EE 501 Linear Systems Theory I
Fall 2016

Instructors:

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References:

- S. Axler, **Linear Algebra Done Right**, Springer, 1997.
- C.A. Desoer, **Notes for a Second Course on Linear Systems**, Van Nostrand Reinhold, 1970.
- P. D. Lax, **Linear Algebra**, Wiley, 2004.
- G. Strang, **Linear Algebra and its Applications, 4th Ed.** Brooks/Cole, 2006.

Tentative Course Schedule:

Week	SUBJECT
1	Algebraic structures defined on sets: Fields and vector spaces.
2	Subspaces. Linear independence. Basis sets. Representation of a vector w.r.t. a basis.
3	Normed vector spaces. Sequences, series and convergence in normed spaces. Matrix norms.
4	Inner product spaces. Orthogonality. Gramm-Schmidt orthonormalization.
5	Linear transformations: Null-range spaces. One-to-one and onto linear transformations.
6	Matrix representations of linear transformations. Adjoints of linear transformations.
7	Direct sum decompositions. (**1st Midterm**)
8	Projection theorem, Orthogonal projections.
9	Systems of linear equations of the form **Ax=b**.
10	Spectral analysis of linear transformations. Eigenvalues and eigenvectors.
11	Cayley-Hamilton Theorem. Characteristic and minimal polynomials.
12	Block diagonal forms. (**2nd Midterm**)
13	Jordan canonical form.
14	Hermitian matrices. Positive (semi) definite matrices. Introduction to functions of a matrix.

Web-Page: http://www.eee.metu.edu.tr/~umut/EE501/

Midterm Dates: November 14, 2016, Monday 17:40 (*1st MT*), December 19, 2016, Monday 17:40 (*2nd MT*)

Grading: MT1 %30, MT2 %30, Final %40

Final and NA Criteria: The students who fail to take both MT1 and MT2 without an official excuse will directly get the grade "NA".