

ECE/ME 461/561 Control Systems - Spring 2024

Instructor:

Dr. John Chiasson, ECE department
202K MEC, Boise State University
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Time and Place: TTh 1:30– 2:45 RUCH 103

Office Hours: 2:45– 3:30 TTh or by appointment

Textbook: *An Introduction to System Modeling and Control*
John Chiasson, John Wiley & Sons, 2022

IEEE student members who order the book directly from Wiley get a 35% discount. Go to <https://www.wiley.com/en-us/An+Introduction+to+System+Modeling+and+Control-p-9781119842897>
IEEE student membership is \$16.00/year. To join go to <https://www.ieee.org/membership/join/index.html>
This discount applies to any book you buy from Wiley's website.

Course Contents:

Review:

Chapter 9 *Tracking and Disturbance Rejection*

Chapter 10 *Pole Placement, 2 DOF Controllers, and Internal Stability*

New Material:

Chapter 11 *Frequency Response Methods*

Chapter 13 *Inverted Pendulum, Magnetic Levitation, and Cart on a Track*

Chapter 14 *State Variables*

Chapter 15 *State Feedback*

Chapter 16 *State Estimators and Parameter Identification*

Chapter 17 *Robustness and of Feedback*

Homework assignments: Homework will be assigned to be handed in on the due date at the beginning of class that day. Solutions provided.

Prerequisites: ECE 360 System Modeling and Control

(Includes Laplace transforms, modeling using elementary physics, simple PID control)

Grading:

Two midterms, 100 points each

One final, 200 points

HW – 100 points

Lab Projects – 100 points

Policies

No makeup exams – If you miss an exam with a valid excuse, your final will be counted more.

There will be a separate grading curve for the graduate and undergraduate students.

Graduate Students – Graduate students will be required to answer one or two extra exam questions and do extra laboratory projects.

Laboratory is in RUCH 337

SIMULINK tutorial: https://www.mathworks.com/support/learn-with-matlab-tutorials.html?s_tid=srchtitle_simulink%20tutorial_1

CONTROL tutorial: <http://ctms.engin.umich.edu/CTMS/index.php?aux=Home>

RUCH 337 Schedule

https://calendar.google.com/calendar/u/0/embed?src=boisestate.edu_fjmju5pddsk1d1u7isdtukjer0@group.calendar.google.com&ctz=America/Denver

Exam Schedule

Exam I Thursday, February 15, 2024

Exam II Tuesday, April 2, 2024

Final Exam Tuesday, April 30, 2024 from 2:30 pm - 4:30 pm.