BIL 421 – IMAGE PROCESSING

2013-2014 SPRING SEMESTER

Instructor: Dr. Emre SÜMER (esumer@baskent.edu.tr)
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Office hours: Monday 11:00 – 11:50, Wednesday 14:00 – 14:50, Thursday 14:00 – 15:50

Course Assistant: Mehmet Dikmen (mdikmen@baskent.edu.tr)
Room: B-413, Tel: +90-312-246 6666 / 1306

Lectures: Wednesday 15:00 – 16:50 (B-311), Thursday 09:00-10:50 (B-311)
Application Hours: *Wednesday 16:00-16:50*

Course Objective:

To learn digital image fundamentals, intensity transformations, spatial filtering in time and frequency domain (Fourier Transform), image restoration, noise models, color image processing and basic image segmentation methods together with the MATLAB programming language basics.

Tentative Course Schedule by week:

Week-1 (17-21 Feb.)	Introduction to Digital Image Processing *(Gonzalez & Woods, Ch # 1)*
Week-2 (24-28 Feb.)	Digital Image Fundamentals – I *(Gonzalez & Woods, Ch # 2)*
Week-3 (03-07 Mar.)	Digital Image Fundamentals – II *(Gonzalez & Woods, Ch # 2)*
Week-4 (10-14 Mar.)	Intensity Transformations *(Gonzalez & Woods, Ch # 3)*
Week-5 (17-21 Mar.)	Spatial Filtering *(Gonzalez & Woods, Ch # 3)*
Week-6 (24-28 Mar.)	Frequency Domain Background *(Gonzalez & Woods, Ch # 4)*
Week-7 (31 Mar. - 04 Apr.)	Filtering in the Frequency Domain *(Gonzalez & Woods, Ch # 4)*
Week-8 (05-12 Apr.)	**MIDTERM WEEK**
Week-9 (14-18 Apr.)	Noise Models and Image Restoration – I *(Gonzalez & Woods, Ch # 5)*
Week-10 * (21-25 Apr.)	Image Restoration – II *(Gonzalez & Woods, Ch # 5)*
Week-11 * (28 Apr. - 02 May)	Color Models and Transformations *(Gonzalez & Woods, Ch # 6)*
Week-12 (05-09 May)	Color Image Processing *(Gonzalez & Woods, Ch # 6)*
Week-13 (12-16 May)	Image Segmentation Fundamentals *(Gonzalez & Woods, Ch # 10)*
Week-14 * (19-23 May)	Image Segmentation Methods *(Gonzalez & Woods, Ch # 10)*

*: Half week

Text Books:

- **Required Text Book:**

- Digital Image Processing, 3rd Edition, Gonzalez & Woods, Pearson Education, Inc., 2008.

- **Reference Materials:**

- Digital Image Processing using MATLAB, 2nd Edition*, Gonzalez, Woods, Eddins, Prentice Hall, 2009.*
- DIPUM Web Page : www.imageprocessingplace.com

Grading:

- 5% Attendance + Participation
- 15% Programming Assignments (x 4)
- 15% Quizzes x 4 (Best 3 of 4)
- 25% Midterm Exam
- 40% Final Exam

Application Hours:

The hours in Wednesday (16:00-16:50) will be allocated as the application hours. In this time slot, MATLAB computing environment (mostly the image processing concepts) will be introduced. These hours will also be used as the discussion time for the programming projects.

Cheating Policy:

Cheating is strictly prohibited. All quizzes, programming projects, and exams are individual works. Do your best but don't copy someone else's work. Anyone found cheating would receive zero on that exercise, homework, or exam and upon repetition to failure in the course, even to punishment through disciplinary procedures as indicated in Baskent University General Catalogue.