University of Wisconsin - Madison
College of Engineering [EGR]
Last Offered: 2012-2013 Fall [1132]

Direct Link to this Syllabus:

1. E C E 417, Digital Control
2. Credits : 3  Contact Hours : 3.0
   a. Other Supplemental Materials : None

   - Specific Course Information :

     a. Brief description of the content of the course (Course Catalog Description) :
        Fundamentals of sampled linear systems from a control perspective, encompassing both frequency-domain and time-domain control strategies. Topics covered include analysis of difference equations, the z-transform, sampling, stability, minimality, discrete approximation, and stabilization techniques.

     b. Pre-requisites or Co-requisites : ECE 334; ECE 332 or con reg

     c. This is a Selected Elective course.

   - Specific Goals for the Course :

     a. Course Outcomes :

        1. Students will be able to design digital control systems by applying relevant concepts in linear system theory.
        2. Students will achieve an understanding of the interactions between sampling and feedback

     - ABET Student Learning Outcomes :
(a) Ability to apply mathematics, science and engineering principles.
(e) Ability to identify, formulate and solve engineering problems.
(k) Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

• Brief List of Topics to be Covered:
  1. Difference Equations
  2. The z-Transform
  3. Sampled-Data Systems
  4. Stability
  5. Jury and Schur-Cohn Criterion
  6. Controllability and Observability
  7. Gain Compensation
  8. Approximation Methods
  9. Direct Design
 10. State Feedback
 11. Dynamic Programming