ELEC 310 – Digital Signal Processing

Term – Spring 2016 (201601)

Instructor
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Office Hours
Days: Wed
Time: 1:30 – 3:30 pm
Location: EOW 307

Course Objectives
To provide the student with basic knowledge about digital signal processing and the mathematic methods used within this field

Learning Outcomes
a. Categorize digital systems based on their properties (such as linearity, time invariance, causality, memory, invertibility, and BIBO stability)
b. Identify basic properties of convolution and compute the convolution of discrete signals
c. Explain the significance of convolution in the context of discrete LTI systems
d. Use the properties of the Fourier and Z transforms in problem solving.
e. Evaluate forward/inverse Fourier and Z transforms of discrete signals
f. Demonstrate competency in working with both time- and frequency-domain representations of discrete signals and systems
g. Design a discrete time filtering algorithm based on given requirements
h. Use Matlab effectively for the analysis of digital signals and for the design of basic digital systems
i. Explain the significance of the sampling theorem and use it in the context of discrete processing of continuous time signals

Syllabus
a. Introduction
b. Complex Analysis
c. Discrete-Time Signals and Systems (Section 2.1-2.5)
d. The Fourier Series and Fourier Transform (Section 2.6-2.9)
e. The Z Transform (Section 3.0-3.3)
f. Applications of the Z Transform (Section 3.4-3.7)
g. Sampling of Continuous-Time Signals (Section 4.0-4.5)
h. Filter Design Concepts (Section 6.0-6.5)
i. The Discrete Fourier Transform (Section 8.0-8.9,9.0-9.2)
A-Section(s): A01 / CRN 211105, A02/CRN 21106
Days:  TWF
Time:  10:30-11:20
Location: ECS 125

Required Text
Title:  Discrete-Time Signal Processing
Author: Oppenheim and Schafer
Publisher: Prentice Hall
Year: 2009

References: to be posted on CourseSpaces.

Assessment:
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<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Assignments</td>
<td>20%</td>
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<tr>
<td>Labs</td>
<td>%</td>
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<tr>
<td>Mid-terms (2)</td>
<td>40%</td>
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<tr>
<td>Final</td>
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Due Dates for Assignments: to be posted on CourseSpaces

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
http://web.uvic.ca/calendar/GI/GUPo.html

Policy on Inclusivity and Diversity
http://web.uvic.ca/calendar/GI/GUPo.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.

Updated December 15, 2015
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.