Introduction to Digital Image Processing
CS 3060

Prerequisite : CS2010

Instructor	:	**David Gregg**	**Libero Ficocelli**
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Course Content:

To introduce students to the fundamentals of image processing and to give them an opportunity to utilize these techniques on real images. The core topics will include image fundamentals, image transforms, image enhancement and restoration, segmentation and encoding. We will also venture to cover advanced topics in applied image processing such as: pattern recognition, scene analysis and morphing. Course topics ***may*** include (but not limited to) all or some the following:

Image Fundamentals:
visual perception, sampling and quantization
pixel relations and imaging geometry
Image Transforms:
Fourier transforms, Hough Transforms, Wavelets
Image Enhancement:
histogram-modification techniques, smoothing and sharpening, pseudo-color
Image Restoration:
algebraic approach, inverse filtering
geometric transformations
Image Compression:
encoding process and criteria
lossless compression and lossy compression;
Image Segmentation:
thresholding, edge detection, boundary following,
region growing, motion detection;
Image Description:
chain codes, shape descriptors, morphology
Pattern recognition:
decision rules, clustering

Lab : The scheduled lab for this course is in J101

Text: **Digital Image Processing Second Edition**
Rafael C. Gonzalez
Richard E. Woods
Prentice Hall

Marking:

Lab/Home Assignments	33%
Projects/Presentation	7%
Exam I	15%
Exam II	15%
Exam III	15%
Exam IV	15%

Special Notes :
The Student will be eligible for a passing grade for the term, **only if** they obtain 30 out of a possible 60 marks (on exams).