.) and will be reported to the Department and the University.
– A student’s second offense in any course will result in a Department recommendation of suspension from the University.

MESSAGES TO EE50 STUDENTS

In addition to EE Honor Code, EE250 students understand that professional attitude is necessary to maintain a comfortable academic environment. For examples:

- Students will not skip the lecture and then ask the instructor to summarize the lecture later on. Office hours are for students to have questions, not for the instructor to summarize the lecture for any specific student.
- Students will come to the class on time and leave the class at the end of the lecture.
- Students will consult the course syllabus for class policies and requirements before requesting the instructor for special attentions
- To minimize possible tension during the exams, students are requested to follow the exam rules closely.
- Students understand that long-term learning is their responsibility and so will always keep it up. etc.