Syllabus – Summer I 2015

Excluding materials for purchase, syllabus information may be subject to change. The most up-to-date syllabus is located within the course in HuskyCT.

Course and Instructor Information

Course Title: Signals and Systems  
Credits: 3  
Format: Blended – all course work will be done in HuskyCT and exams will be given in class (more information to follow from instructor)  
Prerequisites: ECE 2001W  
Professor: Dr. Cuong Do

Email: cuong.do@engineering.uconn.edu  
Telephone: no telephone  
Office Hours/Availability: Emails can be sent to my email as indicated at any time. I will address your questions and issues every morning as indicated. There are no office hours on campus.

Course Materials

Required course materials should be obtained before the first day of class.

Texts are available through a local or online bookstore. The UConn Co-op carries many materials that can be shipped via its online Textbooks To Go service. For more information, see Textbooks and Materials on our Enrolled Students page.

Required Materials:


Access to WebEx:

You will be using WebEx, an electronic web conferencing tool, to participate in live discussions on homework problems. This is mandatory. Be sure to read and follow the instructions provided as an attachment to this syllabus to setup WebEx on your computer or device. Use the link provided below to access WebEx for scheduled sessions. This information is also available in the course under Syllabus & Calendar on the course menu. Make sure you do this as preparation ahead of the start of the course.

https://uconn.webex.com

Group Discussion Board:

Each group of at most 3 members is provided with a discussion board for group communication. Questions should be discussed between group members before sending to the instructor to avoid duplicates.

Course Description

Representation of signals in the time and frequency domains. Fourier series. Fourier and Laplace transform methods for analysis of linear systems. Introduction to state space models. Introduction to sampling and discrete systems analysis via z transforms.
Course Objectives

By the end of the semester, students should be able to:

1. Apply Fourier series, Fourier transform, Laplace transform, and z transform; transform properties
2. Derive the input-output relationship for linear systems
3. Solve for the zero-input response, impulse response, zero-state response, total response of a continuous-time system using convolution given a continuous-time signal
4. Use Laplace transform to calculate the zero-input response, zero-state response, total response of a continuous-time system given a continuous-time signal
5. Understand the concept of sampling
6. Solve for the zero-input response, zero-state response, total response of a discrete-time system using convolution given a discrete-time signal
7. Use z transform to calculate the zero-input response, impulse response, zero-state response, total response of a discrete-time system given a discrete-time signal
8. Have knowledge of filter design
9. Solve state variable equations for a continuous time linear system
10. Use MATLAB/Simulink to for simple signal processing tasks

Course Outline

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<th>Week#</th>
<th>Day#</th>
<th>Contents</th>
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<tr>
<td>1</td>
<td>1</td>
<td>Background review</td>
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<td>2</td>
<td>Introduction to continuous-time signals and systems – Signals</td>
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<tr>
<td></td>
<td>3</td>
<td>Introduction to continuous-time signals and systems – Systems</td>
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<td>4</td>
<td>Discussion</td>
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<td>5</td>
<td>Time Domain Analysis of Continuous Time Systems - Zero-input response</td>
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<td>2</td>
<td>1</td>
<td>Impulse response – Zero-state response – Convolution - System stability</td>
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<td></td>
<td>2</td>
<td>Signal representation - Trigonometric &amp; Exponential Fourier series</td>
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<tr>
<td></td>
<td>3</td>
<td>Fourier transform and properties</td>
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<tr>
<td></td>
<td>4</td>
<td>Discussion</td>
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<td></td>
<td>5</td>
<td>Laplace transform and properties</td>
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<tr>
<td>3</td>
<td>1</td>
<td>Midterm exam (Chapter 1-4) (2 hours)</td>
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<tr>
<td></td>
<td>2</td>
<td>Frequency response and filter design</td>
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<td></td>
<td>3</td>
<td>Discrete-time signals and systems, sampling theorem</td>
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<td>4</td>
<td>Discussion</td>
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<td>5</td>
<td>Discrete-time zero-input response, impulse response, convolution, zero-state response</td>
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<td>4</td>
<td>1</td>
<td>MATLAB/Simulink</td>
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<tr>
<td></td>
<td>2</td>
<td>Z-transform and properties</td>
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<tr>
<td></td>
<td>3</td>
<td>Discrete Fourier transform, Fast Fourier transform</td>
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<td>4</td>
<td>Discussion</td>
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<td>5</td>
<td>Frequency response</td>
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<td>5</td>
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<td>Digital filters</td>
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<td></td>
<td>2</td>
<td>State space analysis</td>
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<td></td>
<td>3</td>
<td>Sample exam and problem review</td>
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<td></td>
<td>4</td>
<td>Final exam (From Chapter 5) (2 hours)</td>
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<td></td>
<td>5</td>
<td>No class (Holiday)</td>
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Discussions are held at time and location posted in the HuskyCT course
Course Requirements and Grading

Summary of Course Grading:
If your midterm score is higher

<table>
<thead>
<tr>
<th>Course Components</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>Group homework</td>
<td>35%</td>
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<tr>
<td>Midterm</td>
<td>35%</td>
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<tr>
<td>Final</td>
<td>30%</td>
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If your final score is higher

<table>
<thead>
<tr>
<th>Course Components</th>
<th>Weight</th>
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<tr>
<td>Group homework</td>
<td>35%</td>
</tr>
<tr>
<td>Midterm</td>
<td>30%</td>
</tr>
<tr>
<td>Final</td>
<td>35%</td>
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Homework
Each group submits a single submission. Homework needs to be typed then convert to PDF, or written clearly using black ink then scanned to PDF, then submitted on HuskyCT using the Assignment tool found on the course menu. Do not use pencils.

Midterm exam
Midterm is held in class on the 1st day of the 3rd week from 5:30 PM – 7:30 PM on 6/15 in ITE 125. Midterm is closed book, closed notes, no computers or communications devices except a calculator. You may bring one 8.5”x11” cheat sheet. You can bring transform tables, convolution tables.

Final exam
Final is held in class on the last day of the semester from 5:30 PM – 7:30 PM on 7/2 in ITE 125. Final is closed book, closed notes, no computers or communications devices except a calculator. You may bring one 8.5”x11” cheat sheet. You can bring transform tables, convolution tables. Exams are not cumulative.

Note: the instructor reserves the right to adjust the exam schedules as needed

Due Dates and Late Policy
Assignments are due on the dates posted in the course calendar in HuskyCT. Late submissions are penalized 50% each day except that students are given instructor’s permission.

Feedback and Grades
I will make every effort to provide feedback and grades as soon as possible. To keep track of your performance in the course, refer to My Grades in HuskyCT.

Student Responsibilities and Resources

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. This section provides a brief overview to important standards, policies and resources.

Student Code
You are responsible for acting in accordance with the University of Connecticut's Student Code. Review and
become familiar with these expectations. In particular, make sure you have read the section that applies to you on Academic Integrity:

- Academic Integrity in Undergraduate Education and Research
- Academic Integrity in Graduate Education and Research

Cheating and plagiarism are taken very seriously at the University of Connecticut. As a student, it is your responsibility to avoid plagiarism. If you need more information about the subject of plagiarism, use the following resources:

- Plagiarism: How to Recognize it and How to Avoid It
- Instructional Module about Plagiarism
- University of Connecticut Libraries’ Student Instruction (includes research, citing and writing resources)

Copyright

Copyrighted materials within the course are only for the use of students enrolled in the course for purposes associated with this course and may not be retained or further disseminated.

Netiquette and Communication

At all times, course communication with fellow students and the instructor are to be professional and courteous. It is expected that you proofread all your written communication, including discussion posts, assignment submissions, and mail messages. If you are new to online learning or need a netiquette refresher, please look at this guide titled, The Core Rules of Netiquette.

Adding or Dropping a Course

If you should decide to add or drop a course, there are official procedures to follow:
- Matriculated students should add or drop a course through the Student Administration System.
- Non-degree students should refer to Non-Degree Add/Drop Information located on the registrar’s website.

You must officially drop a course to avoid receiving an “F” on your permanent transcript. Simply discontinuing class or informing the instructor you want to drop does not constitute an official drop of the course. For more information, refer to the:

- Undergraduate Catalog
- Graduate Catalog

Academic Calendar

The University’s Academic Calendar contains important semester dates.

Academic Support Resources

Technology and Academic Help provides a guide to technical and academic assistance.

Students with Disabilities

Students needing special accommodations should work with the University's Center for Students with Disabilities (CSD). You may contact CSD by calling (860) 486-2020 or by emailing csd@uconn.edu. If your request for accommodation is approved, CSD will send an accommodation letter directly to your instructor(s) so that special arrangements can be made. (Note: Student requests for accommodation must be filed each semester.)

Blackboard measures and evaluates accessibility using two sets of standards: the WCAG 2.0 standards issued by the World Wide Web Consortium (W3C) and Section 508 of the Rehabilitation Act issued in the United States federal government.” (Retrieved March 24, 2013 from http://www.blackboard.com/platforms/learn/resources/accessibility.aspx)
Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships

The University is committed to maintaining an environment free of discrimination or discriminatory harassment directed toward any person or group within its community – students, employees, or visitors. Academic and professional excellence can flourish only when each member of our community is assured an atmosphere of mutual respect. All members of the University community are responsible for the maintenance of an academic and work environment in which people are free to learn and work without fear of discrimination or discriminatory harassment. In addition, inappropriate Romantic relationships can undermine the University’s mission when those in positions of authority abuse or appear to abuse their authority. To that end, and in accordance with federal and state law, the University prohibits discrimination and discriminatory harassment, as well as inappropriate Romantic relationships, and such behavior will be met with appropriate disciplinary action, up to and including dismissal from the University. More information is available at http://policy.uconn.edu/?p=2884.

Sexual Assault Reporting Policy

To protect the campus community, all non-confidential University employees (including faculty) are required to report assaults they witness or are told about to the Office of Diversity & Equity under the Sexual Assault Response Policy. The University takes all reports with the utmost seriousness. Please be aware that while the information you provide will remain private, it will not be confidential and will be shared with University officials who can help. More information is available at http://sexualviolence.uconn.edu/.

Software Requirements and Technical Help

- Microsoft Word
- Scanner Software
- Adobe Acrobat Reader
- Internet Browsers (such as Internet Explorer, Chrome, Firefox, etc.)

This course is facilitated online using the learning management platform, HuskyCT. If you have difficulty accessing HuskyCT, online students have access to the in person/live person support options available during regular business hours in the Digital Learning Center (www.dlc.uconn.edu). Students also have 24x7 access to live chat, phone and support documents through www.ecampus24x7.uconn.edu.

Minimum Technical Skills

To be successful in this course, you will need the following technical skills:

- Write clear handwriting
- Use scanner to scan homework as a single PDF file.
- Use electronic mail with attachments.
- Use HuskyCT

University students are expected to demonstrate competency in Computer Technology. Explore the Computer Technology Competencies page for more information.

Evaluation of the Course

Students will be provided an opportunity to evaluate instruction in this course using the University's standard procedures, which are administered by the Office of Institutional Research and Effectiveness (OIRE).

Additional informal formative surveys may also be administered within the course as an optional evaluation tool.