ECE 8150 – DIGITAL SIGNAL PROCESSING
COURSE OUTLINE – WINTER 2015

COURSE DESCRIPTION:
The course starts with a review of basic concepts of signal processing: classification of signals and systems, system modeling and analysis; to take on more advanced and modern topics in digital signal processing such as subNyquist sampling, time-varying analysis and filtering, linear prediction and power spectrum estimation.

Lectures: 2 days each week, 1.5 hours each day

COURSE OBJECTIVE:
The course covers fundamentals of discrete-time signals, systems and modern digital signal processing. Intended to be a first course on the topic at the graduate level to prepare students for subsequent courses such as Signal Theory and Image Processing.

PRE-REQUISITES:

CONTACT HOURS:
Two times a week, 1.5 hours each.

COURSE CONTENT:
1. Discrete-Time Signals and Systems
2. Z-Transform
3. Frequency Analysis of Signals and Systems
4. The DFT and the FFT
5. Digital Filters
6. Sampling
6. Advanced topics (signal denoising, Fourier integrals and the stationary phase method, time-frequency analysis, linear prediction)

COURSE WEBSITE:
www.ee.umanitoba.ca

HOMEWORK:

TEXTBOOK: COURSE:

TEXTBOOK: RECOMMENDED REFERENCE:
Discrete-Time Signal Processing by Oppenheim and Schafer, Prentice-Hall

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April 7, 2014
EVALUATION:

Your final course grade is determined by your performance in assignments, term test, and a final examination. The weighting of each of these components is as follows:

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<thead>
<tr>
<th>COMPONENT</th>
<th>NO</th>
<th>VALUE %</th>
<th>TOTAL VALUE</th>
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</thead>
<tbody>
<tr>
<td>Homework/Assignments</td>
<td>5</td>
<td>7%</td>
<td>35</td>
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<tr>
<td>Midterm Exam</td>
<td>1</td>
<td>30%</td>
<td>30</td>
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<tr>
<td>Final Examination</td>
<td>1</td>
<td>35%</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td></td>
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INSTRUCTOR INFO:

Name: Dr. Gabriel Thomas
Office: E3-555 EITC Bldg.
Tel: 474-6758
Email: Gabriel.Thomas@ad.umanitoba.ca

Office Hours:

VOLUNTARY WITHDRAW:

Thursday, Mar. 19, 2015

REQUIREMENTS/REGULATIONS

- Student Responsibilities: It is the responsibility of each student to contact the instructor if he/she is uncertain about his/her standing in the course and about his or her potential for receiving a failing grade. Students should also familiarize themselves with Sections 4 and 6 of the Regulations dealing with incomplete term work, deferred examinations, and attendance and withdrawal.
  - Lectures: Attendance at lectures is essential for successful completion of this course. Students must satisfy each evaluation component in the course.

ACADEMIC INTEGRITY:

Students are expected to conduct themselves in accordance with the highest ethical standards of the Profession of Engineering and evince academic integrity in all their pursuits and activities at the university. As such, in accordance with the General Academic Regulations and Requirements of the University of Manitoba, Section 7.1, students are reminded that plagiarism* or any other form of cheating is subject to serious academic penalty (e.g. suspension or expulsion from the faculty or university) regardless of media.

- examinations
- assignments
- laboratory reports
- term exams

A student found guilty of contributing to cheating in examinations or term assignments is also subject to serious academic penalty.

*Plagiarism: to steal and pass off (the ideas or words of another) as one's own; use (another's production) without crediting the source