EK102: Introduction to Linear Algebra for Engineers
Secs. A1 and B1

Fall 2012

Course learning objectives: at the end of this course, the students will be familiar with basic concepts in linear algebra, such as matrices, linear equations, vector spaces, inner products, eigenvectors and eigenspaces.

Instructor: Calin Belta
Mechanical Engineering Dept. & Division of Systems Engineering
110 Cummington Street, Room 414
Telephone : (617) 353 - 9586
Email: cbelta@bu.edu

Office hours: Wed 12-2 and 4-6

Textbook: *Elementary Linear Algebra with Applications*, (**9th edition**), Bernard Kolman and David R. Hill, Pearson/Prentice Hall, 2008.

Homework: Homework will be assigned weekly.

Grading: There will be **one midterm exams** and a **final exam**. The final grade for the course will be based on the following allocation.

Homework: 20%
Midterm 1: 30%
Final Exam: 50%

Blackboard: All class material (e.g., lecture notes, assignments, exams, solutions) will be made available in the BU blackboard (see blackboard.bu.edu)

SYLLABUS

1. *Linear Equations and Matrices* (Chapter 1): Systems of linear equations; Matrices; Matrix operations & special matrices.

2. *Solving Linear Systems* (Chapter 2): Solving linear systems; Inverse of a matrix.

3. *Determinants* (Chapter 3): Determinants and their properties.

4. *Real Vector Spaces* (Chapter 4): Vector spaces; Subspace & span; Linear independence, basis & dimension; Coordinates & isomorphisms.

5. *Inner Product Spaces* (Chapter 5): Inner product spaces, length, & angle; Orthogonal vectors & Gram-Schmidt Process.

6. *Eigenvalues and Eigenvectors* (Chapter 7): Eigenvalues and eigenvectors & diagonalization of matrices.