Santa Clara University Department of Electrical Engineering Aleksandar I. Zecevic Fall 2011

ELEN 236: Linear Control SystemsTEXT: R. L. Williams and D. A. Lawrence: *Linear State-Space Control Systems*, John Wiley & Sons, 2007.

SYLLABUS

WEEK TOPIC

1	Review of fundamental concepts
2	Linear equations, eigenvalues and eigenvectors
3	State equations and canonical realizations
4	Solutions of state equations
5	Stability and modal decompositions
6	MIDTERM
7	Functions of matrices
8	State feedback, controllability and observability
9	Controller canonical form and pole placement
10	Luenberger observers and the Separation Theorem

11 FINAL EXAM

LEARNING OUTCOMES

Students who successfully complete this course should be able to:

- 1. Formulate and solve state equations for linear dynamic systems.
- 2. Find the modal decomposition of a system and determine its stability.
- 3. Establish whether a system is completely controllable and observable.
- 4. Compute Jordan canonical forms and functions of matrices.
- 5. Design state feedback control laws that ensure a desired set of poles for the closed-loop system.
- 6. Design Luenberger observers according to given specifications.

GENERAL INFORMATION

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GRADING

The Midterm and Final exams will be worth 40% and 60% of the grade, respectively. Homework problems will be assigned for practice, but they will *not* be corrected or graded. Instead, detailed solutions will be available on ERES (http://eres.scu.edu).