San José State University
Electrical Engineering
EE110L, Continuous and Discrete Time Systems Lab, All, Spring, 2018

Course and Contact Information

Instructor:	David Parent
Office Location:	ENGR 355
Telephone:	(408) 924-3963
Email:	David.Parent@sjsu.edu
Office Hours:	Book here
Class Days/Time:	Multiple sections
Classroom:	ENGR 290, ENGR 258
Prerequisites:	EE 098 and MATH 133A (with grade of "C" or better) and Satisfactory Score on the Circuit Concepts and Problem Solving Placement Exam. Co-Req EE110
Instructor:	David Parent

Course Format

Technology Intensive, Hybrid, and Online Courses*:*

This is laboratory in person course. All the software required is PPC based and is free. Software and computers are avialible in the lab, ENGR 258 or ENGR 290, so the student does not have to buy anything, although having the software on a laptop is recommended.

Faculty Web Page and MYSJSU Messaging (Optional)

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on Canvas Leaning Management System course login website at http://sjsu.instructure.com. You are responsible for regularly checking with the messaging system through MySJSU at http://my.sjsu.edu (or other communication system as indicated by the instructor) to learn of any updates.

Course Description

LTspice, and Ipython used to solve realistic continuous and discrete time signals, circuits and systems problems. Application to passive and active circuits, to basic control, communications, and bio systems.

Course Goals

Upon successful completion of this course, students will be able to:

1. SLO1: analyze continuous-time signals and LTI systems in the time domain using convolution with Python
2. SLO2: simulate LTI systems in terms of the frequency response and Bode plots using Python and LTspice
3. SLO3: analyze passive and active filter circuits using LTspice and Python.
4. Model real-world continuous time or discrete time system.
5. Evaluate CAD software in terms of functionality, learning curve, and cost.

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

1. CLO1: utilize the Laplace transform to analyze LTI system functions, poles and zeros, and relation to the impulse and frequency responses with Python
2. CLO2: utilize the Laplace transform to calculate the transient and steady-state response of LTI circuits and systems with Python
3. CLO3: analyze simple control, communications, and bio systems
4. CLO3: analyze the function performed by simple discrete-time filters using Python
5. CLO3: utilize the Z-transform to analyze discrete-time filters in terms of poles and zeros and their relation to the impulse response and frequency response using Python

Required Texts/Readings

Textbook

F. Ulaby and A. Yagle, *Engineering Signals and Systems*, NTS Press, 2012. Available at the bookstore or can be purchased directly from the publisher. See http://www.ntspress.com/publications/engineering-signals-and-systems/ **Requiredfrom EE110**

J. McClellan, R. Schafer, and M. Yoder,*Signal processing First*, Pearson/Prentice-Hall, 2003. **Required from EE112**.

Other Readings

1. Haykin and Van Veen, Signals and Systems, 2nd Ed., John Wiley, 2005
2. A. Oppenheim , A. Willsky, and S. Nawab, Signals and Systems, 2nd Ed., Prentice-Hall 1997.
3. A. Oppenheim and R. Schafer, Discrete-Time Signal Processing, 2nd Ed., Prentice-Hall 2010.4. D. Manolakis and V. Ingle, Applied Digital Signal Processing, Cambridge Univ. Press 2011.

Course Requirements and Assignments

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in University Policy S12-3 at http://www.sjsu.edu/senate/docs/S12-3.pdf.

Grading Information

Determination of Grades

- No extra credit
- 20% per day for late work.

Grading Percentage Breakdown

94% and above	A
93% - 90%	A-
89% - 87%	B+
86% - 84%	B
83% - 80%	B-
79% - 77%	C+
76% - 74%	C
73% - 70%	C-
69% - 67%	D+
66% - 64%	D
63% - 60%	D-
below 60%	F

Grading:

- Lab activities and reports: 100%

Classroom Protocol

You are required to attend every lab meeting, for the full length of the lab meeting, unless you have a personal emergency. Midterms and work for example, are not considered emergencies. While it is true that many things can be done outside of the lab time, you need to work during the lab time, so that if you run into trouble the TA's can mentor you. If you leave early and then have questions that were covered in lab, the TA's might not be able to help you in a timely manner. If you have a true emergency, contact the TA and you can get help during office hours. There is a grade for active participation that can be lowered significantly if you do not come to lab, or leave early. Of course if you have finished your work, you may leave.

You need to work in groups with a maximum of two students. If there is an odd number of students in a lab section, then one and only group can be made up of three students.

Eating and drinking are not allowed in lab.

Failure to clean up your lab area will result in a penalty in your grade.

University Policies (Required)

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/"

EE110L, Continuous and Discrete Time Systems Lab Course Schedule

Course Schedule

Tentative Course Schedule

Lab Number	Date	TOPIC	Chapter
	1/26/2018	Class does not meet	
1	2/2/2018	Introduction Signal Generation with LTspice and Signal Processing with Python	Chapter 1, 2
2	2/9/2018	Signal Processing with Python	Chapter 3
3	2/16/2018	Time Domain Convolution techniques	Chapter 4
4	2/23/2018	Frequency Domain Convolution techniques	Chapter 5
5	3/2/2018	Bode Plots and Simple Filter Design	Chapter 6
6	3/9/2018	Synthesize transfer functions	Chapter 8
7	3/16/2018	Synthesize 60Hz Notch Filter	Chapter 9

8	3/23/2018	Synthesize 60Hz Notch Filter	Chapter 9
	3/30/2018	Spring Break	
9	4/6/2018	Application of the Fourier Transform	Chapter 10
10	4/13/2018	Application of the Fourier Transform	Chapter 10
11	4/20/2018	Final Project	
12	4/27/2018	Final Project	Chapter 12
13	5/4/2018	Final Project	
14	5/11/2018	Lab Clean up.	