University of Wisconsin - Madison
College of Engineering [EGR]
Last Offered: 2014 Spring [1144]
Direct Link to this Syllabus :

http://aefis.engr.wisc.edu/index.cfm/page/CourseAdmin.ViewABET?coursecatalogid=145&pdf=True

1. **M E 447, Computer Control of Machines and Processes**
2. **Credits :** 3.00   **Contact Hours :** 2.5
3. **Textbook and Materials :** Computer Controls of Machines and Processes, Bollinger and Duffie, Addison-Wesley, 1988.
4. **Specific Course Information :**
   a. **Brief description of the content of the course (Course Catalog Description) :** Discrete control theory reduced to engineering practice through a comprehensive study of discrete system modeling, system identification and digital controller design. Selected industrial processes and machines utilized as subjects on which computer control is to be implemented. Focus: computer control economics and planning as well as the control theory and programming.
   b. **Pre-requisites or Co-requisites :** ME 340 or equiv or cons inst
   c. **This is a Elective course.**
5. **Specific Goals for the Course :**
   a. **Course Outcomes :**
      1. Develop students' knowledge of modeling physical systems for purposes of control system analysis and design
      2. Develop students' knowledge of feedback control system architectures and options
      3. Develop students' knowledge of analytical approaches for computer control systems
      4. Develop students' knowledge of design methods and tools for computer control systems
      5. Introduce students to control computer architecture, sensors and software/hardware principles
      6. Develop students' knowledge of programmable logic control
      7. Develop students' ability to communicate with experts in the various disciplines associated with computer control of machines and processes.
   b. **ABET Student Learning Outcomes :**
      (e) Ability to identify, formulate and solve engineering problems.
      (f) Understanding of professional and ethical responsibility.
      (h) The broad education necessary to understand the impact of engineering solutions in a global and societal context.
      (i) Recognition of the need for and an ability to engage in life-long learning.
      (j) Knowledge of contemporary issues.
      (k) Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.
6. **Brief List of Topics to be Covered :**

   Discrete system modeling

   Discrete controller design

Transformation methods

Control computer technology

Sensors

Sequential logic control