ECE310: Digital Signal Processing I

Territory Acknowledgement

We acknowledge and respect the Lək̓ʷəŋən (Songhees and Xʷsepsəm/Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.

Course Dates

CRN(s):	Section A01 CRN: 30284
	Section A02 CRN: 30285
Term:	2025
Course Start:	2025-05-07
Course End:	2025-08-16
Withdrawal with 100% reduction of tuition fees:	2025-05-19
Withdrawal with 50% reduction of tuition fees:	2025-06-08
Last day for withdrawal (no fees returned):	2025-07-02

Scheduled Meeting Times (M=Mon, T=Tue, W=Wed, R=Thu, F=Fri)

Section:	Location:	Classes Start:	Classes End:	Days of week:	Hours of day:	Instructor:
A01	HSD A240	2025-05-07	2025-08-01	MR	10:00-11:20	
A02	HSD A240	2025-05-07	2025-08-01	MR	10:00-11:20	
T01		2025-05-07	2025-08-01	NULL		

Instructor(s)

Name: **Le Hung Nguyen**   E-mail: lehung.nguyen.27 at gmail dot com

Course Pre- & Co-requisites

Prerequisites

- Complete 1 of:
  - ECE260 - Continuous-Time Signals and Systems (1.5)
  - ELEC260 - Continuous-Time Signals and Systems (1.5)

TA Information

- Marker TA: Sandar Myint (sandarmyint@uvic.ca)
- Tutorial TA: TBD

Centre for Accessible Learning (CAL)

The University of Victoria is committed to creating a learning experience that is as accessible as possible. If you are registered with the Centre for Accessible Learning and anticipate or experience any barriers to learning in this course, please feel welcome to discuss your concerns with me. If you are a student with a disability or chronic health condition, you can meet with a CAL advisor to discuss access and accommodations.

- How to contact CAL: https://www.uvic.ca/accessible-learning/students/how-to-register/index.php

Academic Concessions

The University recognizes its responsibility to offer academic concessions to students whose ability to complete course requirements is interrupted by unexpected and unavoidable circumstances or conflicting responsibilities.

- Review the Academic Concession Regulation and website.

Course Objectives

- Understand the generation of discrete-time signals through the sampling process and their spectral representation.
- Understand mathematical representation and properties of digital signal processing (DSP) systems.
- Be able to analyze typical DSP systems, e.g., digital filters and applications.
- Introduce the z- transform and its relation to the Laurent series.
- Evaluation of the inverse z transform using complex series and contour integrals.
- Be able to apply the z transform for representation and analysis of DSP systems.
- Understand the processing of continuous time signals using DSP systems.
- Introduce the discrete-Fourier transform and the use of fast Fourier transforms for its evaluation.
- Introduction to the design of DSP systems

Learning Outcomes

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

Syllabus

Chapter 6 Continuous-Time Fourier Transform (Sampling) Chapter 8 Discrete-Time Signals and Systems Chapter 9 Discrete-Time Linear Time-Invariant Systems Chapter 10 Discrete-Time Fourier Series Chapter 11 Discrete-Time Fourier Transform Chapter 12 Z Transform
Additional Material:

- Sampled signals and Linear Time Invariant Systems
- Fast Fourier Transform

Textbook

Required Text
Title: Signals and Systems
Author: M.D. Adams
Publisher/Year: UVic Press, 2022, 5th Edition
Link: https://ece.engr.uvic.ca/~frodo/sigsysbook/

Course Delivery

This cours is offered face-to-face.

Learning & Teaching Technologies

- Course lecture notes, assignments, and grades access are provided by the course's BrightSpace page here: https://bright.uvic.ca/d2l/home/418562
- The course lectures will be delivered face-to-face.
- Many of the assignments will need to be completed using MATLAB.
  - University of Victoria students can download MATLAB for free from here: https://www.uvic.ca/systems/support/computerssoftware/softwaredistribution/matlab.php.
  - Some students have used MATLAB online to complete many assignments in the past. It may work for you but I cannot guarantee that it will work for all assignments.

Assessment

Assessment Tool	Weight	Date
Assignments	20%	TBD
Mid-term	2 X 20% = 40%	June 5 and July 3
Final Exam	40 %	TBD

Notes

- 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.
- Coursework Mark Appeals: All marks must be appealed within 7 days of the mark being posted.
- A supplemental exam will not be offered in this course.

Providing Feedback

Student's are encouraged to provide feedback to the instructor via the Discussion tool on the Course's BrightSpace page or via direct emails.

General Information:

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 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.

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 Centre for Accessible Learning. 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.

Academic Integrity requires commitment to the values of honesty, trust, fairness, respect, and responsibility. It is expected that students, faculty members and staff at the University of Victoria, as members of an intellectual community, will adhere to these ethical values in all activities related to learning, teaching, research and service. Any action that contravenes this standard, including misrepresentation, falsification or deception, undermines the intention and worth of scholarly work and violates the fundamental academic rights of members of our community. This policy is designed to ensure that the university's standards are upheld in a fair and transparent fashion.

Attendance: Students are expected to attend all classes in which they are enrolled. An academic unit may require a

student to withdraw from a course if the student is registered in another course that occurs at the same time.

An Instructor may refuse a student admission to a lecture, laboratory, online course discussion or learning activity, tutorial or other learning activity set out in the course outline because of lateness, misconduct, inattention or failure to meet the responsibilities of the course set out in the course outline. Students who neglect their academic work may be assigned a final grade of N or debarred from final examinations.

Students who do not attend classes must not assume that they have been dropped from the course by an academic unit or an instructor. Courses that are not formally dropped will be given a failing grade, students may be required to withdraw and will be required to pay the tuition fee for the course.

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Resources for Students:

- UVic Learn Anywhere
- Library resources
- Indigenous Student Services (ISS)
- Centre for Academic Communication (CAC)
- Math & Stats Assistance Centre
- Learning Assistance Program (LSP)

- [Community-Engaged Learning (CEL)](#)
- [Academic Concessions Regulation](#)
- [Academic Concessions & Accomodations](#)
- [Centre for Accessible Learning (CAL)](#)
- [Academic Accommodation & Access for students with disabilities - Policy AC1205](#)
- [Student Groups & Resources](#)
- [Student Wellness](#)
- [Office of the Ombudsperson](#)

University Statements and Policies:

- [Information for all students](#)
- [Attendance](#)
- [Creating a respectful, inclusive and productive learning environment (general policies)](#)
- [Accommodation of Religious Observance](#)
- [Student Conduct](#)
- [Academic Integrity](#)
- [Non-academic Student Misconduct](#)
- [Standards of Professional Behaviour (Faculty of Engineering and Computer Science)](#)
- [Academic Accommodations and Accessibility](#)
- [Accessibility](#)
- [Diversity & Inclusion Supports (Faculty of Engineering and Computer Science)](#)
- [Diversity / EDI (VPAC's Commitment](#)
- [Equity statement](#)
- [Sexualized Violence Prevention and Response](#)
- [Discrimination and Harassment Policy](#)