Engineering 410 Lab
Control Systems

Spring 2009 Syllabus

Instructor: Kurt DeGoede, Associate Professor, Physics and Engineering
161 B Esbenshade Hall
(717) 361-1380 anytime
degoedek@etown.edu anytime
Home: (717) 492-0558 before 10:00 PM (no calls between 1:00 PM Saturday and 4:00 PM on Sunday please)

Office Hours: M Tu 2:00 – 3:30 PM
W 9:30 – 11:00 AM
F 12:20 – 1:30 PM
Or drop in to make an appointment. Please feel free to stop by my office anytime, if my door is closed please leave a note.

Class Hours: W 4:00 -6:00 in 182 Esbenshade Hall

Corequisites: EGR410

Textbook: Nise, N.R., Control Systems Engineering, 5th Edition. Wiley, 2008.

Course Description: Design and analysis of continuous time-domain control systems using system modeling techniques, simulation software and physical systems (plants) for control algorithms. Evaluation of control system performance and design criteria including feedback, stability, sensitivity, time and frequency response.

Course Objectives: Students will be able to use Matlab, Simulink and Lab View to analyze, design and implement control systems for a variety of modeled and physical electro-mechanical plants. Students will present engineering lab work and solutions clearly in formal written technical reports and lab notes. Teamwork skills will also be enhanced by working in small groups or pairs.

Tentative Course Schedule

Jan 14	Matlab/Simulink – introduction
Jan 21 – ch 2	Matlab – models in the frequency domain
Jan 28 – ch 3	Matlab – state space models
Feb 4 – ch 4	Matlab/Simulink – time response of models
Feb 11	Lab View – time response of rotational motion system
Feb 18	Exam
Feb 25 – ch 5	Matlab/Simulink – closed loop response and Feedback Control
Mar 11 – ch 6	Matlab/Simulink – stability and pole location
Mar 18	Lab View – proportional position control
Mar 25 – ch 7	Matlab – root locus analysis
Apr 1 – ch 8	Exam
Apr 8 – ch 9	Matlab/Simulink – controller design
Apr 15 – ch 10	Matlab – frequency response analysis
Apr 22 – ch 11	Matlab/Simulink – velocity control of a mechanical system
Apr 29 – ch 11	Lab View – velocity control of a mechanical system

Grading: Grades will be based on submitted lab reports and subjective assessment of lab work.

Grades will be rounded to 3 significant figures with the following scale

A	Outstanding	93.0	–	100.	%
A –		90.0	–	92.9	
B +		87.0	–	89.9	
B	Good	83.0	–	86.9	
B –		80.0	–	82.9	
C +		77.0	–	79.9	
C	Acceptable	73.0	–	76.9	
C –		70.0	–	72.9	
D +		67.0	–	69.9	
D	Poor	63.0	–	66.9	
D –		60.0	–	62.9	
F	Failing	0.00	–	59.9	

Grades will not be “curved.”

Ethics: Students are to act in accordance with the Pledge of Integrity as stated in the student handbook on all course assignments. Dishonest practice will result in a 0 grade for that particular assignment and can result in failure of the course and possibly expulsion from the college.

Any solution or course work obtained from any source should be properly referenced.

Re-Grading: Written requests, with full rational, for re-grading of all course-work will be accepted the next class period after original materials are returned to the students.

Disabilities Statement: If you have a documented disability and need reasonable accommodations to fully participate in course activities or meet course requirements, you must

1.) Contact the Director of Disability Services, Dr. Kristin Sagun, in the Center for Student Success, BSC room 228 by calling 361-1227.
2.) Meet with me (the instructor) within two weeks of receiving a copy of the accommodation letter from Disability Services to discuss your accommodation needs and their implementation.

NOTE: Students must bring to my attention accommodations they may use in order complete this course. Students will be accommodated as law requires, but remember, by law, initiation must be made by the individual student, not the instructor.

Fine Print: The above information represents the *intent* of the course and is subject to change at the discretion of the instructor.