

Course schedule

Week 1	Aug. 25 – Aug. 29	
Th. lec.	Ch. 1	Overview, intro. to FB control, dynamic models
Reading	Ch. 1	Overview, intro. to FB control, dynamic models
	Ch. 2	Modeling in the frequency domain
Week 2	Sep. 1 – Sep. 5	
Mo.		<i>Labor Day</i>
Tu. lec.	Ch. 1	Overview, intro. to FB control, dynamic models
Th. evening lec.	Ch. 1	Overview, intro. to FB control, dynamic models
Th. lec.	Ch. 2	Modeling in the frequency domain
Reading	Ch. 1	Overview, intro. to FB control, dynamic models
	Ch. 2	Modeling in the frequency domain
HW	HW 1	
Week 3	Sep. 8 – Sep. 12	
Tu. lec.	Ch. 3	Modeling in the time domain
Th. lec.	Ch. 4	Time response
Th. evening lec.	Ch. 4	Time response
Mo. lab	Lab 1	Modeling & Simulation in MATLAB / Simulink
We. lab	Lab 1	Modeling & Simulation in MATLAB / Simulink
We. lab	Lab 1	Modeling & Simulation in MATLAB / Simulink
Fr. lab	Lab 1	Modeling & Simulation in MATLAB / Simulink
Reading	Ch. 3	Modeling in the time domain
	Ch. 4	Time response
HW	HW 2	
Week 4	Sep. 15 – Sept. 19	
Tu. lec.	Ch. 6	Stability
Th. lec.	Ch. 7	Steady-state errors
Mo. lab	Lab 2	Basic concepts in control system design
We. lab	Lab 2	Basic concepts in control system design
We. lab	Lab 2	Basic concepts in control system design
Fr. lab	Lab 2	Basic concepts in control system design
Reading	Ch. 8	Root locus techniques
HW	HW 3	
Week 5	Sep. 22 – Sep. 26	
Tu. lec.	Ch. 7	Steady-state errors
Th. lec.	Ch. 8	Root locus techniques
Mo. lab	Lab 3	Quanser hardware & proportional control
We. lab	Lab 3	Quanser hardware & proportional control
We. lab	Lab 3	Quanser hardware & proportional control
Fr. lab	Lab 3	Quanser hardware & proportional control
Reading	Ch. 9	Design via root locus
	Ch. 10	Frequency response techniques
HW	HW 4	

Week 6	Sep. 29 – Oct. 3	
Tu. lec.	Ch. 9	Design via root locus
Th. lec.	Ch. 10	Frequency response techniques
Reading	Ch. 10	Frequency response techniques
HW	HW 5	
Week 7	Oct. 6 – Oct. 10	
Tu. lec.	Ch. 9	Frequency response techniques
Th. lec.	Ch. 10	Frequency response techniques
Mo. lab	Lab 4	Model-based position control of a cart
We. lab	Lab 4	Model-based position control of a cart
We. lab	Lab 4	Model-based position control of a cart
Fr. lab	Lab 4	Model-based position control of a cart
Reading	Ch. 11	Design via frequency response
HW	HW 6	
Week 8	Oct. 13 – Oct. 17	
Tu. lec.	Midterm Review	
Th. lec.	Midterm Review	
Th. evening	Midterm	
Week 9	Oct. 20 – Oct. 24	
Tu. lec.	Ch. 11	Design via frequency response
Th. lec.	Ch. 11	Design via frequency response
Mo. lab	Lab 5a	Magnetic levitation
We. lab	Lab 5a	Magnetic levitation
We. lab	Lab 5a	Magnetic levitation
Fr. lab	Lab 5a	Magnetic levitation
Reading	Ch. 11	Design via frequency response
	Ch. 12	Design via state space
HW	HW 7	
Week 10	Oct. 27 – Oct. 31	
Tu. lec.	Ch. 12	Design via state space
Th. lec.	Ch. 12	Design via state space
Mo. lab	Lab 5b	Magnetic levitation
We. lab	Lab 5b	Magnetic levitation
We. lab	Lab 5b	Magnetic levitation
Fr. lab	Lab 5b	Magnetic levitation
Reading	Ch. 12	Design via state space
	Ch. 13	Digital control systems
HW	HW 8	

Week 11	Nov. 3 – Nov. 7	
Tu. lec.	Ch. 12	Design via state space
Th. lec.	Ch. 13	Digital control systems
Mo. lab	Lab 6a	Pole placement for the inverted pendulum
We. lab	Lab 6a	Pole placement for the inverted pendulum
We. lab	Lab 6a	Pole placement for the inverted pendulum
Fr. lab	Lab 6a	Pole placement for the inverted pendulum
Reading	Ch. 13	Digital control systems
HW	HW 9	
Week 12	Nov. 10 – Nov. 14	
Tu.		<i>Veteran's Day</i>
Tu. lec.	Ch. 13	Digital control systems (<i>date and time t.b.d.</i>)
Th. lec.	Ch. 13	Digital control systems
We. lab	Lab 6b	Luenberger observer design for inverted pendulum
We. lab	Lab 6b	Luenberger observer design for inverted pendulum
Fr. lab	Lab 6b	Luenberger observer design for inverted pendulum
Reading		
HW	HW 10	
Week 13	Nov. 17 – Nov. 21	
Tu. lec.	LQR	Linear quadratic regulator
Th. lec.	LQR	Linear quadratic regulator
Mo. lab	Lab 6b	Luenberger observer design for inverted pendulum
We. lab	Lab 6c	LQR controller design for inverted pendulum
We. lab	Lab 6c	LQR controller design for inverted pendulum
Fr. lab	Lab 6c	LQR controller design for inverted pendulum
Reading		
HW	HW 11	
Week 14	Nov. 24 – Nov. 28	
Tu. lec.	PID	PID controller
Mo. lab	Lab 6c	LQR controller design for inverted pendulum
Th.		<i>Thanksgiving</i>
Reading		
Week 15	Dec. 1 – Dec. 5	
Tu. lec.	Filters & KF	LP, HP, EWMA, KF, EKF
Th. lec.	Filters & KF	LP, HP, EWMA, KF, EKF
Mo. lab	Lab 6d	Self-erecting inverted pendulum
We. lab	Lab 6d	Self-erecting inverted pendulum
We. lab	Lab 6d	Self-erecting inverted pendulum
Fr. lab	Lab 6d	Self-erecting inverted pendulum
Reading		
Week 16	Dec. 8 – Dec. 12 (RRR)	
Tu. lec.	Final review	
Th. lec.	Final review	
Week 17	Dec. 19	
Fr.	Final	7:00 – 10:00 p.m.