



DEPARTMENT OF SCIENCE

COURSE OUTLINE – WINTER 2013

CS3060 – INTRODUCTION TO DIGITAL IMAGE PROCESSING – 3 (3-0-3) 90 HOURS

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OFFICE HOURS:	TBA		

PREREQUISITE(S)/COREQUISITE: CS2010

REQUIRED TEXT/RESOURCE MATERIALS:

Digital Image Processing Third Edition
Rafael C. Gonzalez
Richard E. Woods
Prentice Hall

CALENDAR DESCRIPTION:

Introduction, history, and applications of image processing; scanning and quantization; visual perception; output devices; pattern recognition; feature extraction; decision theory; classification rules; data representation and formats; image enhancement and restoration; edge detection; segmentation and texture; correlation and registration.

CREDIT/CONTACT HOURS: 3 (3-0-3) 90 Hours

DELIVERY MODE(S): In class lecture

OBJECTIVES (OPTIONAL):

TRANSFERABILITY: University of Alberta, University of Calgary, University of Lethbridge, Athabasca University

GRADING CRITERIA:

**** Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions.**

GRANDE PRAIRIE REGIONAL COLLEGE			
GRADING CONVERSION CHART			
Alpha Grade	4-point Equivalent	Percentage Guidelines	Designation
A ⁺	4.0	90 – 100	EXCELLENT
A	4.0	85 – 89	
A ⁻	3.7	80 – 84	FIRST CLASS STANDING
B ⁺	3.3	77 – 79	
B	3.0	73 – 76	GOOD
B ⁻	2.7	70 – 72	
C ⁺	2.3	67 – 69	SATISFACTORY
C	2.0	63 – 66	
C ⁻	1.7	60 – 62	
D ⁺	1.3	55 – 59	MINIMAL PASS
D	1.0	50 – 54	
F	0.0	0 – 49	FAIL
WF	0.0	0	FAIL, withdrawal after the deadline

Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability

EVALUATIONS:

Lab Assignments: 32%

Exams: 68% (4 exams - 17% each)

STUDENT RESPONSIBILITIES:

- The Student must pass the theory/concepts portion of the course in order to obtain a passing grade for the term. In other words, a student must obtain 34 out of a possible 68 points from the exam components only, lab assignments are not counted.

STATEMENT ON PLAGIARISM AND CHEATING:

Refer to the Student Conduct section of the College Admission Guide at

<http://www.gprc.ab.ca/programs/calendar/> or the College Policy on Student Misconduct: Plagiarism and Cheating at www.gprc.ab.ca/about/administration/policies/**

****Note:** all Academic and Administrative policies are available on the same page.

COURSE SCHEDULE/TENTATIVE TIMELINE:

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 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