

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

**EE 545: Digital Signal Processing II, 3.0 Credits
Fall 2008**

Class Schedule: MWF 2:30-3:20 PM
Class Location: Thomas & Brown, Rm 204

Instructor:

Dr. Charles (Chuck) Creusere
Room 160D Goddard Hall
Phone: 646-3919
email: ccreuser@nmsu.edu

Office hours: M 9-11, by appointment.

Course Description:

This is a first year graduate course in digital signal processing. Topics to be covered here include advanced sampling, Fourier and z-transforms, digital filter design and realization, implementation issues, and an introduction to multirate signal processing, 2D signal processing, and adaptive filtering. An undergraduate course in DSP is required,

Prerequisites: EE395 (DSP) or equivalent.

Textbook:

S.K. Mitra, *Digital Signal Processing: A Computer-Based Approach*, 3rd Edition, McGraw-Hill, 2006, ISBN: 0-07-286546-6

Other Useful References (not required):

Oppenheim, A.V., Shafer, R.W., and Buck, J.R., *Discrete-Time Signal Processing*, Prentice Hall, 2nd Edition (1999); ISBN: 0137549202.

Software:

MATLAB, Signal Processing Toolbox (available in T&B 201 and 202). Purchase of MATLAB is optional.

Online Resources: WebCT .

Course Objectives:

After completing this course, the student should be comfortable with the advanced theory and practice of digital signal processing including:

- Bandpass and non-ideal sampling
- Frequency domain representations and their uses
- Digital filter structures for implementation
- Digital filter design
- Implementation considerations and finite word-length effects
- Introduction to multirate systems
- Introduction to 2 and higher dimensional processing
- Introduction to adaptive filter
- Introduction to statistical signal processing (time permitting)

Prepared by: C. Creusere, 08/13/08

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 webCT.

Projects: There will be two group projects for this class. Groups will be randomly assigned by the instructor and they will be different for each project. Individual grades on projects will be based in part on intra-group student evaluations as well as extra-group student evaluations. Each project will be worth 15% of the class grade in total.

Exam: There will be one midterm exams worth a total of 30% of the final grade. **Date**: Wednesday, Oct. 8, 2008 (6-8 PM).

Final: The final examination is scheduled for Wednesday, December 10, 2008 from 1-3PM. Worth 30% of the final grade.

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 back from the instructor.

Assignment of final grades: Either absolute grading or cluster grading will be used to assign the final course grades: whichever is more advantageous to the student. I will discuss this in class.

Policies:

You may discuss homeworks and mini-projects with either myself or your peers. This discussion can include 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.

Rescheduled Classes:

There may be rescheduled or canceled classes .

Students with Disabilities:

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.

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