SUPPLEMENTARY MATERIALS II-B-2A: SIGNALS AND SYSTEMS COURSE SCHEDULE, SPRING 2019

COURSE SCHEDULE

WEEK /DATE	**TUESDAY**	**ASSIGNMENTS DUE TUESDAY**	**FRIDAY**	**ASSIGNMENTS DUE FRIDAY**
WEEK 0 JAN 25			***COURSE OVERVIEW*** WHY COMPLEX? FACTS OF COMPLEX LIFE	
WEEK 1 JAN 29- FEB 1	***CHAPTER 1*** INTRODUCING SIGNALS SAMPLE APPLICATION PRESENTATION	CONCEPT BUILD 0 (APX E)	***CLASSIFYING SIGNALS; OPERATIONS***	CONCEPT QUIZ 0; *APPLICATION PRESENTATIONS*
WEEK 2 FEB 5-8	***CHAPTER 2*** INTRODUCING SYSTEMS	CONCEPT BUILD 1 (CH 1)	***CLASSIFYING SYSTEMS; CONNECTING SYSTEMS***	CONCEPT QUIZ 1; *APP. PRES.*
WEEK 3 FEB 12-15	***CHAPTER 3*** TIME-DOMAIN ANALYSIS OF LTI CT SYSTEMS	CONCEPT BUILD 2 (CH 2)	***IMPULSE RESPONSE; CONVOLUTION***	CONCEPT QUIZ 2; *APP. PRES.*
WEEK 4 FEB 19-22	***CONVOLUTION METHODS***	CONCEPT BUILD 3 (CH 3)	***CHAPTER 4*** SIGNAL REPRESENTATION USING FOURIER SERIES	CONCEPT QUIZ3; *APP. PRES.*
WEEK 5 FEB 26- MAR 1	***ORTHOGONAL SIGNAL SPACE; FOURIER BASIS FUNCTIONS***	NONE	***CT FOURIER SERIES***	CONCEPT QUIZ 4; *APP. PRES.*
WEEK 6 MAR 5-8	***CHAPTER 5*** CT FOURIER TRANSFORM INVERSE FOURIER TRANSFORM	CONCEPT BUILD 4 (CH 4)	***CT FOURIER TRANSFORM OF PERIODIC FUNCTIONS; CT FOURIER SERIES COEFFICIENTS AS SAMPLES OF THE CT FOURIER TRANSFORM***	CONCEPT QUIZ 5; *APP. PRES.*

WEEK /DATE	TUESDAY	ASSIGNMENTS DUE TUESDAY	FRIDAY	ASSIGNMENTS DUE FRIDAY
WEEK 7 MAR 12-15	***PROPERTIES OF THE CT FOURIER TRANSFORM; FOURIER TRANSFORM OF REAL, EVEN, AND ODD FUNCTIONS.***	CONCEPT BUILD 5 (CH 5)	***EXAM I*** *COVERS MATERIAL UP THROUGH LAST FRIDAY , MARCH 9*	NONE
MAR 18-22	***SPRING BREAK!***			
WEEK 8 MAR 26-29	***CHAPTER 9*** DT SIGNALS AND SYSTEMS TEAM FORMATION	SUBMIT TEAM MEMBERS' NAMES	***SAMPLING AND QUANTIZATION***	PROJECT PROPOSAL
WEEK 9 APR 2-5	***CHAPTER 10*** TIME-DOMAIN ANALYSIS OF DT SYSTEMS DIFFERENCE EQUATIONS; IMPULSE RESPONSE	CONCEPT BUILD 6 (CH 9)	**OLIN MONDAY—NO CLASS**	NONE
WEEK 10 APR 9-12	***CONVOLUTION; CONVOLUTION PROPERTIES***	REVISED PROJ. PROPOSALS	***CHAPTER 11*** DISCRETE-TIME FOURIER SERIES AND TRANSFORM	CONCEPT QUIZ 6 CONCEPT BUILD 7 (CH 10)
WEEK 11 APR 16-19	***PROPERTIES OF THE DTFT; FREQUENCY RESPONSE OF LTI DT SYSTEMS; MAGNITUDE AND PHASE SPECTRA***	WORK ON FINAL PROJECTS	***CHAPTER 13*** THE Z-TRANSFORM AND INVERSE Z-TRANSFORM; UNILATERAL/BILATERAL	CONCEPT QUIZ 7 CONCEPT BUILD 8 (CH 11)
WEEK 12 APR 23-26	***PROPERTIES OF THE Z-TRANSFORM; SOLUTION OF DIFFERENCE EQUATIONS; STABILITY ANALYSIS; FREQUENCY RESPONSE*** ***DIGITAL FILTERS***	WORK ON FINAL PROJECTS	***CONNECTIONS:*** DT TO CT VIA THE **Z TRANSFORM** AND THE **LAPLACE TRANSFORM**; LTI SYSTEM ANALYSIS USING THE Z AND LAPLACE TRANSFORMS	CONCEPT QUIZ 8 CONCEPT BUILD 9 (CH 13)
WEEK 13 APR 30 - MAY 3	***FINAL PROJECT PRESENTATIONS AND DEMONSTRATIONS***	FINAL PROJECT REPORTS	***FINAL PROJECT PRESENTATIONS AND DEMONSTRATIONS*** **EXAM II** WILL OCCUR DURING FINALS PERIOD, DATE/TIME TBD BY THE REGISTRAR	FINAL PROJECT REPORTS

SUPPLEMENTARY MATERIALS II-B-2B: SIGNALS AND SYSTEMS EXAMPLE OF DEVELOPED COURSE MATERIAL, SPRING 2019

The following developed course material example, "**2019-04-30 Transient vs. Steady-state response; Connecting pole-zero plots, the system function H(z) and frequency response H(Ω); 3-dB width; Sinusoidal steady state response; Matlab verification**", explains how to discern the transient response from the steady-state response, starting with the input/output difference equation, then finding its z domain equivalent, and finally using the inverse Z-transform to deduce the output in the discrete-time domain, at which point the transient and steady-state components become evident. Spaces are left in the handout so students can figure out the answers to questions posed.

The handout goes on to connect pole-zero plots, system functions, and frequency response. It concludes with a discussion of the 3-dB bandwidth and sinusoidal steady state response. A follow-up handout provides the Matlab verification for the calculations done by the students.