

Sys 6412  
Digital control Systems  
Winter 2018

Instructor	M A Zohdy	Office	342 EC
Office hrs	by appointment	Phone	2234
Schedule	Sat 9-12.30	Room	MSC 364
Prereq.	Sys 520		4 Cr

Text: Franklin, Powell, Emami , 'Digital Control', Prentice Hall, 5ed, 2003.

Supplement: Philips , Nagle, 'Digital Control Systems', Prentice Hall, 3ed, 1997.

Program outcomes:

- a. ability to apply mathematics, science, and engineering
- b. ability to design, conduct experiments, analyze data sets
- c. ability to design realistic systems and subsystems to meet specifications and constraints , economic, environmental, social, ethical, health, safety.
- d. ability to function in multidisciplinary teams
- e. ability to identify, formulate and solve engineering problems
- f. ability to understand professional conduct
- g. ability to communicate effectively
- h. ability to understand the implication of engineering solutions in global context

## Course Objectives:

- \*Introduction to digital control
- \*Sampling and Quantization processes
- \*Z transform analysis
- \*Inverse Z transforms
- \*Conformal mapping S-domain to Z-domain
- \*Digital controller design principles
- \*Discrete state variables modeling
- \*Discrete Controllability and Observability
- \*Combined controller/observer design and implementation

## Exams:

- Several quizzes
- Midterm exam

## Projects:

- design centered novel digital control system design and implementation, for performance and stability. Must effectively utilize matlab/ simulink/ labview

## Grading:

- Hws 20%

-Quizes 20%

-Exams 25%

-Projects 35%