EK102 (A1): Introduction to Linear Algebra for Engineers

Fall 2014

Instructor: Pirooz Vakili
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Class: Wednesday 10 am-12pm; **Location:** PHO 206

Discussion sections:

A2: Monday 11am- 12 pm**; Location:** PRB 148
A3: Tuesday 2-3 pm**; Location:** PSY B47
A4: Friday 10-11 am**; Location:** SOC B59
A5: Thursday 3-4 pm**; Location:** PSY B33

Office hours: Tuesdays 12 -1 pm, Wednesday 1-2 pm or by appointment

Textbook: We will not be using a textbook. Class notes and references will be provided.

Homework: Homework will be assigned weekly. It is due at the beginning of the following class. Collaboration in solving homework problems is acceptable. However you need to turn in your own work.

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

Homework: 25%
Midterm: 35%
Final Exam: 40%

Midterm Exam: Saturday October 25, 10 am – 12 pm, PHO 206.

Final Exam: Scheduled during final exam period by the registrar. Final exam will be on ALL material covered in the course.

Course learning objectives: At the end of this course, students will be familiar with basic concepts in linear algebra, such as matrices and matrix operations, linear systems and their solutions, vector spaces, inner products, eigenvalue, eigenvectors and their application.

SYLLABUS

1. *Introduction to the course*; (**September 3)**

2. *Real Vector Spaces*: Space of vectors; inner product; length & angle between vectors; Orthogonal vectors & Gram-Schmidt Process (**September 10, September 17**)

3. *Real Vector spaces II*: Subspace & span; Linear independence, basis & dimension; (**September 17, September 24**)

4. *Linear Transformations and Matrices*: Linear Transformations & range and kernel; Matrix of a linear transformation (**October 1, October 8**)

   No class on October 15

5. *Linear Equations and Matrices*: System of linear equations; Matrices; Matrix operations & special matrices. (**October 22**)

   Midterm Exam: Saturday October 25, 10 am – 12 pm, PHO 206.

6. *Solving Linear Systems*: Solving linear systems; Inverse of a matrix. (**October 29**)

7. *Determinants*: Determinants and their properties (**November 5**)

8. *Eigenvalues and Eigenvectors*: Eigenvalues and eigenvectors (**November 12, November 19**)

   No class on November 26

9. *Applications* (**December 3**)

10. *Review* (**December 10**)