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OH: T,Th 10:45am-12:00pm or by appt

Spring 2007

CPMA 551-61: Digital Image Processing

W, 6:00-8:40pm, 220 College Hall

Required Text: Digital Image Processing, by Gonzalez and Woods (2nd Edition)

Reference Texts:

- Forsythe and Ponce, *Computer Vision*, Prentice Hall, 2003.
- Gonzalez, Woods, Eddins, *Digital Image Processing Using MATLAB*, Prentice Hall, 2003
- Jain, *Fundamentals of Digital Image Processing*, Prentice Hall, 1989.
- Pratt, *Digital Image Processing*, 3rd Edition, John Wiley, 2001.
- Castleman, *Digital Image Processing*, Prentice Hall, 1996.
- Netravali, Barry G. Haskell, *Digital Pictures*, Plenum, 2e, 1995.

Prerequisites: You must have passed either CPMA 512 or MATH 315 (Linear Algebra) and either CPMA 518 or MATH 215 (Vector Calculus) prior to enrolling.

Blackboard, *www.blackboard.duq.edu*: Announcements, assignments, course documents, the discussion board, assignment due dates, details on the final project etc. can be found on blackboard. You are expected to log in and check announcements at least once a week. All changes will also be announced in class.

Username: The first part of your Duquesne University email address. For example, if your duquesne address is **name123@duq.edu**, then your username is **name123**.

Password: The first letter of your last name in lower case and your full social security number without spaces or hyphens (you should change your password under 'student tools' once you've logged on).

Goals and Objectives: This course will introduce the student to the fundamentals of digital image processing. The student will learn the mathematics underlying the field as well as implement, develop, and compare various algorithms on the computer. Topics to be covered include: image sensing and acquisition, sampling and quantization, image enhancement in the spatial and frequency domains, the Fourier Transform, convolution, low- and high-pass filters, image restoration, color image processing, wavelets, image compression

Attendance: Each student is responsible for all of the material covered during class. Attendance does not factor into your final grade, however, missing class is **never** an excuse for not knowing any of the material covered, assignment due dates, etc. In the case that you are forced to miss class due to a verifiable medical emergency, contact me as soon as possible and I will let you know what we covered. Otherwise, you are solely responsible for obtaining the information that you missed.

Homework: Students should read the relevant sections of the text prior to the lecture. Homework problems will be assigned for each lecture. The exercises should be prepared to be turned in for grading each week. **Assignments and due dates will continually be updated on blackboard.** To receive full credit for collected assignments, solutions to homework exercises should contain a full written description and justification of the process by which you arrive at the final answer. A numerical answer without support is not acceptable, even if it is correct. All code and final images should also be included.

Grades: Grades will be determined by the following criteria.

Homework\Projects	50%
Midterm	25 %
Final	25%

Classroom Behavior: Students are expected to observe basic classroom etiquette such as turning off cell phones, etc.

Academic Honesty: Discussion of the homework problems (except those on take-home quizzes/exams) is allowed and even encouraged. However, each student must do his/her own work. Assignments which are too similar will receive a zero.

Students are also expected to observe Duquesne University's policy on academic integrity. Quoting from the student handbook:

Violations of academic integrity occur when an individual seeks and receives credit for intellectual work which was performed by someone else, when an individual knowingly falsifies or ignores data in order to reach a predetermined conclusion or when an individual contaminates someone else's data or intellectual property in order to affect the conclusion or outcome.

It is expected that each student's grade should reflect only that student's achievement. It is obvious that the pursuit of knowledge and understanding, along with the quest for truth, cannot be conducted in a dishonest manner. To attempt to do so is contradictory to the objectives and the values of the University.

Therefore, it is the responsibility of the student to maintain academic integrity with regard to class assignments, examinations and any other course requirements, such as term papers, theses and the like. Thus cheating, plagiarism and knowingly assisting others to violate academic integrity are each and all violations of academic integrity.

Violations of academic integrity are subject to disciplinary action, including (but not limited to) lowering of grades, course failure, or suspension or dismissal from the class or from the University. Violations of academic integrity include but are not limited to the following:

- *cheating on examinations, whether giving or receiving assistance or using prohibited material as a test aid (prohibited material includes, but is not limited to, notes or other written documents, unauthorized calculators and/or formulas, programs, software, data and text stored in calculators. When in doubt, the student is responsible for ascertaining whether a given model of calculator is permitted and what information may be stored in the calculator),*
- *submitting a research paper, thesis, dissertation or work for publication which includes work which is not one's own and which fails to give proper attribution to the actual source of the work,*
- *submitting any document without proper attribution composed of sources [including but not limited to] from either the World Wide Web, the Internet, any electronic source, or purchased or copied from another, and which is represented as one's own work,*
- *furnishing false information to any University instructor, official or office with intent to deceive,*
- *forgery, alteration or misuse of any University document, record or instrument of identification (written or computerized),*
- *knowingly assisting another in any of the above.*

Students with disabilities: "Students with disabilities are entitled to reasonable accommodations if needed. If you need accommodations, please contact the Office of Freshman Development and Special Student Services in 309 Duquesne Union (412-396-6657) as soon as possible. Accommodations will not be granted retrospectively."