

Date	Topic	Textbook Reference	Homework Due
8-Jan	Introduction and fundamental definitions	1-1, 1-2, 1-3	
13-Jan	Constructing block diagrams for physical systems	1-4, 2-3	
15-Jan	Modeling and analyzing physical systems in the Laplace domain (transfer functions)	2-1, 2-2	HW 1
20-Jan	Plotting system response based on transfer functions	supplemental	
22-Jan	Modeling and analyzing interconnected systems	2-3	HW 2
27-Jan	Multivariable (MIMO) systems	supplemental	
29-Jan	Modeling and analyzing physical systems in state space	2-4, 2-5, -6	HW 3
3-Feb	Model simplification - linearization	2-7	
5-Feb	Continuation of linearization/exam review	supplemental	HW 4
10-Feb Exam 1			
12-Feb	The root locus plot	6-1, 6-2, 6-3	
17-Feb	Proportional feedforward/feedback control	5-7, 5-8, 6-4, 6-5, 6-6, 6-7, 6-8	
19-Feb	PI control	5-7, 5-8, 6-4, 6-5, 6-6, 6-7, 6-8	HW5
24-Feb	Filtered PID control	5-7, 5-8, 6-4, 6-5, 6-6, 6-7, 6-8	
26-Feb	Simulink	supplemental	HW6
10-Mar	Multi-loop control designs	6-9, supplemental	
12-Mar	State feedback control	9-6, 10-1, 10-2, 10-3	HW7
17-Mar	Estimator/observer design	9-7, 10-5, 10-6, 10-7	
	Closed loop transfer functions with estimators/exam		
19-Mar	review	supplemental	HW8
24-Mar Exam 2			
26-Mar	Introduction to control design challenge	supplemental	
31-Mar	The bode and Nyquist (polar) plots	7-1, 7-2, 7-3, 7-4	
2-Apr	Robustness margins	7-5, 7-6, 7-7, 7-8	
	Fundamental feedback tradeoffs and loop-shaping		
7-Apr	control design principles	7-10, supplemental	
9-Apr	Real-world effects: actuator dynamics	supplemental	HW9
14-Apr	Real-world effects: communication (and other) delays	supplemental	
16-Apr	Real-world effects: sensor noise and dynamics	supplemental	
21-Apr	Real-world effects: dealing with generalized uncertainty	supplemental	
23-Apr	Survey of advanced control techniques/exam review	supplemental	HW10
28-Apr Controls challenge competition			
5-May Exam 3			