University of Texas at El Paso
Department of Electrical and Computer Engineering

EE 4364 Systems and Controls
Fall 2018
Syllabus

Instructor:	Hector Erives, Ph.D.
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Textbook:	Feedback Control of Dynamic Systems by Franklin, Powell, Emami-Naeini, 8th edition, Pearson.
Office hours:	M,W 9:00 – 11:00 or by appointment

Pre-requisites: EE3353 with a grade of "C" or better.
Pre-requisites by topic: Laplace transform, transfer function, block diagrams, differential equations..

Course Description:
Systems and Controls Analysis and design of continuous and discrete time linear systems. Relationships between frequency and time domain design. Analysis of system stability and performance using root locus, lead lag compensation, and other techniques. Applications to electromechanical systems.

Course Outcomes:
Students completing this course will be able to:
1. Apply control techniques to design and implement a controller for an LTI system.
2. Understand different controller architecture and their capabilities.
3. Apply concepts and principles of sensors and actuators to model control systems.
4. Understand and apply the principles of controller system design

Topics:
- Dynamic Models
- Dynamic Response
- Analysis of Feedback Systems
- Root Locus Design
- Frequency-Response Design Method
- Digital Control

Grading:
- HW/Programs (10 %)
- Quizzes (10 %)
- Exam 1 & 2 (40 %)

- Project(s) (20 %)
- Final Exam (20 %)

Class Rules:

1. **Excused Absences**. If there is any medical or any other kind of emergency, please let the instructor know immediately.
2. **Academic Conduct.** It is expected that the students will conduct with integrity in all course areas. Do not attempt to engage in a dishonest activity such as copying, plagiarism, falsifying information, etc. The instructor will take measures to check such instances and will submit the case to the proper authorities. Website: http://studentaffairs.utep.edu/Default.aspx?tabid=4386
3. **Disability.** If you have a disability that requires accommodations, contact the Disabled Student Services Office at 747- 5148, or go to Room 106E Union. More information is available at: http://studentaffairs.utep.edu/dsso

Homework and Other Assignments:

- To obtain full credit, each assignment:
  - Must be turned in on time.
  - Must be properly documented
  - Hardware must function as required by the assignment
  - Software must compile and run without errors as required by the assignment
  - Must be turned in at the lab, with a hard copy, or via email as instructed
- You are encouraged to work in collaboration with classmates; however, each assignment must be done and turned in on an individual basis unless otherwise assigned.

Relationship to ECE Undergraduate Program Outcomes:

b. Have an ability to design and conduct experiments and interpret data. Students have lab assignments to design various aspects of a system based on an embedded microprocessor.

c. have an ability to design a system, component, or process to meet desired needs. There is a final project where each student designs and implements a system with an embedded microprocessor.

e. Have an ability to identify, formulate, and solve engineering problems. In the final project, students will use laboratory equipment to test and debug their designs.

g. Have an ability to communicate effectively. A final report for the final project is required.

k. Have an ability to use techniques, skills, and modern engineering tools necessary for modern engineering practice. Assignments and test problems are given that are related to major architectural features of modern embedded processors.