ELEC 459  Applications of Digital Signal Processing Techniques

Term – Spring 2018 (201801)

Instructor
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Office Hours
Days: Wednesdays
Time: 14:40 – 16:40
Location: EOW 427

Course Objectives
To learn the structure, principles, implementation, and applications of digital signal processing systems

Learning Outcomes
Working knowledge of signal sampling, digital filtering and signal interpolation; working knowledge of FFT, DCT, two-channel based filter banks and adaptive filtering; working knowledge DCT based JPEG, adaptive system identification and channel estimation techniques, and restoration and compression of audio signals and digital images.

Syllabus

Introduction
Motivation and structure of DSP systems.

Analysis of Discrete Signals
1-D and 2-D z transform, Discrete Fourier transform, and Discrete cosine transform

JPEG standard

Digital Filters and Filter Banks

Signal Interpolation

De-Noising and Compression of Digital Signals

Adaptive Filtering

A-Section: A01 CRN21123
Days: Tuesdays, Wednesdays & Fridays
Time: 11:30 – 12:20
Location: Elliott 062
Assignment Marker: Elhoshy Mostafa
Lab instructor: Alhammuri Khalid

B01 (21124) Mon 16:00-18:50 EOW B215
Dates: Jan. 22, Feb. 05, Feb. 26, Mar. 12
Assignment Marker: Elhoshy Mostafa
Lab instructor: Alhammuri Khalid

Required Text
Title: Same as course name (course-pack)
Author: Wu-Sheng Lu
Publisher: UVic Bookstore

Optional Text
Title:
Author:
Publisher:
References: See the course pack.

Assessment:

Assignments: 10 % (Due dates to be given in class)
Labs: 15 %
Mid-term: 20 % Date: Feb. 21, Wednesday.
Final Exam: 55 %

Note:
Failure to complete all laboratory requirements 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.
https://web.uvic.ca/calendar2018-01/undergrad/info/regulations/grading.html

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.
https://web.uvic.ca/calendar2018-01/undergrad/info/regulations/exams.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 Assistant to set up an appointment.

Accommodation of Religious Observance:
https://web.uvic.ca/calendar2018-01/undergrad/info/regulations/religious-observance.html

Policy on Inclusivity and Diversity:
https://web.uvic.ca/calendar2018-01/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.
https://web.uvic.ca/calendar2018-01/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.