



Course Syllabus: Signal and Systems II - EE 152

Division	Computer, Electrical and Mathematical Sciences & Engineering
Course Number	EE 152
Course Title	Signal and Systems II
Academic Semester	Spring
Academic Year	2016/2017
Semester Start Date	01/22/2017
Semester End Date	05/18/2017
Class Schedule (Days & Time)	02:30 PM - 04:00 PM Mon Thu

Instructor(s)				
Name	Email	Phone	Office Location	Office Hours
Ahmed Sultan Salem	Ahmed.Salem@kaust.edu.sa			TBD

Teaching Assistant(s)	
Name	Email
TBD	TBD

Course Information	
Comprehensive Course Description	This course builds upon the material investigated in EE 151 (Signals and Systems I) and addresses the following topics: z-transform, sampling and quantization, continuous-time filters, digital filters, finite impulse response (FIR) filter design, infinite impulse response (IIR) filter design, and applications of digital signal processing.
Course Description from Program Guide	This course builds upon the material investigated in EE151 and addresses the following topics: z-transform, continuous-time filters, digital filters, finite impulse response (FIR) filter design, infinite impulse response (IIR) filter design, sampling and quantization, and applications of digital signal processing including spectral estimation, digital audio, audio filtering, and digital audio compression.
Goals and Objectives	<p>At the end of this course, students should:</p> <ol style="list-style-type: none"> 1. Understand the z-transform and how it is applied to discrete-time systems. 2. Understand the properties of the z-transform and how it is related to the discrete-time Fourier transform (DTFT). 3. Understand the class of bandlimited signals and their properties. 4. Understand the sampling of continuous-time signals and the conditions needed for perfect reconstruction. 5. Understand the quantization of signals and be able to analyse the associated quantization error. 6. Understand the operation of continuous- and discrete-time filters. 7. Understand the mathematics underlying filter design, e.g. Chebyshev polynomials. 8. Be able to design continuous-time filters. 9. Be able to design finite impulse response (FIR) and infinite impulse response (IIR) discrete-time filters. 10. Understand filtering in the context of some applications such as analog-to-digital and digital-to-analog conversion.

Required Knowledge	<ul style="list-style-type: none"> - Fourier analysis (Fourier series, continuous-time Fourier transform, discrete-time Fourier transform) - Linear time-invariant system theory - Calculus
Reference Texts	<p><i>-Required Textbook:</i> Continuous and Discrete Time Signals and Systems by Mrinal Mandal, Amir Asif</p> <p><i>-Reference Books:</i> * Signals and Systems (2nd Edition) by Alan V. Oppenheim, Alan S. Willsky with S. Hamid * Signals and Systems using MATLAB (2nd Edition) by Luis Chaparro * Transforms in Signals and Systems by Peter Kraniuskas</p>
Method of evaluation	35.00% - Final exam 25.00% - Midterm exam 40.00% - Homework /Assignments
Nature of the assignments	8 to 10 problem sets. Students are required to solve about 8 problems weekly. The assignments involve Matlab-based problems.
Course Policies	Late submissions are not accepted.
Additional Information	

Tentative Course Schedule

(Time, topic/emphasis & resources)

Week	Lectures	Topic
1	Mon 01/23/2017 Thu 01/26/2017	
2	Mon 01/30/2017 Thu 02/02/2017	
3	Mon 02/06/2017 Thu 02/09/2017	
4	Mon 02/13/2017 Thu 02/16/2017	
5	Mon 02/20/2017 Thu 02/23/2017	
6	Mon 02/27/2017 Thu 03/02/2017	
7	Mon 03/06/2017 Thu 03/09/2017	
8	Mon 03/13/2017 Thu 03/16/2017	
9	Mon 03/20/2017 Thu 03/23/2017	
10	Mon 03/27/2017 Thu 03/30/2017	
11	Mon 04/03/2017 Thu 04/06/2017	
12	Mon 04/10/2017 Thu 04/13/2017	
13	Mon 04/17/2017 Thu 04/20/2017	
14	Mon 04/24/2017 Thu 04/27/2017	
15	Mon 05/01/2017 Thu 05/04/2017	
16	Mon 05/08/2017 Thu 05/11/2017	
17	Mon 05/15/2017 Thu 05/18/2017	
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Note

The instructor reserves the right to make changes to this syllabus as necessary.