Sonoma State University  
School of Science and Technology  
Department of Engineering Science  
CES 400 – Linear Systems Theory, Fall 2018

Instructor Contact Information

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Office Hours: Mondays 1:00 – 3:30 PM, Tuesdays 1:00 – 2:00 PM or by appointment

General Course Information

Class Days/Time: Mondays & Wednesdays, 4:00-5:15 PM  
Classroom: 2009A  
Credit Hours: 3.0  
Prerequisites: MATH 241 (Differential Equation with Linear Algebra) or consent of instructor

Course Description

Analysis of linear time-invariant systems, correlation, convolution, impulse response, complex variables, Fourier series and transform, sampling, filtering, modulation, stability and causality, feedback and control systems, Laplace and Z-transform, fast Fourier transforms.

Course Format and Instructional Methods

The course will be taught using multiple instructional methods. These methods will include lecture, group discussion, and oral presentations. Typically, course topics will be introduced via a lecture format incorporating interpretive discussions. This course will also utilize Canvas, SSU’s learning management system, where you will interact with your classmates and with the instructor. Within the course Canvas site you will access the learning materials and syllabus; discuss issues; submit assignments; take quizzes; participate in online group activities; and share your projects. Refer to the course calendar/schedule and assignment instructions for information on where and when to submit your work.

Course Goals and Student Learning Objectives

Upon successful completion of this course, students will be able to: apply various methods that can transform signal representations in time domain to their frequency domain representations and vice-versa; use various forms signals in linear systems; use transform techniques not related to time or frequency domains but useful in solving linear systems problems; apply various transform techniques in solving linear systems problems; apply knowledge of mathematics, science, and engineering to design and analyze linear systems; analyze and interpret data; and use the technique, skills, and modern engineering tools necessary for engineering practice.
**Required Texts/Readings**

**Textbook**

**Other Readings**

Additional references and reading materials will be posted on Canvas.

**Other Equipment/Material Requirements/Software**
MATLAB/Simulink

**Tentative Course Schedule**
(Changes will be announced in class and/or on Canvas. Refer to Canvas course site for further details.)

<table>
<thead>
<tr>
<th>Topics, Readings</th>
<th>No. of Lectures</th>
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<tbody>
<tr>
<td>1. Syllabus Discussion and Introduction (Signals and Systems, MATLAB and Simulink)</td>
<td>2</td>
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<tr>
<td>2. Continuous time signals and systems</td>
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<td>3. Continuous-time linear time-invariant systems</td>
<td>3</td>
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<tr>
<td>4. Fourier series</td>
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<td>5. The Fourier transform</td>
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<td>6. Applications of the Fourier transform</td>
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<tr>
<td>7. The Laplace transform</td>
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<tr>
<td>8. Discrete time signal and systems</td>
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<tr>
<td>9. Discrete time linear time-invariant systems</td>
<td>3</td>
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<tr>
<td>10. The z-transform</td>
<td>2</td>
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<tr>
<td>11. Fourier transform of discrete-time signals</td>
<td>4</td>
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<td>Final project discussion and presentation</td>
<td>2</td>
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<tr>
<td>Midterm and Final Exam</td>
<td>2</td>
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</table>
Course Requirements & Grading Policy: Refer to Canvas course site for further details.

Class Participation 5%
Homework 30%
Project 30%
Midterm and Final Exams 35%

Classroom Protocol
Refer to Canvas course site for further details.

Canvas Course
Canvas is SSU's Learning Management System (LMS). Canvas is the place where you will find the course syllabus, read posted announcements in the news forum, participate in online class discussions with classmates, submit your assignments online and view the materials for this course. To access the Canvas course site use your SSU Seawolf ID and password to log into SSU's Online Services Portal https://login.sonoma.edu. Click on the Canvas link. You can also access it from https://canvas.sonoma.edu. When you get to the Canvas site home, click on the “Courses” menu located on the left navigation. Click on the link for this course (classes are listed by course name and number, click on “All Courses” if this course does not appear on the list). Note: The Login link is also conveniently located at the top of the Sonoma State University homepage http://www.sonoma.edu and many other university pages.

Canvas Help and Student Computing Resources

Canvas and General IT Help Desk
Contact the IT Help Desk http://www.sonoma.edu/it/helpdesk/ if you need assistance with Canvas or other information about computing and information technology at SSU. Three ways to contact the IT Help Desk are:

- Call: 707-664-4357
- Email: helpdesk@sonoma.edu
- Visit Location: Schulz 1000

Plugins
Download Plugins http://www.sonoma.edu/about/plugins.html lists plugins that may be needed to access some content on or linked from SSU websites and Canvas. (If applicable, list any other plugins that may be needed to access/use publisher materials).

General Student Computing
Review the information posted at Student Computing http://www.sonoma.edu/it/students. There you will find computer use guidelines and a list of available computer labs.

Library Research Guides and Subject Librarians
The University Library can help you find information and conduct research. You can make an appointment with a subject librarian, get help online, or drop by the library during open Research Help hours: http://library.sonoma.edu/about/hours/detailed.
University Policies

There are important University policies that you should be aware of, such as the add/drop policy; cheating and plagiarism policy, grade appeal procedures; accommodations for students with disabilities and the diversity vision statement. See Important Policies and Procedures for Students http://www.sonoma.edu/uaffairs/policies/studentinfo.shtml.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. How to Add a Class http://www.sonoma.edu/registration/addclasses.html has step-by-step instructions. Registration Information http://www.sonoma.edu/registration/regannounce.html lists important deadlines and penalties for adding and dropping classes.

Campus Policy on Disability Access for Students

If you are a student with a disability, and think you may need academic accommodations, please contact Disability Services for Students (DSS), located in Salazar Hall, Room 1049, Voice: (707) 664-2677, TTY/TDD: (707) 664-2958, as early as possible in order to avoid a delay in receiving accommodation services. Use of DSS services, including testing accommodations, requires prior authorization by DSS. See SSU’s policy on Disability Access for Students http://www.sonoma.edu/uaffairs/policies/disabilitypolicy.htm.

Emergency Evacuation (Optional/suggested statement)

If you are a student with a disability and you think you may require assistance evacuating a building in the event of a disaster, you should inform your instructor about the type of assistance you may require. You and your instructor should discuss your specific needs and the type of precautions that should be made in advance of such an event (i.e. assigning a buddy to guide you down the stairway). We encourage you to take advantage of these preventative measures as soon as possible and contact the Disability Services for Students office if other classroom accommodations are needed.

Academic Integrity

Students should be familiar with the University’s Cheating and Plagiarism policy http://www.sonoma.edu/UAffairs/policies/cheating_plagiarism.htm. Your own commitment to learning, as evidenced by your enrollment at Sonoma State University and the University’s policy, require you to be honest in all your academic course work. Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified.
Additional Resources

SSU Writing Center

The SSU Writing Center, located at Schulz 1103, helps SSU students become better writers and produce better written documents. The knowledgeable and friendly tutors can help you with a wide array of concerns, from generating good ideas and organizing papers more clearly to learning citation formats and using semi-colons correctly. Visit the Writing Center website http://www.sonoma.edu/programs/writingcenter/default.html for more information on how to schedule time with a tutor.

Counseling and Psychological Services (CAPS)

CAPS is a unit of the division of Student Affairs of Sonoma State University. CAPS offers confidential counseling to students experiencing personal problems that interfere with their academic progress, career or well being. The CAPS website http://www.sonoma.edu/counselingctr provides information only. If you would like to talk with someone or make an appointment, please call (707) 664-2153 between 8 a.m. - 4:30 p.m., Monday-Friday.