



WINTER 2018

ECE 8220 – Digital Image Processing

COURSE DESCRIPTION:

Study of digital camera images in terms of image structures, visual patterns and the application of topological methods in classifying and image retrieval.

COURSE OBJECTIVE:

The main objective of this course is to investigate digital camera images using filtering, wireframes, image structures, feature (colour, shape, texture) extraction, and topological methods that facilitate image classification and content-based image retrieval.

PRE-REQUISITES:

ECE 4440 or equivalent desirable.

CONTACT HOURS:

3-hours per week

COURSE CONTENT:

Study of digital image structures and visual patterns arising from sets of pixels, image covers, linear filtering, edges, lines, ridges, corners, proximity, segmentation, separation of image regions, component analysis, moments, shapes, covering uniformity, texture, classification and feature spaces.

Additional advanced research topics as determined by the instructor.

HOMEWORK:

Bi-weekly assignments.

TEXTBOOK:

- J.F. Peters, Topology of Digital Images: Pattern Discovery in Proximity Structures, Springer, Berlin, 2013.
- J.F. Peters, 8220 course notes.
- R.C. Gonzalez, R.E. Woods, Digital Image Processing, 3rd Ed., Pearson Prentice-Hall, NY, 2008.

EVALUATION:

Your final course grade is determined by your performance in assignments, term test, and a final examination. The weighting of each of these components is as follows:

COMPONENT	NO	VALUE %	TOTAL VALUE	DETAILS / ADDITIONAL INFO
Homework / Assignments	5	20%	20	
Project	1	0%	0	
Midterm Exam	1	30%	30	
Final Examination	1	50%	50	
TOTAL			100	

INSTRUCTOR INFO:

Name: James Peters

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Email: James.Peters3@umanitoba.ca

Lab URL: <http://home.cc.umanitoba.ca/~petersii/wren/>

Office Hours: By appointment

VOLUNTARY WITHDRAW:

Friday, 16 March 2018

REQUIREMENTS/REGULATIONS

Student Responsibilities: It is the responsibility of each student to contact the instructor if he/she is uncertain about his/her standing in the course and his/her potential for receiving a failing grade. Students should also familiarize themselves with Sections 4 and 6 of the Regulations dealing with, among others, incomplete term work, deferred examinations, attendance and withdrawal, etc..

Lectures: Attendance at lectures is essential for successful completion of this course. Students must satisfy each evaluation component in the course.

ACADEMIC INTEGRITY

Students are expected to conduct themselves in accordance with the highest ethical standards of the Profession of Engineering and evince academic integrity in all their pursuits and activities at the university. As such, in accordance with the General Academic Regulations and Requirements of the University of Manitoba, Section 7.1, students are reminded that plagiarism* or any other form of cheating is subject to serious academic penalty (e.g. suspension or expulsion from the faculty or university) regardless of media

- examinations
- assignments
- laboratory reports
- term exams

A student found guilty of contributing to cheating in examinations or term assignments is also subject to serious academic penalty

Please refer any questions regarding Academic Integrity to your course instructor.

***Plagiarism:** to steal and pass off (the ideas or words of another) as one's own; use (another's production) without crediting the source