Course
ECE 48300 – Digital Control Systems - Analysis and Design

Type of Course
Elective for CmpE, EE, and ME programs

Catalog Description

Credits
3

Contact Hours
3

Prerequisite Courses
ECE 301 or ME 331

Corequisite Courses
None

Prerequisites by Topics
An introduction to signals and systems, or system dynamics

Textbook
Digital Control Systems, Benjamin C. Kuo, Oxford University Press, 2nd Ed., 1995

Course Objectives
This course provides an introduction to control of discrete-time systems. Both classical and modern control techniques are covered. Implementation of digital controller and computer controlled systems are also discussed.

Course Outcomes
Students who successfully complete this course will have an understanding of:
1. Discrete-time systems representations (a,e)
2. Introduction to z-transform and state-space techniques (a,e)
3. Controllability, observability, and stability (a,e)
4. Time-domain and frequency domain analysis (a,e)
5. Design using z-transform and state-space descriptions (c,e)
6. Approximation and implementation of controllers (a,e)
7. An introduction to program logic controllers (k)

Lecture Topics
1. Discrete-time systems representations
2. Analysis of discrete-time systems
3. Controllability, observability, and stability
4. Control systems design of discrete-time systems
5. Approximation and implementation of controllers
6. An introduction to program logic controllers

**Computer Usage**
- High

**Laboratory Experience**
- None

**Design Experience**
- High

**Coordinator**
- Hossein M. Oloomi, Ph.D.

**Cross-listed Course**
- None

**Date**
- November 10, 2013