ECE 350 - Communications Theory and Systems 1

Term – Fall 2018 (201809)

Instructor

Dr.   Peter Driessen
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Office Hours

Days: Monday
Time: 1:15-2:00
Location: EOW 435

Course Objectives

To learn how to describe and analyze analog and digital communication systems

Learning Outcomes

1	Describe a communications system at a block diagram level
2	Describe the operation of each block
3	Explain general IQ modulation and demodulation of a carrier wave
4	Explain special cases of analog IQ modulation, including AM, FM, SSB
5	Describe the time domain representation of AM, FM, SSB signals
6	Analyze the spectrum of AM, FM, SSB signals
7	Describe a digital baseband signal as a sum of weighted delayed pulses
8	Describe different pulse shapes and their effect on the occupied spectrum
9	Describe signal constellation and digital modulations ASK, FSK, PSK
10	Identify signals on a time-frequency diagram waterfall display
11	Select components (blocks) to build a specified system (ASK, PSK, FSK, AM, FM, SSB)
12	Design, build and test a specified communications system using software defined radio
13	Analyze the link budget for a communications system

Syllabus

Principles of amplitude, frequency and phase modulation. Modulators, mixers and demodulators. Design of complete and representative transmission systems using link budget. Qualitative treatment of modulation systems in the presence of noise. Elementary digital communications, PSK, FSK.

· Definition of telecommunications
· Idea of carrier wave, real and complex signals
· Link budget
· Baseband message signals
· General amplitude/phase modulation
· General demodulation and receiver structures
    software defined radio
· AM, FM, SSB, ASK, PSK, FSK QAM as special cases
· Noise
· Matched filtering

A-Section(s): A01 / CRN 10936
Days: MR
Time: 10:00-11:15
Location: ELL 167

Marker TAs

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Lab TAs

B01	Ho	Danh Huu	danhho@uvic.ca
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Required Text
Online notes and online lab manual

References: online

Assessment:

Assignments:	12.5%	
Labs	12.5%	
Mid-term	12.5% each	Date: 4 October, 8 November
Final Exam	50%	

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

There will be no supplemental examination for this course.

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 Secretary to set up an appointment.

Accommodation of Religious Observance:
https://web.uvic.ca/calendar2018-09/undergrad/info/regulations/religious-observanc.html

Policy on Inclusivity and Diversity:
https://web.uvic.ca/calendar2018-09/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.
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/calendar2018-09/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.