

# EE 602 Analytical Methods (Spring 2010)

## **Text Book:**

Gilbert Strang, *Introduction to Linear Algebra*, Fourth Edition, Wellesley-Cambridge Press (2009) ISBN 978-0-9802327-1-4.

Textbook web site: <http://web.mit.edu/18.06/www>

## **Reference Book:**

P. Lancaster and M. Tismenetsky, *The Theory of Matrices*, Second Edition, Academic Press, 1985.

## **Instructor:**

Yi Guo, Prof. of ECE

Office: Burchard 202

Email: [yguo1@stevens.edu](mailto:yguo1@stevens.edu)

Ph: (201) 216 5658

Web Site: <http://personal.stevens.edu/~yguo1>

Office Hours: Tuesday Wednesday 3:40pm-4:40pm

## **Grading Policy:**

Homework 20%

Mid-term Exam 30%

Final Exam (comprehensive) 50%

Homework will be assigned regularly. Possible revision of test grades may be discussed immediately following the return of the test papers or the announcement of grades (no later than a week from it). No make-up tests.

Any act of academic dishonesty will result in a failing grade.

## **Schedule of Topics (tentative):**

Week 1 – Matrix operations, special properties, Laplace's Theorem, Binet-Cauchy formula

Week 2 – Elementary operation, LU decomposition

Week 3 – Vector spaces and linear independence, linear systems theory

Week 4 – Linear algebraic equations, consistency test, solution techniques

Week 5 – Eigenvalues and eigenvectors, diagonalization of square matrices

Week 6 – Linear differential equations, state space representation

Week 7 – Midterm exam

Week 8 – Solutions to state space equations

Week 9 – The matrix exponential, functions of matrix

Week 10 – Quadratic forms, positive definite matrix

Week 11 – Controllability and observability

Week 12 – Nonnegative matrices, stochastic matrices (optional)

Week 13 – Special topics, application examples (optional)

Week 14 – Review