Syllabus for Spring 2023

Course: EEE180   Signal and Systems
Lectures: MWF 8:00 a.m.-8:50 a.m.
                     Monday - RVR 1006,
                     Wednesday, Friday -Online
Instructor: Dr. Jing Pang
Email: jpang@csus.edu
Office Hours: Wednesday 10:50 a.m. – 1:30 p.m. or by Appointment
Office Hour Zoom Link: https://csus.zoom.us/j/82925903338

Course Description:

Rigorous development of the fundamental relationships governing time-domain and frequency-domain analysis of linear continuous-time and discrete-time systems. Topics include Fourier, Laplace, and z-transforms, sampling theorem, modulation, system stability, and digital filters.

Prerequisite:
- MATH 45, EEE 117; EEE 117 may be taken concurrently.

Textbook:
Lathi, B. P., Signal Processing and Linear Systems, New York: Oxford University Press, 1998.

Learning Outcomes:
By the end of the course, you can
- find the output of a linear, time-invariant, continuous-time system for a given input and initial conditions.
- find the output of a linear, time-invariant, discrete-time system for a given input and initial conditions.
- design a realization of a linear, time-invariant, continuous-time system having a desired system transfer function.
- design a realization of a linear, time-invariant, discrete-time system having a desired system transfer function.
- determine the effect on a signal's frequency spectrum of passing the signal through a linear, time-invariant, continuous-time system

Grading:

Homework   15%
Midterm1   25%
Midterm 2   25%
Final (Comprehensive) 35%

A: $\geq 92\%$ A-: $\geq 90\%$
B+: $\geq 85\%$ B : $\geq 82\%$ B-: $\geq 80\%$
C+: $\geq 75\%$ C: $\geq 72\%$ C- : $\geq 70\%$
D+: $\geq 65\%$ D: $\geq 62\%$ D-: $\geq 60\%$
F : <60 %

Class Schedule

Weeks	Dates	Topics	Reading Assignments

Week 1	Jan. 23 – Jan. 27	Introduction to Signals and Systems	Background, Chap. 1 Pages 1 ~ 96
Week 2	Jan. 30 – Feb. 3	Discrete-time signals and systems	Chap. 8 Pages 540 ~ 569
Week 3	Feb. 6 – Feb. 10	Time-domain analysis of continuous-time systems	Chap. 2, Pages 104 ~ 165
Week 4	Feb. 13 – Feb. 17	Time-domain analysis of continuous-time systems	Chap. 2, (Continue)
Week 5	Feb. 20 – Feb. 24	Time-domain analysis of discrete-time system, **Midterm 1 Review**	Chap. 9, Pages 573 ~ 611
Week 6	Feb. 27 – Mar. 3	Time-domain analysis of discrete-time system	Chap. 9, (Continue)
Week 7	Mar. 6 – Mar. 10	**Midterm 1** Continuous-time systems: Laplace transform analysis.	Chap. 6, Pages 361 ~ 426
Week 8	Mar. 13 – Mar. 17	Continuous-time systems: Laplace transform analysis	Chap. 6, (Continue)
	Mar. 20 – Mar. 26	Spring Recess	
Week 9	Mar. 27 – Mar. 31	Discrete-time systems: z-transform analysis. Mar. 31, Friday, Cesar Chavez Birthday Observed (Holiday, Campus Closed)	Chap. 11, Pages 668 ~ 697
Week 10	Apr. 3 – Apr. 7	Discrete-time systems: z-transform analysis.	Chap. 11, (Continue)
Week 11	Apr. 10 – Apr. 14	**Midterm 2 Review** Continuous-time signal analysis: Fourier series,	Chap. 3, Pages 171 ~ 226
Week 12	Apr. 17 – Apr. 21	**Midterm 2** Continuous-time signal analysis: Fourier series,	Chap. 3, (Continue)
Week 13	Apr. 24 – Apr. 28	Continuous-time signal analysis: Fourier transform,	Chap. 4, Pages 235 ~ 309
Week 14	May 1 – May 5	Frequency response of an LTIC system	Chap. 7, Pages 471 ~ 476
Week 15	May 8 – May 11	Sampling	Chap 5. Pages 319 ~ 330
Week 16	May 15 – May 19	**Final Exam**	

Course Policy:

1. No makeup exam.

2. Homework:
   Homework assignments will be completed online using Canvas Assignments in the course Canvas site. Homework problems shall either be from the textbook or created by the instructor. Most homework assignments are due one week later. There is no time limit on completing the homework assignment as long as you complete the homework by the due date.

3. You are responsible for all the materials presented and announcements made in class.
   If you have to miss a class, be sure to get the notes from another class member. This includes information about announcements or exams.

4. For Policy on Academic Integrity refer to
   https://www.csus.edu/umanual/student/stu-100.htm

This syllabus is tentative and it is subject to change at the instructor's discretion