NYU Tandon School of Engineering – Polytechnic Institute
Department of Electrical & Computer Engineering

EL6253: Linear Systems
Course web site: http://crrl.poly.edu/6253 (including homeworks & solutions & Office hours)

Instructor: Prof. Farshad Khorrami
Phone: (646) 997-3227
Fax: (646) 997-3906
email: khorrami@nyu.edu
Room: LC266E

Course Outline

Lecture	Subject
I	Basic concepts; classification of systems; notion of state.
II	Realization thoery and canonical forms.
III	Canonical forms; review of time-doamin analysis: convolution, impulse response, and step response.
IV-VI	Solutions of linear differential and difference equations: time varying and time-invariant cases. Frequency domain analysis for time-invariant systems.
VII	Controllability and and observability for continuous systems both time-varying and fixed.
VIII	Midterm.
IX	Controllability and observability for discrete-time systems both time-varying and fixed systems.
X, XI	Kalman Decomposition.
XI, XII	Stability of linear systems and pole placement.
XIII	Observer design and separation principle.
XIV	Sampled data systems.
XV	Final Exam

TEXT: P. E. Sarachik, *Principles of Linear Systems*, Cambridge Press, 1996.

References:

1. T. Kailath, *Linear Systems*, Prentice-Hall, 1980.
2. P. J. Antsaklis and A. N. Michel, *Linear Systems*, McGraw Hill, 1997.
3. C. T. Chen, *Linear System Theory and Design*, HRW, 1984.
4. F. Khorrami, *Lecture notes on the course website.*

Grading:

Midterm: 40% , Final: 50%, Homework: 10%