Instructor: Jerome P. Lynch  
jerlynch@umich.edu.

Lectures: Tuesdays and Thursdays, 8:30 - 10:00 am  
EECS Building Room 1311

Office Hours: Available upon Request

Website:  http://www-personal.umich.edu/~jerlynch/cee572/

Catalog Description:  
This course is an introductory course in the fundamentals of dynamics system theory  
applied to infrastructure systems including applications in modeling, motoring and  
controlling structural, transportation, hydraulic, and electrical grid systems. Linear  
systems are emphasized including continuous-time and discrete-time systems but  
elementary concepts in nonlinear systems are also presented. Additional topics include  
feedback control theory, system identification, and cyber-physical system architectures.

Textbook:  
• None required

Optional References (currently on 2-hour reserve at the AAE Library):  
• Introduction to Dynamic Systems: Theory, Models, and Applications, David G. Luenberger,  
  Wiley, 1979  
• Linear Dynamical Systems, John L. Casti, Academic Press, 1987  
• Filtering and System Identification: A Least Squares Approach, Michel Verhaegen and Vincent  
  Verdult, Cambridge Press, 2007

Course Requirements:  
• Regular attendance  
• Weekly homework assignments  
• Midterm exams (3 exams)

Homework:  
Homework will be assigned each Thursday and due the following Thursday in class  
(unless otherwise noted). Please note, late homework will not be accepted. You are  
allowed to work on the homework in small groups, but you must write up your own  
homework to hand in. Homework will often involve MATLAB programming. Homework  
will be graded on a scale of 100.

Grading:  
Homework 25%, Midterm #1 25%, Midterm #2 25%, and Midterm #3 25%. These  
weights are approximate; the right to change them later is reserved (but always to the  
benefit of the student).

Prerequisites:  
Exposure to linear algebra and matrices. You should have seen the following topics:  
matrices and vectors, (introductory) linear algebra and differential equations. Some  
preliminary knowledge of MATLAB would be beneficial but not required. Deeper  
appreciation for the course would be derived from having taken CEE571: Linear System  
Theory