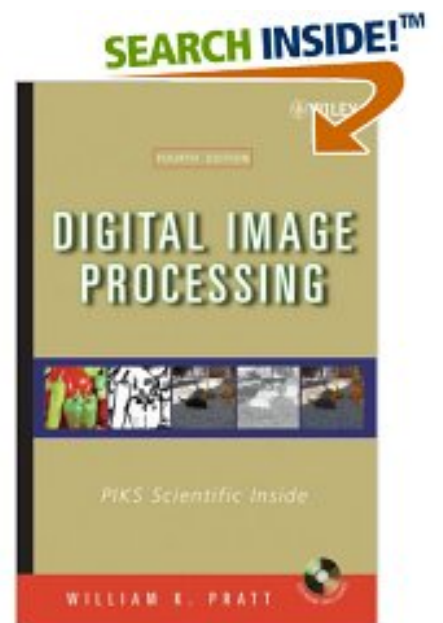
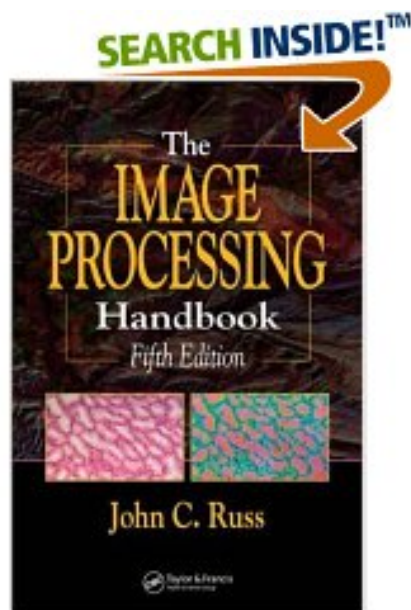
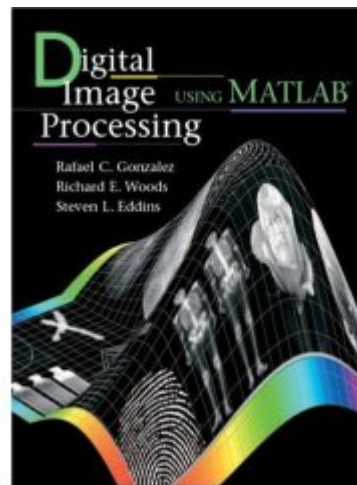
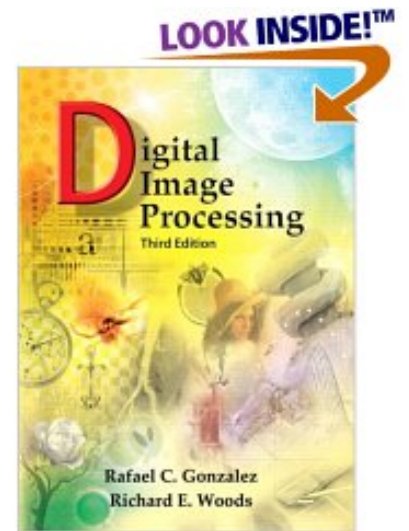
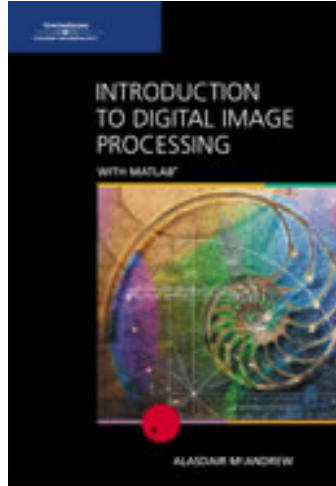


CS 440-101: Digital Image Processing
Marshall University
Fall 2008

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1 Course description

In this course you will learn mathematical techniques, algorithms, and software tools for image sampling, quantization, enhancement, reconstruction, compression, segmentation, and analysis. MATLAB will be used to demonstrate digital image principles and practices.

2 Course schedule

This course meets on MW 2.00 PM - 3.15 PM in GH 206A.

3 Instructor information

- Dr. V.N. Gudivada, Gullickson Hall Room 205A, Phone: 304-696-5452, Email: gudivada@marshall.edu. Please use this email only if you cannot access WebCT Vista email.
- Office hours: Monday - 12.00 Noon - 2.00 PM; Wednesday - 3.00 PM - 5.00 PM; Tuesdays and Thursdays: 3.30 PM - 5.00 PM. Other times by appointment.

4 Course topics at a glance

- a. Image capture and display.
- b. Image types and storage formats.
- c. Intensity transformations and spatial filtering.
- d. Frequency domain processing.
- e. Color image processing.
- f. Morphological image processing.
- g. Image segmentation.
- h. Image representation and description.
- i. Image restoration.

5 Student learning outcomes

- a. The student **articulates** general terminology of digital image processing principles and practices.
- b. The student **demonstrates** the knowledge of various image types and associated storage requirements.
- c. The student **demonstrates** the knowledge of various intensity transformations and spatial filtering in enhancing digital images.
- d. The student **demonstrates** the knowledge of frequency domain technique in enhancing digital images.
- e. The student **has mastered the methodologies and tools** for color image processing.
- f. The student **has mastered the methodologies and tools** for morphological image processing.
- g. The student **has mastered the methodologies and tools** for image segmentation.
- h. The student **has mastered the methodologies and tools** for image representation and description.
- i. The student **has mastered the methodologies and tools** for image restoration.

6 Instructional materials

Required Textbook Alasdair McAndrew. *Introduction to Digital Image Processing with MATLAB.*, ISBN-10: 0534400116, ISBN-13: 978-0534400118, Course Technology, 1st edition (April 7, 2004).

Reference Book Rafael C. Gonzalez and Richard E. Woods. *Digital Image Processing.*, ISBN-10: 013168728X. ISBN-13: 978-0131687288, Prentice Hall, 3rd edition, (August 21, 2007).

Reference Book Rafael C. Gonzalez, Richard E. Woods, and Steven L. Eddins. *Digital Image Processing Using MATLAB.* ISBN-10: 0130085197. ISBN-13: 978-0130085191. Prentice Hall, 1st edition (September 5, 2003).

Reference Book John C. Russ. *The Image Processing Handbook*, ISBN-10: 0849372542. ISBN-13: 978-0849372544, CRC Press, 5th edition, (December 19, 2006).

Reference Book William K. Pratt. *Digital Image Processing: PIKS Scientific Inside*, ISBN-10: 0471767778, ISBN-13: 978-0471767770, Wiley-Interscience, 4th edition (February 9, 2007).

Additional Resources Course notes and other handouts will be available on muOnline. URLs for additional resources will also be listed on the muOnline.

7 Course assessment and grading criteria

The course assessment is based on the following components:

- Programming projects: 30%
- Two midterm exams: 40%
- Final exam: 30%

8 Assignment of letter grade

<i>Score</i>	<i>Letter Grade</i>	<i>Remarks</i>
≥ 90	A	Achievement of distinction
≥ 80 & < 90	B	Competent and professional work
≥ 70 & < 80	C	Below average performance
≥ 60 & < 70	D	Patently substandard work
< 60	F	Unsatisfactory work

Note that A grades are awarded only to those students who have demonstrated distinctive performance in the course.

9 muOnline

It is important to visit **muOnline** (<http://www.marshall.edu/muonline/>) for up-to-date information about the course. It hosts all the course materials including assignments, handouts, lecture notes, and reading materials. Also, you will use the muOnline for submitting your projects.