AOE 4004: Computer Aided Control System Design
Course Syllabus

Instructor: Mazen Farhood
224-13 Randolph Hall
Phone: 231-2983
E-mail: farhood@vt.edu

Time & Location: Tuesdays & Thursdays, 12:30 PM to 1:45 PM
Randolph Hall, Room 208

Office Hours: Tuesday, 2:00 PM to 3:30 PM
Thursday, 2:00 PM to 3:30 PM

Course Web Page: http://scholar.vt.edu

Recommended Text: Ogata, K. Modern Control Engineering, Fourth Edition,

References: Bélanger, P. Control Engineering: A Modern Approach,

Franklin, G. F., Powell, J. D., and Emami-Naeini, A.
Feedback Control of Dynamic Systems, Third Edition,
Addison-Wesley, Reading, MA 1994.

Ogata, K. System Dynamics, Third Edition,

Grade: 20% Homework
25% Exam #1: Date TBA
25% Exam #2: Date TBA
30% Exam #3: Date TBA

Course Topics:

I. Modeling and Analysis
   A. Newton’s Laws and Lagrange’s Equations
   B. Linearization
   C. Frequency/Time Response
   D. Control Strategies: Open-loop, Feedback, Feedforward

II. Frequency Domain Topics
    A. Standard compensator structures (P, PD, PI, & PID control)
    B. Stability analysis (Routh’s criterion, root locus plots, Nyquist plots)

III. Time Domain Topics
    A. State Space Systems (state transition, controllability, observability)
    B. State Feedback (pole placement, LQR)
    C. State Estimation (Luenberger observer, Kalman filter)