



Department of Electrical and Computer Engineering

COURSE OUTLINE

ELEC 483/583 – Digital Video Processing Spring 2017 (201701)

(see also: <http://www.ece.uvic.ca/~panagath/ELEC483/ELEC483.html>)

Instructor:

Dr. Pan Agathoklis
Phone: 721-8618
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Office Hours:

Days: Wednesdays, Fridays
Time: 11:00 a.m. – 12:00 noon
Location: EOW 423

Lectures:

Section(s): AO1/CRN 21190, AO2/CRN 21191
ELEC 583/CRN 21218
Days: Mondays and Thursdays
Time: 11:00 am – 12:50 p.m.
Location: CLE A207

Extra Lectures:

Tuesday, **January 9**, 3:00-4:20 pm in DSB C118

There will be no lecture on **January 31**.

Course Description:

Course Objectives: Introduction in the theory and practice of processing video signals.
Understanding the mathematical tools used in the analysis of multidimensional signals
Understanding hybrid video coding and video standards conversion.

Syllabus **ELEC 483/583:** Representation of digital video. Image formation models. Spatio-temporal sampling and sampling structure conversion. Two and three-dimensional motion estimation techniques. Optical flow, block-based and pel-recursive methods for motion estimation. Image and video compression methods and standards. Interframe compression and model-based methods for video compression. Digital video systems and applications. (Prerequisite: 310)

Learning Outcomes

- 1 Apply multidimensional Fourier and z Transforms to analyse video signals
- 2 Interpret the multidimensional sampling theorem using lattices
- 3 Interpret video sampling and sampling rate conversion
- 4 Illustrate the video standards conversion
- 5 Use Motion Estimation and Motion Compensation for video frame prediction
- 6 Demonstrate the foundations of hybrid video coding
- 7 Illustrate the principles of video coding standards

Required Text:

Title: Video Processing and Communications
Author: Y. Wang, J. Osterman and Y-Q. Zhang
Publisher: Prentice-Hall
Year: 2002

Assessment:

Assignments:	5%	
Project:	15%	Due on the day of final exam.
Mid-term	25%	Date: Thursday, February 23, 2017.
Final	55%	

Note: Failure to complete the project will result in a grade of N being awarded for the course.

The final grade obtained from the above marking scheme for the purpose of GPA calculation will be based on the percentage-to-grade point conversion table as listed in the current Undergraduate Calendar.

ELEC 483: Assignment of E grade and supplemental examination for this course will be at the discretion of the Course Instructor. The rules for supplemental examinations can be found in the current Undergraduate Calendar.

<http://web.uvic.ca/calendar2017-01/undergrad/info/regulations/grading.html>

Note to students: Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact the Chair of the Department by email or the Chair's Secretary to set up an appointment.

Accommodation of Religious Observance: <http://web.uvic.ca/calendar2017-01/general/policies.html>

Policy on Inclusivity and Diversity: <http://web.uvic.ca/calendar2017-01/general/policies.html>

Standards of Professional Behaviour: You are advised to read the Faculty of Engineering document Standards for Professional Behaviour, which contains important information regarding conduct in courses, labs, and in the general use of facilities.

<https://www.uvic.ca/engineering/assets/docs/professional-behaviour.pdf>

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult the entry in the current Undergraduate Calendar for the UVic policy on academic integrity.

<http://web.uvic.ca/calendar2017-01/undergrad/info/regulations/academic-integrity.html>

Equality: This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for appropriate accommodation. Alternatively, you may want to contact the Resource Centre for Students with a Disability located in the Campus Services Building.

The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.

Course Lecture Notes: Unless otherwise noted, all course materials supplied to students in this course have been prepared by the instructor and are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.