

# ECE 3510

Tentative

A. Stolp

01/06/19

## Spring 2019 COURSE SCHEDULE

Week	Date	lect	Topics	Books		
				Bodson	Nise	
1	M 01/07	1	Introduction to Feedback Systems, Block diagrams	1.1	1.1 - 6	
	W 01/09	2	Transfer functions and signals, The Laplace transform of signals	2.1	2.1	
	F 01/11	3	The Laplace transform, Relationship between pole locations and signal shapes	2.1	2.2	
2	M 01/14	4	Inverse of Laplace transforms using partial fraction expansions	2.2 - 3	2.2	
	W 01/16	5	Inverse of Laplace transforms, Properties of signals	3.1	2.2	
	F 01/18	6	Transfer functions, Interconnected systems, Feedback system	3.1	2.3, 5.1,2	
7	M 01/21	Martin Luther King Day				
7	M 01/21	6	Transfer functions, Interconnected systems, Feedback system	3.1	2.3, 5.1,2	
	W 01/23	7	Systems, Circuits, BIBO stability	3.2	2.4	
	F 01/25	8	Responses to step inputs, % overshoot, effect of zeros	3.3	4.1 - 4.5	
4	M 01/28	9	Responses to sinusoidal inputs, sinusoidal steady-state	3.4	4.6 - 8	
	W 01/30	10	Effect of initial conditions, State-space advantages	3.5 - 6	3.5	
	F 02/01	11	Electrical analogies of mechanical systems	notes	3.1 - 3	
5	M 02/04	12	Electrical analogies of mechanical systems	notes	2.5 - 9	
	W 02/06	Exam 1				
	F 02/08	13	Stability and Performance of Control Systems	4.1	6.1	
6	M 02/11	14	Control system characteristics	4.1	7.1	
	W 02/13	15	Steady-state error and integral control	4.2	7.2 - 5	
	F 02/15	16	Routh-Hurwitz stability test	4.3	6.2 - 5	
7	M 02/18	Presidents Day				
7	M 02/18	16	Routh-Hurwitz stability test	4.3	6.2 - 5	
	W 02/20	17	Root-locus introduction, main rules RL1	4.4	8.1 - 5	
	F 02/22	18	Root-locus main rules, examples fill in from screen	4.4	8.5 - 7	
8	M 02/25	19	Root-locus additional rules, examples fill in from screen	4.4	9.1 - 3	
	W 02/27	20	Root-locus design, PI, Lag, PD, Lead	4.4	9.4 - 5	
	F 03/01	21	PID, Lag - lead, Catchup and Review			
9	M 03/04	22	Feedback design for phase-locked loops, discussion of PLL lab	4.5		
	W 03/06	Exam 2				
	F 03/08	23	Variations of Root Locus		notes	
	S 03/09	Spring Break				

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S 03/09	Spring Break			
Su 03/17				

			Books	
			Bodson	Nise
10	M 03/18	24 Pole dominance, Physical realization,	notes	9.6
	W 03/20	25 PID tuning	notes	
	F 03/22	26 Ladder Logic & Programmable Logic Controllers (PLCs)	notes	
11	M 03/25	27 Ladder Logic & Programmable Logic Controllers (PLCs)	notes	
	W 03/27	28 Frequency-Domain Analysis of Control Systems, Bode plots	5.1	10.1 - 2
	F 03/29	29 Bode Plots complex poles & zeros, z, wn	5.1	10.2
12	M 04/01	30 Bode Plots to Transfer functions	5.1	10.13
	W 04/03	31 Bode Plots to Transfer functions, Gain and phase margins	5.1, 3	10.7
	F 04/05	Exam 3		
13	M 04/08	32 Nyquist Criterion of stability, introduction	5.2	
	W 04/10	33 Nyquist Criterion of Stability, poles on the jw axis	5.2	10.5
	F 04/12	34 Gain, phase and delay margins	5.3	10.6-7, 12
14	M 04/15	35 Relation to transient response, Frequency-Domain Design	5.3	10.8, 11
	W 04/17	36 Discrete-time Signals and Systems	6.1	13.1 - 2
	Th 04/18	Mechanical Engineering Design Day in the Union Ballroom, attendance required		
	F 04/19	37 The z-transform	6.1	13.3
15	M 04/22	38 Properties of the z-transform	6.2	13.3
	W 04/24	Problem Session, 10:45		
	F 04/26	Review 3:30 - 5:30 in _____		
16	M 04/29	Final Exam, 10:30 -12:30		