University of Victoria
Faculty of Engineering | Electrical and Computer Engineering
Engineering Office Wing Room 448 PO Box 1700 STN CSC Victoria BC V8W 2Y2 Canada
T 250-721-6036 | ecesec@uvic.ca |

COURSE OUTLINE

ECE 310 Digital Signal Processing I

Term –SUMMER 2020 (202005)

Instructor

Dr. Michael McGuire
Phone: (250) 721-8684
E-mail: mmcguire@uvic.ca

Office Hours

Days: Wednesdays
Time: 1:00 PM – 3:00 PM
Online: Zoom Meeting (Link on CourseSpaces page)

Course Objectives

- Understand the basics of discrete time signal processing.
- Present the basic mathematics for sampling including which signals can be uniquely represented with samples and the source of the ambiguity.
- Describe linear time invariant systems and how these systems can be used to process signals for engineering applications.
- Introduce the mathematical transform techniques used to simplify signal processing calculations. Show how these transforms can be used for designing signal processing systems.
- Extend the time/frequency relationships for continuous time signals to sampled/discrete-time signals.

Learning Outcomes

- Explain significance of the sampling theorem and use it in the context of discrete-time processing of continuous-time signals
- Understand linearity, time invariance and convolution for discrete time systems and signals.
- Be able compute the time-domain and frequency-domain responses of discrete-time filters.
- Analyze discrete-time systems/signals using Continuous-time Fourier, Discrete-Time Fourier, and z-transforms

Syllabus

1. An Introduction to Signals and Sampling
2. A Review of Sinusoidal Signals
3. Sampling and Aliasing
4. Discrete-Time Systems
5. The Discrete-Time Fourier Transform
6. The Discrete Fourier Transform
7. The Z-transform
8. Digital Filters
9. Implementation of Digital Filters

A-Section(s): A01 and A02 / CRN 30307 and 30308
Days: Monday and Thursday
Time: 10:00-11:20 AM
Link: Zoom Meeting Link

Tutorial : T01 / CRN 30309
Day: Wednesday[1]
Time: 1:30-2:20 PM
Link: TBD

[1] Tutorials will only be held in weeks before midterms and final exam.

Required Textbook

Title:	Digital Signal Processing Using MATLAB
Author:	F. Gebali and A. Youssef
Publisher:	University of Victoria Press
Year:	2020

Optional Textbook

Title:	DSP First, Second Edition
Author:	J.H. McClellan, R.W. Schafer, and M.A. Yoder
Publisher:	Pearson Education, Inc.
Year:	2016.

Online Course Delivery:
As this course will be conducted online during this term, students will need to complete assignments/labs online. The students will require access to a computer which has the following software installed: MATLAB with the signal processing toolbox and Simulink. As University of Victoria student, you can download MATLAB for installation on your own machine from links on the MATLAB student page here: https://matlab.engr.uvic.ca/student/. Click on the "Gain TSH Access" link

References:

Assessment:

Assignments:	20 %	Due Dates: TBD
Mid-term	40 %	Date: June 4, July 9 during class time (each exam worth 20%).
Final Exam	40 %	

Important: All deadlines and schedules for this course will reference Pacific Daylight Time.

Note: Failure to pass the final exam will result in a failing grade 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://www.uvic.ca/calendar2020-05/undergrad/index.php#/policy/S1AAgoGuV?bc=true&bcCurrent=14%20-%20Grading&bcItemType=policies

Assignment of an 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://www.uvic.ca/calendar2020-05/undergrad/index.php#/policy/SJ2Rxoz_N?bc=true&bcCurrent=13%20-%20Examinations&bcItemType=policies

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.

Course Withdrawal Deadlines:

- May 16, 2020: Withdrawal with 100% reduction of tuition fees
- June 6, 2020: Withdrawal with 50% reduction of tuition fees
- July 1, 2020: Last day for withdrawal (no fees returned)

Accommodation of Religious Observance:
https://www.uvic.ca/calendar2020-05/undergrad/index.php#/policy/r1q0gofdN?bc=true&bcCurrent=10%20-%20Accommodation%20of%20Religious%20Observance&bcItemType=policies

Policy on Inclusivity and Diversity:

Engineering: https://www.uvic.ca/engineering/about/equity/index.php
Academic Calendar: https://www.uvic.ca/calendar2020-05/undergrad/index.php#/policy/HkQ0pzdAN

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

Academic Integrity

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://www.uvic.ca/calendar2020-05/undergrad/index.php#/policy/Sk_0xsM_V?bc=true&bcCurrent=08%20-%20Policy%20on%20Academic%20Integrity&bcItemType=policies

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 an appropriate accommodation. Alternatively, you may want to contact the Centre for Accessible Learning located in the Campus Services Building. https://www.uvic.ca/services/cal/. The University of Victoria is committed to promoting, providing, and protecting a positive, 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.

Sexualized Violence Prevention and Response at Uvic:

UVic takes sexualized violence seriously, and has raised the bar for what is considered acceptable behaviour. We encourage students to learn more about how the university defines sexualized violence and its overall approach by visiting www.uvic.ca/svp. If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support please contact the sexualized violence resource office in Equity and Human Rights (EQHR). Whether or not you have been directly impacted, if you want to take part in the important prevention work taking place on campus, you can also reach out:

Where: Sexualized violence resource office in EQHR; Sedgewick C119
Phone: 250.721.8021
Email: svpcoordinator@uvic.ca
Web: www.uvic.ca/svp

Office of the Ombudsperson:

The Office of the Ombudsperson is an independent and impartial resource to assist with the fair resolution of student issues. A confidential consultation can help you understand your rights and responsibilities. The Ombudsperson can also

clarify information, help navigate procedures, assist with problem-solving, facilitate communication, provide feedback on an appeal, investigate and make recommendations. Phone: 250-721-8357; Email: ombuddy@uvic.ca; Web: https://uvicombudsperson.ca/