ECEN 5713 Linear Systems
Spring 2009
Syllabus

Time: Tuesday/Thursday 12:30-1:45PM

Place: Cordell 127 (Stillwater) and NCB 213 (Tulsa)

Prerequisite: Graduate standing or consent of instructor
Linear Algebra, Dynamical Systems, Signals and Transforms

Text: *Lecture Notes* to be distributed via D2L

References: *Linear System Theory and Design*, Chi-Tsong Chen
Oxford, 1984

Modern Control Theory, 3rd edition, William L. Brogan
Prentice-Hall, 1991

Linear Systems, Panos Antsaklis and Anthony Michel
McGraw-Hill, 1997

Linear Systems, Thomas Kailath
Prentice-Hall, 1980

Instructor: Professor Gary G. Yen, Engineering South 404
http://www.okstate.edu/elec-engr/faculty/yen
405-744-7743, 405-744-9198 (fax), gyen@okstate.edu
Office Hours: Tuesday/Thursday 2:00PM-5:00PM; or by
appointment only

TA: TBA

Objectives: To study the fundamental theory of finite-dimensional
linear system with emphasis on the state-space
representation and its solution.
The topics include, but not limited to,
- mathematical basis-
  matrix theory, linear algebra, vector space
- system representation-
  input-output operator, geometric approach,
  state space representation, transfer function
- conversion of alternative representations
- linear dynamical solution
- similarity transformation
- controllablity, observability and special forms
- stability and control

- o linearization and minimal realization
- o state feedback and state estimation
- o state observer

Grading:

10 Weekly Homework Assignments	**25%**

Tentative schedule-
1/22, 1/29, 2/5, 2/12 (before the first midterm)
3/3, 3/10, 3/24, 3/31 (before the second midterm)
4/16, 4/23 (after the second midterm)
Spring Break: 3/17, 3/19

Midterm Exam 1 (February 24, 12:30PM-2:00PM)	**25%**
Midterm Exam 2 (April 9, 12:30PM-2:00PM)	**25%**
Final Exam (May 7, 10:00-11:50AM)	**25%**

A-90% above; **B**-78%-90%; **C**-68%-77%; **D**-58%-67%; **F**-57% below
Quizzes will be given throughout the semester and counted toward the final grade as bonus points; No makeup exams will be given.

Note: All exams are open notes, but close book.

Drop and Add: The instructor will follow University, College and Departmental guidelines for drops and adds. Consult the class schedule book or Ms. Helen Daggs in Engineering South 202 for more information.

Attendance: Attendance record will be sampled randomly and will be counted toward your grade. Students will be expected to attend class. Habitual failure to do so will result in a reduced grade. An incomplete grade will only be given when a student misses a portion of the semester because of illness or accident. All (I) grades must be completed within thirty days.

Academic Integrity: The instructor will strictly follow OSU's Academic Integrity Policy as stipulated in http://academicintegrity.okstate.edu/   There is a video clip at http://ra.okstate.edu/provost/academic/integrity.html that every student (and probably every faculty member) should watch early in their academic career. This video very clearly defines the different types of academic misconduct and summarizes methods to avoid these problems.

Cheating on homework, quizzes or examinations, plagiarism and other forms of academic dishonesty are serious offenses and will subject the student to serious penalties.

Plagiarism. Presenting the written, published or creative work of another as your own work. Whenever you use wording, argument, data, design, etc., belonging to someone else in a paper, report, oral presentation, or other assignment, you must take this fact explicitly clear by correctly citing the appropriate references or sources. You must fully indicate the extent to which any part or parts of the

project are attributed to others and provide citations for paraphrased materials.

Disability Impairment: If any member of the class feels that he/she has a disability and needs special accommodations of any nature whatsoever, the instructor will work with you and the University Office of Disabled Student Services to provide reasonable accommodations to ensure that you have a fair opportunity to perform in this class.

Class Website: You are advised to check class website at the Online Classroom and Community page (D2L) at https://oc.okstate.edu/ regularly for important information, such as handouts, homework assignments, schedule changes, old exams and last minute announcements.