

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

**EE 596: Digital Image Processing, 3.0 Credits
Fall 2007**

Class Schedule: MWF 2:30-3:20 PM
Class Location: Thomas & Brown, Rm 307

Instructor:

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

Office hours: Monday, 9-11 AM, by appointment.

Course Description:

This is a first year graduate course in digital image processing. Topics to be covered here include image enhancement, image restoration, and image compression (Chapters 2-6 are covered along with parts of Chapters 7 and 8). Ability to program in Matlab is expected coming into the class.

Prerequisites: Digital Signal Processing at at least the undergraduate level (i.e., EE 395 or EE545), random signal analysis (EE571) recommended.

Textbook:

Gonzales and Woods, *Digital Image Processing*, 2nd Edition, Prentice Hall, ISBN: 0-20-118075-8.

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.

J.S. Lim, *Two-Dimensional Signal and Image Processing*, Prentice Hall, ISBN: 0-13-935322-4.

S.K. Mitra, *Digital Signal Processing: A Computer-Based Approach*, 2nd Edition, McGraw-Hill, August 2000, ISBN: 0-07-232105

Software:

MATLAB v6.x, Image Processing Toolbox (available in T&B 206). Purchase of MATLAB is optional.

Online Resources: Solutions and ancillary information will be posted on WebCT

Course Objectives:

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

- Human Visual perception
- Image Enhancement : spatial operations & histograms
- Frequency domain filtering & processing
- Image Restoration
- 2D transformations

- Color processing
- Image/video Compression
- Wavelets

Grading:

Homeworks: There will be weekly homework assignments consisting mostly of textbook problems. Worth 15% of the final grade. Late assignments will not be accepted.

Practical Assignments: There will be periodic practical Matlab-based programming assignments given. These will be worth in total 15% of the final class grade. All computer programs must be emailed to me and they will be randomly screened. If the program does not generate the results given in the hardcopy, no points will be awarded for the entire homework assignment. Late assignments will not be accepted.

Project: There will be one project worth 25% of the final grade. Teams of two will be allowed on this project but not required. A team project is expected to accomplish more than an individual project. The project will have two parts: a proposal worth 5% of the final grade and the final report and presentation are worth 20% of the final grade. **Due Dates:** Proposal-- Friday, Oct. 5, 2007 by 5PM; Project report-- Friday, Dec. 14, 2007 by 5:00 PM MST.

Exam: There will be one take-home midterm exam worth 20% of the final grade. Date: **TBD**

Final: The final, comprehensive examination is scheduled for Wednesday, Dec. 12, 2007 from 1-3 PM. Worth 25% 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.

Policies:

I highly encourage you to discuss homeworks and projects with either myself 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.

Students will be expected to attend at least 50% of regularly scheduled classes.

Rescheduled Classes:

There may be rescheduled classes. Classes will be made up either in the evenings or on weekends.

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