DEPARTMENT OF SCIENCE

COURSE OUTLINE – WINTER 2012

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

INSTRUCTOR:	Libero Ficocelli	**PHONE:**	780 539 - 2825
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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 at 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 50% out of a possible 68 points - which includes all components except the lab assignments.

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