ECE 3510

A. Stolp

Tentative

01/15/21

Spring 2021 COURSE SCHEDULE

Books

Week	Date	lect	Topics	Bodson	Nise
1	M 01/18		Martin Luther King Day		
	W 01/20	1	Introduction to Feedback Systems, Block diagrams	1.1	1.1 - 6
	F 01/22	2	Transfer functions and signals, The Laplace transform of signals	2.1	2.1
2	M 01/25	3	The Laplace transform, Relationship between pole locations and signal shapes	2.1	2.2
	W 01/27	4	Inverse of Laplace transforms using partial fraction expansions	2.2 - 3	2.2
	F 01/29	5	Martin Luther King Day		
3	M 02/01	6	Transfer functions, Interconnected systems, Feedback system		
	W 02/03	7	Systems, Circuits, BIBO stability	3.2	2.4
	F 02/05	8	Responses to step inputs, % overshoot, effect of zeros	3.3	4.1 - 4.5
4	M 02/08	9	Responses to sinusoidal inputs, sinusoidal steady-state	3.4	4.6 - 8
	W 02/10	10	Effect of initial conditions, State-space advantages	3.5 - 6	3.5
	F 02/12	11	Electrical analogies of mechanical systems	notes	3.1 - 3
5	M 02/15		Presidents Day		
	W 02/17	12	Electrical analogies of mechanical systems		
	F 02/19	13	Stability and Performance of Control Systems	4.1	6.1
	M 02/22		Exam 1		
	W 02/24	14	Control system characteristics	4.1	7.1
	F 02/26	15	Steady-state error and integral control	4.2	7.2 - 5
7	M 03/01	16	Routh-Hurwitz stability test	4.3	6.2 - 5
	W 03/03	17	Root-locus introduction, main rules RL1	4.4	8.1 - 5
	F 03/05	18	Root-locus main rules, examples fill in from screen	4.4	8.5 - 7
8	M 03/08	19	Root-locus additional rules, examples fill in from screen	4.4	9.1 - 3
	W 03/10	20	Root-locus design, PI, Lag, PD, Lead	4.4	9.4 - 5
	F 03/12	21	PID, Lag - lead, Catchup and Review		
9	M 03/15	22	Feedback design for phase-locked loops, discussion of PLL lab		
	W 03/17		Exam 2		
	F 03/19	23	Variations of Root Locus	notes	

						Books	
						Bodson	Nise
10	M	03/22	24	Pole dominance, Physical realization,		notes	9.6
	W	03/24	25	PID tuning		notes	
	F	03/26	26	Ladder Logic & Programmable Logic Controllers (PLCs)		notes	
11	M	03/29	27	Ladder Logic & Programmable Logic Controllers (PLCs)		notes	
	W	03/31	28	Frequency-Domain Analysis of Control Systems, Bode plots		5.1	10.1 - 2
	F	04/02	29	Bode Plots complex poles & zeros, ζ, ω_n		5.1	10.2
12	M	04/05	30	Bode Plots to Transfer functions		5.1	10.13
	W	04/07	31	Bode Plots to Transfer functions, Gain and phase margins		5.1, 3	10.7
	F	04/09	32	Nyquist Criterion of stability, introduction			
13	M	04/12		Exam 3			
	W	04/14	33	Nyquist Criterion of Stability, poles on the $j\omega$ axis		5.2	10.5
	F	04/16	34	Gain, phase and delay margins		5.3	10.6-7, 12
14	M	04/19	35	Relation to transient response, Frequency-Domain Design		5.3	10.8, 11
	W	04/21	36	Discrete-time Signals and Systems		6.1	13.1 - 2
	F	04/23	37	The z-transform		6.1	13.3
15	M	04/26	38	Properties of the z-transform		6.2	13.3
	W	04/28		Problem Session, 10:45			
	T	05/04		Review 3:30			
	W	05/05		Final Exam, 10:30 -12:30			