ECE 3510

Tentative

A. Stolp

01/23/23

Spring 2023 COURSE SCHEDULE

Week		Date	lect	Topics	Books Bodson	Nise
1	M	01/09	1	Syllabus, etc. Servo, Introduction to Feedback Systems, Block diagrams	Ch.1	Ch.1
	W	01/11	2	Transfer functions and signals, The Laplace transform of signals	2.1	2.1
	F	01/13	3	The Laplace transform, Relationship between pole locations and	2.1	2.2
2	M	01/16		Martin Luther King Day		
	W	01/18	4	Inverse of Laplace transforms using partial fraction expansions	2.2	2.2
	F	01/20	5	Inverse Laplace, Properties of signals (bounded, converge)	2.3	2.2
3	M	01/23	6	Transfer functions, Interconnected systems, Feedback system	3.1	2.3, 5.1-2
	W	01/25	7	Systems, Circuits, BIBO stability	3.1 - 2	2.4
	F	01/27	8	Responses to impulse and step inputs, 1st & 2nd order	3.3	4.1 - 4
4	M	01/30	9	Responses to step inputs, % overshoot, effect of zeros	3.3	4.5 - 7
	W	02/01	10	Responses to sinusoidal inputs, sinusoidal steady-state	3.4	4.1 - 8
	F	02/03	11	Effect of initial conditions, State-space advantages	3.5-6,	Ch.3
5	M	02/06	12	Electrical analogies of mechanical systems	notes	2.5 - 9
	W	02/08	13	Electrical analogies of mechanical systems	notes	2.5 - 9
	F	02/10		Exam 1		
6	M	02/13	14	Stability and Performance of Control Systems	4.1 - 3	6.1
	W	02/15	15	Steady-state error and integral control	4.1 - 5	Ch. 7,
	F	02/17	16	Routh-Hurwitz stability test	4.5.1	6.2
7	M	02/20		Presidents Day		
	W	02/22	17	Root-locus introduction, main rules, RL1	4.6.1	8.1 - 4
	F	02/24	18	Root-locus main rules, examples		
8	M	02/27	19	Root-locus additional rules, examples	4.6.2	8.1 - 4
	W	03/01	20	Root-locus additional rules, examples	4.6.3	8.5 - 7
	F	03/03	21	Root-locus design, PI, Lag, PD, Lead, Example 1	notes	9.1- 4
9	S	03/04		Spring Break		
	Su	03/12				

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10	M	03/13	22	Root-locus design, PID, Lag - lead, Catchup and Review	4.6.5	9.1- 4
	W	03/15	23	Feedback design for phase-locked loops, discussion of PLL lab	4.7,	notes
	F	03/17		Exam 2		
11	M	03/20	24	Variations of Root Locus	notes	notes
	W	03/22	25	Pole dominance, Physical realization,	notes	9.6
	F	03/24	26	PID tuning and Relay logic	notes	notes
12	M	03/27	27	Ladder Logic & Programmable Logic Controllers (PLCs)	notes	notes
	W	03/29	28	Frequency-Domain, Bode plots, basic examples	5.1	10.1 - 2
	F	03/31	29	Bode Plots complex poles & zeros, ζ, ω_n	5.1	10.2
13	M	04/03	30	Bode Plots to Transfer functions	5.1	10.13
	W	04/05	31	Bode Plots to Transfer functions, Gain and phase margins	5.3	10.7,12
	F	04/07		Exam 3		
14	M	04/10	32	Relation to transient response, Frequency-Domain Design	5.2 - 3	10.8
	W	04/12	33	Amplifier Feedback & freq response, Op Amp compensation, Zin, Zout	notes	notes
	F	04/14	34	Discrete-time Signals and Systems	6.1	13.1 - 2
15	M	04/17	35	The z-transform and properties	6.1	13.3
	W	04/19	36	Properties of the z-transform	6.2 - 3	13.3
	Th	04/20		ME Design Day, Union Build.	0	0
	F	04/21	37	Inverse z-transform	6.3	13.3
16	M	04/24	38	Digital control	Ch.7	Ch.13
	T	04/25		Last Day of Classes		
	W	04/26		Reading Day		
	Th	04/27		Finals ECE 3510 Review		
	F	04/28		3510 Final 10:30 AM		
17	M	05/01				
	T	05/02				
	W	05/03				
	Th	05/04		Freedom		