Sample course syllabus for ABET Self-Study Report (new format)

1. Course number and name
   ENGR 447 Control Systems

2. Credits and contact hours
   3 credit hours; three 75-minute lecture sessions/week, or two 1-hr-15-minute lecture sessions/week, depending on semester

3. Instructor’s or course coordinator’s name
   Instructor: V.V.Krishnan, Instructor
   Course coordinator: V.V. Krishnan, Professor of Mechanical Engineering

4. Text book, title, author, and year
   a. other supplemental materials
      Ogata, K.: Modern Control Engineering (Fifth Edition), Prentice-Hall, 2009
      MATLAB & Simulink Student Version  R2010a, Mathworks, 2010
      Interactive Control Systems Tutorial (available on the web)

5. Specific course information
   a. brief description of the content of the course (catalog description)
   b. prerequisites or co-requisites
      ENGR 305: Systems Analysis.
   c. indicate whether a required, elective, or selected elective course in the program
      Required / Elective for Mechanical Engineering; required for Electrical Engineering.

6. Specific goals for the course
   a. specific outcomes of instruction,
      • Students will be familiar with the fundamental concepts of Control Theory
      • Students will be introduced to the basic techniques of time and frequency domain analysis.
      • Students will be able to interpret control system specifications
      • Students will be able to develop performance criteria for simple everyday control systems
      • Students will be able to design appropriate controllers for practical systems.
Sample course syllabus for ABET Self-Study Report (new format)

- Students will be able to use standard software for designing controllers.
- Students will use the Mathworks Control Systems Toolbox for implementing the various controller design techniques.

b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.
Course addresses ABET Student Outcome(s): a, c, d, e, g, i, j, k.

7. Brief list of topics to be covered

- Review of basic systems concepts
- Transfer Functions and block diagram reduction
- System formulation in State-Space
- Effect of system parameters on system response
- System performance specifications in time domain
- System Stability
- Root Locus Method
- Frequency Characteristics of systems
- Bode Plots and Nyquist Stability Criterion
- System Specifications in frequency domain
- Classical Compensator Design Methods
- Design in State Space
- Design of Controllers and Observers
- Introduction to Digital Controls
- Advanced Topics in Control