ECEN 3413 Controls I  
Spring 1998

**Time:** Tuesday/Thursday 10:30AM-11:45 AM

**Place:** Human Environmental Sciences (HES) 316

**Prerequisite**  
ENGSC 2613- Introduction to Electrical Science  
MATH 2613- Differential Equations

**Text:**  
*System Dynamics*  
Katsuhiko Ogata, Prentice-Hall, 1998

**References:**  
*Discrete-time and Continuous-time Linear Systems*  
Robert J. Mayhan, Addison-Wesley, 1984  
*Signals and Systems- an Introduction*  
Leslie Balmer, Prentice-Hall, 1991  
*Signals, Systems and Transforms*  
Charles L. Phillips and John M. Parr, Prentice-Hall, 1995

**Instructor:**  
Professor Gary G. Yen,  
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Engineering South 202  
Office Hours: Tuesday/Thursday 2:00-5:00 PM  
or by appointment only

**Objectives:**  
To introduce some basic tools needed for signal and system analysis and design applicable to dynamic controls through mathematical derivations and computer simulations.  
The topics include  
- signals and systems representation  
- Laplace transform  
- solving differential equations  
- z-transform  
- solving difference equations  
- modeling of electrical systems  
- modeling of mechanical systems  
- time-domain analysis  
- frequency-domain analysis  
- state space model and its solution

**Grading:**  
- 10 Weekly Homework Assignments 20%  
  1/20, 1/27, 2/3, 2/10, 2/26, 3/5, 3/17, 3/24, 4/14, 4/21  
- Computer Design Project 10%  
- Midterm Exam 1 (February 19) 20%  
- Midterm Exam 2 (April 2) 20%  
- Final Exam (May 7) 30%

**Note:**  
All exams are open book and class notes.