UNIVERSITY OF TEXAS

Department of Mechanical Engineering

Digital Control

ME 397 (Unique #18675); Fall 2018

TTH 11:00am-12:30pm; ETC 3.112

Professor Dongmei Chen
ETC 5.136 dmchen@me.utexas.edu

Office Hours
TTH 1:00-3:00pm

TENTATIVE SCHEDULE

WEEK	TOPICS
8/27	Introduction to computer controlled systems (Chapter 1)
9/03	Sampled data analysis (Chapter 2)
9/10	Z transform (Chapter 3)
9/17	Discrete-time system representation (Chapter 4)
9/24	Analysis of discrete-time systems (Chapter 5)
10/1	Analysis of discrete-time systems (Chapter 5)
10/08	Design of discrete time controller – input/output approaches (Chapter 6)
10/15	Midterm project report
10/22	Design of discrete time controller – polynomial approaches (Chapter 7)
10/29	Midterm exam
11/05	Midterm project presentation
11/12	Design of discrete time controller – state space approaches (Chapter 8)
11/19	Thanksgiving recess
11/26	Linear quadratic (LQ) optimal control (Chapter 9)
12/03	Course project demo and report

Prerequisites: ME344 or equivalent;

ME364L or equivalent is desired.

Ref. Text:

Notes and handouts will be distributed through UT CANVAS.

1. G. Chiu and H. Peng, course pack of "Design of Digital Control Systems," 1994-2012.

Grading:	Homework	20%	No late HW accepted w/o prior approval/excuse
	Midterm Exam	40%	
	Midterm Project Presentation/Report	10%	
	Final Project	30%	

Course Evaluation: MEC form

Scholastic dishonesty policy strictly enforced

Disabilities: The University of Texas at Austin provides upon request appropriate academic adjustments for qualified students with disabilities. For more information,

contact the Office of the Dean of Students at 471-6259, 471-4241 TDD or the College of Engineering Director of Students with Disabilities at 471-4321. The website for Service for Students with Disabilities is http://diversity.utexas.edu/disability/

OBJECTIVES

Upon completion of this course, the students should obtain fundamental understanding of computer controlled systems, and be able to construct discrete-time models, design digital control algorithms and analyze the open loop and closed-loop behavior.

COURSE CATALOG DESCRIPTION

The concepts of sampling and discrete-time signals/systems; analysis of discrete-time systems; design of discrete-time controllers, including input/output approaches, polynomial methods, state space techniques, and linear quadratic optimal control design. Three lecture hours a week for one semester.

HOMEWORK POLICY

Homework will be assigned to support lecture material and reading assignments-approximately five homework assignments. No late homework will be accepted except for illness or other extenuating circumstances. Students should bring a signed excuse from a health professional (if ill) or other authoritative professional (other extenuating circumstances).

EXAMINATION and PROJECT POLICY

One midterm examination will be given in the course. It is scheduled in the middle of the term. The format of the exams will be discussed prior to the exam. Make-up exam will not be provided. Signed excuses from appropriate professionals (i.e. doctors for illness, etc) must be turned in if the examination is not taken—otherwise a grade of zero will be assessed for the examination.

One term project will be assigned at the beginning of the term. The final report and program files need to be turned in during the last class.

CLASS FORMAT

Lecture style.

ATTENDANCE

Regular class attendance is expected but roll will not be taken. Class participation will be noted.

IMPORTANT DATES

Refer to course catalogs.