

**Klipsch School of Electrical and Computer Engineering
College of Engineering
New Mexico State University**

**EE 497: Introduction to Communications Systems II, 3.0 Credits
Spring 2008**

Class Schedule: MWF 1:30-2:20 PM

Class Location: Thomas & Brown, Rm 303

Instructor:

Dr. Charles (Chuck) Creusere

Room 160D Goddard Hall

Phone: 646-3919

email: ccreuser@nmsu.edu

Office hours: Tu, 10-11, W 10-11; by appointment (recommended).

Course Description:

Introduction to probability theory and random processes as applied to the analysis of communications systems. In particular, we will use such probabilistic techniques to study the behavior of digital communications systems in the presence of noise. We will also study the basic principles of digital data transmission.

Prerequisites: C or better in EE496 and STAT 371 or EE302

Textbook:

B.P. Lathi, *Modern Digital and Analog Communications Systems*, 3rd Edition, Oxford University Press, 1998, ISBN 0-19-511009-9.

Other Useful References (not required):

Software:

MATLAB/Simulink, available on all ECE lab computers-- Purchase is optional.

Online Resources: WebCT

Course Objectives:

After completing this course, the student should understand a variety of digital communications systems and be able to use probability and random process theory to analyze them. Specifically, the course covers:

1. Applications of basic probability concepts to communications systems,
2. Applications of random processes to communications systems analysis,
3. M-ary digital communications systems,
4. Analyzing system behavior in the presence of noise,
5. Constructing simple error correction codes,
6. Investigating basic spread spectrum principles
7. Simulating digital communications systems using Matlab/Simulink

Contributions of EE497 to Meeting the Professional Component

Introduction to Comms II teaches students how to apply mathematics and basic sciences to practical problems in communications engineering. This course provides a strong basis for employment and educational advancement in the communications engineering area. This class provides 3.0 credits of engineering science.

Relationship of the Course to Program Objectives

Course Objective	Program Outcome					
	I b	II e	II f	III a	III f-III j	III-k
1		x	x	x		
2		x	x	x		
3		x	x	x		
4	x		x	x		
5	x		x	x		x
6					x	

Relevant Program Outcomes

- I b. Use of computers.
- II e. Knowledge of advanced mathematics.
- II f. Knowledge of engineering sciences.
- III a. Ability to apply knowledge of mathematics, science and engineering.
- III.f. Understand professional and ethical responsibly
- III.g. Ability to communicate effectively
- III.h. Broad education necessary to understand the impact of engineering solution in a global and societal context.
- III.i. Recognition of the need for and the ability to engage in life- long learning
- III.j. Knowledge of contemporary issues
- III k. Use of engineering tools.

Grading:

Homework: There will be weekly homework assignments consisting of textbook problems and/or computer simulation projects. Worth 10% of the final grade. Late assignments will not be accepted. Solutions will be available on the class website.

Quizzes: There will be almost-weekly on-line quizzes most weeks using the WebCT system. In total, they will be worth 15% of the final class grade.

Miniprojects: There will be two Simulink-based miniprojects and they will start being given out after the midway point of the class. They will be worth 20% of the class grade in total.

Exams: There will be two midterm exams worth a total of 30% of the final grade. There will be no makeup exams except in the case of serious documented illness. The exams will be held outside of class on the following dates: Wednesday, Feb. 27, 2008 from 6-8 PM; Weds. April 16, 2008 from 6-8 PM. If you have any professional conflicts with these dates, you must contact me at least 2 weeks in advance to arrange to take the exam early. Makeup exams will only be given with proof of medical illness.

Final: The final, comprehensive examination is scheduled for Monday, May 5, 2008 from 1:00-3:00PM. It is worth 25% of the final grade. *Student will have the option of replacing the numeric score of one midterm with that of their final.*

Re-grading: If a student feels that the grading on any assignment or exam is in error, they must bring the problem to the instructors attention **within 1 week** of receiving the graded assignment and solutions.

Calculating Final Grades: Final grades will be calculated either on an absolute scale or using the clustering methodology explained in class--whichever is more beneficial to the student. Letter grades will not be assigned for individual exams.

Policies:

You may discuss homework and programming assignments with either myself, the TA, or your peers. This discussion could include among other things, various approaches to a homework problem, algorithms for a software project, programming tips, and various theoretical insights. Be aware, however, that all submitted solutions to homeworks and projects must be written or coded (in the case of software) by the individual. There is to be no "sharing" of solutions. **Any plagiarism or cheating will result in an automatic F in the course.**

Exam Calculator Policy: Only the following non-programmable, non-symbolic calculators will be allowed: HP 30s, TI-30Xa, and TI-30X IIS. Other calculators may be approved by the instructor on a case by case basis.

EEO/ADA Information:

Feel free to call Jerry Nevarez, Director of Institutional Equity, at 505-646-3635 with any questions you may have about NMSU's Non-Discrimination Policy and complaints of discrimination, including sexual harassment.

Feel free to call Michael Armendariz, Coordinator of Services for Students with Disabilities, at 505-646-6840 with any questions you may have on student issues related to the Americans with Disabilities Act (ADA) and/or Section 504 of the Rehabilitation Act of 1973. All medical information will be treated confidentially.

Prepared by: C. Creusere, 08/15/07