University of Victoria

Department of Electrical and Computer Engineering

ELEC 515 **Information Theory** **Fall 2016**

COURSE OUTLINE

Instructor Dr. T. Aaron Gulliver

Office:	EOW 325
Phone:	721-6028
Email:	agullive@ece.uvic.ca
Office Hours:	Tuesday 12:30–14:30

Lectures

Tuesday	11:30 – 12:20	ECS 104
Wednesday	11:30 – 12:20	ECS 104
Friday	11:30 – 12:20	ECS 104

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.

Web Site

`http://www.ece.uvic.ca/~agullive/515.html`

Course Notes

ELG 5170 Information Theory: Course Notes, Jean-Yves Chouinard

Optional Text

Elements of Information Theory, Second Edition, Thomas M. Cover and Joy A. Thomas, Wiley, New York, 2006

Assessment

Five Assignments	30%	
Midterm Test	20%	Friday, October 21, 2016
Final Exam	50%	

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

Assignments

Each assignment is worth 6% of the final grade. Completed assignments can be delivered to EOW 325 or submitted at lecture time.

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.
http://web.uvic.ca/calendar2016-09/grad/academic-regulations/grading.html

Note to Students

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

Accommodation of Religious Observance

http://web.uvic.ca/calendar2016-09/general/policies.html

Policy on Inclusivity and Diversity

http://web.uvic.ca/calendar2016-09/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.
http://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 Graduate Calendar for the UVic policy on academic integrity.
http://web.uvic.ca/calendar2016-09/grad/academic-regulations/academic-integrity.html

Course Materials

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.

Learning Outcomes

At the completion of this course, the student should:
1. Understand the fundamentals of information theory.
2. Understand the principles and fundamental limits of data compression, storage 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 systems.