ECE 3510

A. Stolp

Tentative

01/06/24

Spring 2024 COURSE SCHEDULE

Week		Date	lect	Topics	Books: Bodson	Books: Nise
1	M	01/08	1	Syllabus, etc. Servo, Introduction to Feedback Systems, Block diagrams	Ch.1	Ch.1
	W	01/10	2	Transfer functions and signals, The Laplace transform of signals	2.1	2.1
	F	01/12	3	The Laplace transform, Relationship between pole locations and signal shapes	2.1	2.2
2	M	01/15		Martin Luther King Day		
	W	01/17	4	Inverse of Laplace transforms using partial fraction expansions	2.2	2.2
	F	01/19	5	Inverse Laplace, Properties of signals (bounded, converge)	2.3	2.2
3	M	01/22	6	Transfer functions, Interconnected systems, Feedback system	3.1	2.3, 5.1-2
	W	01/24	7	Systems, Circuits, BIBO stability	3.1 - 2	2.4
	F	01/26	8	Responses to impulse and step inputs, 1st & 2nd order	3.3	4.1 - 4
4	M	01/29	9	Responses to step inputs, % overshoot, effect of zeros	3.3	4.5 - 7
	W	01/31	10	Responses to sinusoidal inputs, sinusoidal steady-state	3.4	4.1 - 8
	F	02/02	11	Effect of initial conditions, State-space advantages	3.5-6,	Ch.3
5	M	02/05	12	Electrical analogies of mechanical systems	notes	2.5 - 9
	W	02/07		Exam 1		
	F	02/09	13	Electrical analogies of mechanical systems	notes	2.5 - 9
6	M	02/12	14	Stability and Performance of Control Systems	4.1 - 3	6.1
	W	02/14	15	Steady-state error and integral control	4.1 - 5	Ch. 7,
	F	02/16	16	Routh-Hurwitz stability test	4.5.1	6.2
7	M	02/19		Presidents Day		
	W	02/21	17	Root-locus introduction, main rules, RL1	4.6.1	8.1 - 4
	F	02/23	18	Root-locus main rules, examples		
8	M	02/26	19	Root-locus additional rules, examples	4.6.2	8.1 - 4
	W	02/28	20	Root-locus additional rules, examples	4.6.3	8.5 - 7
	F	03/01	21	Root-locus design, PI, Lag, PD, Lead, Example 1	notes	9.1- 4
	S	02/26		Spring Break		
	Su	03/05				

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Week		Date	lect	Topics	Books Bodson	Nise
9	M	03/11	22	Root-locus design, PID, Lag - lead, Catchup and Review	4.6.5	9.1- 4
	W	03/13		Exam 2		
	F	03/15	23	Feedback design for phase-locked loops, discussion of PLL lab	4.7, not	notes
10	M	03/18	24	Variations of Root Locus	notes	notes
	W	03/20	25	Pole dominance, Physical realization,	notes	9.6
	F	03/22	26	PID tuning and Relay logic	notes	notes
11	M	03/25	27	Ladder Logic & Programmable Logic Controllers (PLCs)	notes	notes
	W	03/27	28	Frequency-Domain, Bode plots, basic examples	5.1	10.1 - 2
	F	03/29	29	Bode Plots complex poles & zeros, ζ, ω_n	5.1	10.2
12	M	04/01	30	Bode Plots to Transfer functions	5.1	10.13
	W	04/03		Exam 3		
	F	04/05	31	Bode Plots to Transfer functions, Gain and phase margins	5.3	10.7,12
13	M	04/08	32	Relation to transient response, Frequency-Domain Design, Z_{in}, Z_{out}	5.2 - 3	10.8
	W	04/10	33	Amplifier Feedback & freq response, Op Amp compensation	notes	notes
	F	04/12	34	Discrete-time Signals and Systems	6.1	13.1 - 2
14	M	04/15	35	The z-transform and properties	6.1	13.3
	W	04/17	36	Properties of the z-transform	6.2 - 3	13.3
	Th	04/18		ME Design Day, Union Build.		
	F	04/19	37	Inverse z-transform	6.3	13.3
15	M	04/22	38	Digital control	Ch.7	Ch.13
	T	04/23		Last Day of Classes		
	W	04/24		Reading Day		
	Th	04/25		Finals		
	Su	04/28		ECE 3510 Review		
16	M	04/29		3510 Final 10:30 AM		
	Th	05/02		Freedom		