

**ELE 314 Linear Systems and Signals** (3 cr.) Summer II, 2019 MWF 6:00-8:20 pm Quinn 219

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wk	date	lecture topics	reference
1	6/24	Introduction; Laplace transform; linear time-invariant (LTI) systems; LTI analog systems in the frequency domain; frequency response; transfer function	Chap. 6 handout
	6/26	rational form and differential equation; factored form of transfer function; partial fraction expansion; DC gain; decibels; bounded-input bounded-output (BIBO) stability	
	6/28	cascade, parallel and feedback connections; inverse LTI system; steady-state response; phase and group delays ----- <b>HW #1</b> due	
2	7/1	Preparation for exam 1: sample exam #1a and #1b	handout
	7/3	<b>Exam #1</b> (90 min), followed by solutions	
	7/5	circuit analysis examples: FIR low-pass filter, FIR high-pass filter ----- <b>HW #2</b> due	handout
3	7/8	circuit analysis on an RLC circuit; introduction to z-transform (ZT)	handout
	7/10	overview of transforms between the time domain and frequency domain; digital signals in the time domain; ----- <b>HW #3</b> due	Chap. 7
	7/12	examples of digital filters: 60 Hz notch filter, IIR low-pass filter	handout
4	7/15	<b>Exam #2</b> (90 min), followed by solutions	
	7/17	discrete Fourier transform (DFT) and fast Fourier transform (FFT) ----- <b>HW #4</b> due	online
	7/19	Inverse ZT: partial fraction expansion, power series, Residue theorem	handout
5	7/22	Linear feedback systems, negative feedback and positive feedback	handout
	7/24	stability, root-locus analysis, Nyquist stability criterion ----- <b>HW #5</b> due	handout
	7/26	<b>Exam #3</b> (90 min), followed by solutions	

**Grading:** Home work (25%), Exam #1 (25%), Exam # 2 (25%), Exam #3 (25%).

A 94-100	B+ 87-89	C+ 77-79	D+ 67-69
A- 90-93	B 83-86	C 73-76	D 60-66
	B- 80-82	C- 70-72	F <60

**Text book** (recommended): Signals and Systems, 1st Ed., by Sanjit K. Mitra. ISBN: 978-0190245290,2016.  
 Instructor's handouts: <<http://www.ele.uri.edu/courses/ele314/>>

**Catalog description:** Continuous-time and discrete-time systems, frequency response, stability criteria, Laplace transforms, z-transforms, filters, sampling, feedback, and applications. (Lec. 3 credits) Pre: ELE 313 or permission of instructor.

**ABET Student Learning Outcomes:**

- A: ability to apply knowledge of mathematics, science, and engineering.
- E: ability to identify, formulate, and solve engineering problems.
- K: ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- L: ability to question approaches, procedures, tradeoffs, and results related to engineering problems.

**Instructor Policy:** Please review the University of Rhode Island Student Handbook  
 <<http://web.uri.edu/studentconduct/files/2015-2017-Student-Handbook.pdf>>.

**Students with Disabilities**

Any student with a documented disability is welcome to contact me as early in the semester as possible so that we may arrange reasonable accommodations. As part of this process, please be in touch with Disability Services for Students Office in Memorial Union, room 330 or phone 874-2098.