

SCIENCE DEPARTMENT COURSE OUTLINE – WINTER 2026

CS 4060: Image Processing and Computer Vision – 3 (3-0-3) 6 Hours for 15 Weeks

Northwestern Polytechnic acknowledges that our campuses are located on Treaty 8 territory, the ancestral and present-day home to many diverse First Nations, Metis, and Inuit people. We are grateful to work, live and learn on the traditional territory of Duncan's First Nation, Horse Lake First Nation and Sturgeon Lake Cree Nation, who are the original caretakers of this land.

We acknowledge the history of this land and we are thankful for the opportunity to walk together in friendship, where we will encourage and promote positive change for present and future generations.

INSTRUCTOR:	Ubaid Abbasi	PHONE:	780-539-2976
OFFICE:	C-427	E-MAIL:	UAbbasi@nwpolytech.ca
OFFICE HOURS:	11:30-12:30 Monday or appointment by email		

CALENDAR DESCRIPTION:

The course will explore topics such as data representation and formats; image enhancement and restoration; edge detection; segmentation and texture; correlation and registration. These fundamentals will then be applied to the analysis of images by using pattern recognition; feature extraction and detection; object tracking, decision theory; classification rules.

PREREQUISITE(S)/COREQUISITE: CS2010

REQUIRED TEXT/RESOURCE MATERIALS:

Digital Image Processing by Rafael Gonzalez and Richard Woods ISBN: 9780133356724

Note: Additional handouts will be provided in class.

DELIVERY MODE(S):

This course includes 3-hours of lecture per week and a 3-hour lab per week

Lectures:	G112	Tuesday, Thursday	10:00 – 11:30AM
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TRANSFERABILITY:

UA, UC, UL, AU, KUC, GMU.

***Warning:** Although we strive to make the transferability information in this document up-to-date and accurate, **the student has the final responsibility for ensuring the transferability of this course to Alberta Colleges and Universities.** Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at Alberta Transfer Guide main page <http://www.transferalberta.ca> or, if you do not want to navigate through few links, at <http://alis.alberta.ca/ps/tsp/ta/tbi/onlineSearch.html?SearchMode=S&step=2>

**** Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability**

EVALUATIONS:

Your final grade will be determined in the following manner:

Lab Assignments	20%
Quizzes	20%
Midterm Exam	25%
Final Exam	35%

GRADING CRITERIA: (The following criteria may be changed to suite the particular course/instructor)

Please note that most universities will not accept your course for transfer credit **IF** your grade is **less than C-**.

Alpha Grade	4-point Equivalent	Percentage Guidelines		Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	95-100		C+	2.3	67-69
A	4.0	85-94		C	2.0	63-66
A-	3.7	80-84		C-	1.7	60-62
B+	3.3	77-79		D+	1.3	55-59
B	3.0	73-76		D	1.0	50-54
B-	2.7	70-72		F	0.0	00-49

COURSE SCHEDULE/TENTATIVE TIMELINE:

1	Introduction and Overview of Image Processing and Computer Vision
2	Video I/O and GUI
3	Binary Image Processing
	Quiz (topics 1 through 3)
4	Image Filtering
5	Image Enhancement
6	Image Restoration
	Midterm
7	Geometric Transformation and Image Features
8	Image Recognition
9	Compression and Water Marking
10	Morphological Processing
	Final Exam (topics 1 through 10)

STUDENT RESPONSIBILITIES:

- All assignments must be completed as individual efforts unless the instructor states otherwise;
- Tests must be written as scheduled by the Instructor;
- Students must average at least 50% on the tests combined in order to receive credit.
- Students must average at least 50% on the assignments in order to receive credit.
- Students are not allowed to attempt final exam if the attendance is less than 80%.

STATEMENT ON PLAGIARISM AND CHEATING:

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the College Calendar at <http://www.gprc.ab.ca/programs/calendar/> or the College Policy on Student Misconduct: Plagiarism and Cheating at <https://www.gprc.ab.ca/about/administration/policies>