

Fall 2025 ECE 515: Information Theory (Units: 1.5)

Territory Acknowledgement

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

Key Dates and Schedules

Section	CRN	Schedule	Location	Class Start	Class End	Days of Weeks*	Hours of Day	Instructor
A01	11030	Lecture	ECS 108	2025-09-03	2025-12-20	TWF	10:30-11:20	Aaron Gulliver
A02	11031	Lecture	ECS 108	2025-09-03	2025-12-20	TWF	10:30-11:20	Aaron Gulliver

*M=Monday, T=Tuesday, W=Wednesday, R=Thursday, F=Friday.

Withdrawal without reduction of tuition fees: 2025-09-16

Withdrawal with 50% reduction of tuition fees: 2025-10-07

Last day for withdrawal (no fees returned): 2025-10-31

Instructor(s), Contact Information, and Office Hours

Name: **Aaron Gulliver**

Office: EOW 325

Phone: 250 721 6028

Email: agullive@uvic.ca

Office Hours: Wednesday 11:30 AM - 1:30 PM

TA Information

Posted on course website: <https://www.ece.uvic.ca/~agullive/515.html>

Course Description

Information theory and its relationship to probability, statistics, and data compression; entropy, relative entropy and mutual information; Huffman coding, arithmetic coding and Lempel-Ziv coding; channel capacity; group codes; generator and parity check matrices; Hamming codes and bound; bounds on the dimension of a linear code; random coding bounds; code construction.

Learning Outcomes

At the completion of this course, the student should:

1. Understand the fundamentals of information theory.
2. Understand the principles and limits of data compression and transmission.
3. Know the basic concepts regarding communications over noisy channels.
4. Understand the need for error correcting codes in data communications and storage.

Textbook & Course Materials

Optional Text

Title: Elements of Information Theory

Author: Thomas M. Cover and Joy A. Thomas

Publisher/Year: Wiley, 2006

Course Notes

Title: ELG 5170 Information Theory

Author: Jean-Yves Chouinard

Reference

Title: Information Theory Lecture Notes

Author: Stefan M. Moser

Course Delivery

Face-to-face.

Learning & Teaching Technologies

- Brightspace: <https://bright.uvic.ca/d2l/home//437186>
- Course Website: <http://www.ece.uvic.ca/~agullive/515.html>

Assessment

** Type**	Weight	Date
5 Assignments	35%	TBD
Mid-term	25%	Wednesday, October 22, 2025
Final Exam	40%	TBD

Each assignment is worth 7% of the final grade.

Notes

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 [Graduate Calendar](#).

Coursework Mark Appeals: All marks must be appealed within 7 days of the mark being posted.

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.

Academic Integrity

[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. See the [Policy on Academic Integrity](#) in the Graduate Academic Calendar for further information.

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.

See further information on [attendance](#) in the Graduate Academic Calendar.

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.

Academic Concession

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](#) in the Graduate Academic Calendar and [website](#).

Grading System

The University of Victoria follows a percentage grading system in which the instructor will submit grades in percentages. The University will use the following Senate approved standardized grading scale to assign letter grades. Both the percentage mark and the letter grade will be recorded on the academic record and transcripts.

F	D	C	C+	B-	B	B+	A-	A	A+
0-49	50-59	60-64	65-69	70-72	73-76	77-79	80-84	85-89	90-100
Grades	Description								
A+	Exceptional work. Technically flawless and original work demonstrating insight, understanding and independent application or extension of course expectations; often publishable.								
A	Outstanding work. Demonstrates a very high level of integration of material demonstrating insight, understanding and independent application or extension of course expectations.								
A-	Excellent work. Represents a high level of integration, comprehensiveness and complexity, as well as a mastery level of relevant techniques/concepts.								
B+	Very good work. Represents a satisfactory level of integration, comprehensiveness and complexity; demonstrates a sound level of analysis with no major weakness.								
B	Acceptable work that fulfills the expectations of the course. Represents a satisfactory level of integration of key concepts/procedures. However, comprehensiveness or technical skills may be lacking.								
B- , C+ , C, D	Unacceptable work revealing some deficiencies in knowledge, understanding or techniquesy. Represents an unacceptable level of integration, comprehensiveness and complexity. Mastery of some relevant techniques or concepts lacking.								
F	Failing grade. Unsatisfactory performance. Wrote final examination and completed course requirements.								

Student Experience of Learning (SEL)

I value your feedback on this course. Towards the end of term you will have the opportunity to complete a confidential Student Experience of Learning (SEL) survey regarding your learning experience. The survey is vital to providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future. When it is time for you to complete the survey, you will receive an email inviting you to do so. If you do not receive an email invitation, you can go directly to the [SEL site](#)

You will need to use your UVic NetLink ID to access the survey, which can be done on your laptop, tablet or mobile device. I will remind you closer to the time, but please be thinking about this important activity, especially the following three questions, during the course.

- What strengths did your instructor demonstrate that helped you learn in this course?
- Please provide specific suggestions as to how the instructor could have helped you learn more effectively.
- Please provide specific suggestions as to how this course could be improved.

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](#) 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.

Resources for students

- a. [UVic Learn Anywhere](#) is the primary learning resource for students that offers many learning workshops and resources to help students with academics and learning strategies.
- b. [Library resources](#)
- c. [Indigenous Student Support \(ISS\)](#).
- d. [Academic Skills Centre \(ASC\)](#).
- e. [Math & Stats Assistance Centre \(MSAC\)](#).
- f. [Learning Strategies Program \(LSP\)](#).
- g. [Community-Engaged Learning \(CEL\)](#).
- h. [Academic concession](#)
- i. [Academic accommodation](#)
- j. [Academic accommodation & access for students with disabilities](#)
- k. [Student groups and resources](#)
- l. [Student wellness](#)
- m. [Ombudsperson](#)

University statements and policies

- a. [University Calendar - Information for all students](#)
- b. [Accommodation of Religious Observance](#)
- c. [Student Conduct](#)
- d. [Non-academic Student Misconduct](#)
- e. [Academic Accommodations and Accessibility](#)
- f. [Diversity / EDI – VPAC commitment](#)
- g. [Sexualized Violence Prevention and Response](#)
- h. [Discrimination and Harassment](#)

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