ECE 4830 – Signal Processing 2  
Winter 2015

Course Objectives

This course provides an introduction on basic technologies for processing discrete-time signals and systems. The major course contents include discrete-time signal processing in time, frequency, and z-domains, and the analysis methods for discrete-time linear systems and digital filters. Laboratories will be used to provide students with hands-on experience in application of many of the concepts learned in the course. It is a fundamental course to digital signal processing (DSP) and digital communications.

Course Content

The following topics will be covered:

- Introduction to discrete-time signals and systems
- Impulse response characterization of LTI systems
- Discrete-Time Fourier Series (DTFS)
- Discrete-Time Fourier Transform (DTFT)
- Z-Transform
- General solution of LTI systems
- Discrete-time filters and time-varying filtering.

Textbook


Other References


Requirements/Regulations

- Attendance at lectures and laboratories is essential for successful completion of this course. Students must satisfy each evaluation component in the course to receive a final grade.
- It is the responsibility of each student to contact the instructor in a timely manner if he or she is uncertain about his or her standing in the course and about his or her potential for receiving a failing grade. Students should also familiarize themselves with the University’s *General Academic Regulations*, as well as Section 3 of the Faculty of Engineering *Academic Regulations* dealing with incomplete term work, deferred examinations, attendance and withdrawal.
- No programmable devices or systems (such as calculators, PDAs, iPods, iPads, cell phones, wireless communication or data storage devices) are allowed in examinations unless approved by the course instructor.

Important Dates

- **Term Test**  
  February 12th, 2015
- **Voluntary Withdrawal Deadline**  
  March 19th, 2015
- **Mid-term Break**  
  February 16–20, 2015  
  No classes or examinations
- **Good Friday**  
  April 3rd, 2015  
  No classes or examinations
Learning Outcomes

1. Understand fundamentals of discrete-time signals and systems.
2. Analyze discrete-time systems using time domain technologies.
3. Analyze discrete-time systems using frequency domain technologies.
5. Apply general solution of LTI systems and discrete-time filters.

Expected Competency Levels

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Evaluation

The final course grade is determined by the student's performance on assignments, in laboratories, and on examinations. Students must complete all the laboratories in order to be eligible to receive a passing grade.

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<th>Component</th>
<th>Value (%)</th>
<th>Method of Feedback</th>
<th>Learning Outcomes Evaluated</th>
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* Method of Feedback: F - Formative (written comments and/or oral discussion), S - summative (numerical grade)

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 on Academic Integrity, students are reminded that plagiarism or any other form of cheating in examinations, term tests, assignments, projects, or laboratory reports is subject to serious academic penalty (e.g. suspension or expulsion from the faculty or university). A student found guilty of contributing to cheating by another student is also subject to serious academic penalty.

Updated: 03 January 2015