

Departments of Bioengineering & Electrical Engineering
University of Washington

**BIOEN/EE 568 – Image Processing Computer Systems
SPRING Quarter, 2006**

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TA Hours: 3:15 - 4:00 p.m. Mondays and Wednesdays

Prerequisites: 1) Basic Linear Systems
2) Computer Programming
3) Graduate Standing
4) Permission of Course Instructor

Credit: Four (4)

Time: Mondays and Wednesdays, 4:00 – 5:50 p.m.

Location: MEB 250

Web site: <http://students.washington.edu/tutar/ee568>

Textbooks: **Highly recommended** – *Digital Image Processing*, R.C. Gonzalez & R.E. Woods, 2nd Edition, Prentice Hall, 2002. ISBN: 0201180758 (www.bestwebbuys.com/books/, www.amazon.com or <http://www.bn.com/>)

Recommended – *Computer and Robot Vision*, R. M. Haralick and L. G. Shapiro, Prentice Hall, 1993.

Focus: - Image computing algorithms and techniques,

- Their basic idea from an application-oriented point of view,
- Their realization from the programmer's and hardware designer's point of view, and
- Their background from a theoretical point of view.

Note: **NO sitting-in will be allowed. Only students registered for the course for a numerical grade can attend the lectures and use the lab.**

Lecture Schedule:

1. Introduction (Chapter 1) What is image processing? Applications and History	-- 2 hours
2. Basic image processing (Chapters 3 and 5) Point processing, geometric transforms	-- 4 hours
3. Linear systems and filtering (Chapters 3, 4, and 5) Transforms, convolution, filtering, restoration	-- 6 hours
4. Image and video compression (Chapter 8) Lossless, lossy compression, JPEG, MPEG	-- 4 hours
5. Introduction to image segmentation (Chapter -11) Edge detection, region growing	-- 4 hours
6. Image segmentation and analysis continued (Chapters 9-11) Morphology, active contours, classification, case study, advanced topics	-- 10 hours
7. Image registration (Material supplied by instructor) Basic and advanced methods/application	-- 4 hours
9. Applications and systems	-- 2 hours

	36 hours

Deadlines and Important Dates:

Project pre-approval is due April 19 (Wednesday)
 Project proposal is due on April 28 (Friday).
 Project presentations are scheduled on May 24 and May 31 (Wednesdays).
 Exam is scheduled on or after June 5 (TBD).
 Final project demonstrations are scheduled on June 9 (Friday).

Grading:	20%	Laboratories and Homework
	5%	Participation in class discussions
	30%	One Examination
	45%	Individual Project (project proposal, weekly progress reports, final project report, project demonstration, difficulty & scope, practicality, elegance, possibility for publication, etc)

	100%	

Ps. Note each project will be collectively assessed by the instructors and teaching assistant to maintain minimum standards across the class.