University of Tehran
School of Electrical and Computer Engineering

Course:	**8101174 – Linear Algebra**
Course type:	EE*: Com ☐, E ☐, P ☐, B ☐, Con ☒, D ☐ — CE*: SW ☐, HW ☐, IT ☐ — Credit: 3 (Required / Elective)
Level:	Undergraduate ■ Graduate ☐
Co-requisite(s):	None.
Prerequisite(s):	Calculus II (8120049)
Prerequisite by topic:	Matrix Calulation
Textbook(s):	[1] Strang, Gilbert. Introduction to Linear Algebra. 4th ed. Wellesley, MA: Wellesley-Cambridge Press, February 2009. [2] Stephen H. Friedberg, A. J. Insel, and L. E. Spence, Linear Algebra, Printice-Hall Inc., 2003
Coordinator:	Yazdanpanah, Professor, School of ECE
Goals:	This course provides students with a good understanding of the concepts and methods of linear algebra, described in detail in the syllabus and helps the students develop the ability to solve problems using linear algebra.
Outcome:	Upon successful completion of the course, students will be able 1. apply knowledge of mathematics, science, and engineering 2. design and conduct experiments, as well as to analyze and interpret data 3. identify, formulate, and solve engineering problems 4. use the techniques, skills, and modern engineering tools necessary for engineering practice
Topics:	1. Sets, Functions, Fields 2. Vector Spaces 3. Linear Transformations and Matrices 4. Elementary Matrix Operations 5. Systems of Linear Equations 6. Determinants 7. Diagonalization 8. Euclidean and Unitary Spaces 9. Inner Product Spaces 10. Definite and Semi-definite Matrices in (Constrained) Optimization

	11. Weighted Least Squares 12. Adjoint Operators 13. Generalized Eigenvalue Problem 14. Matrix Norms 15. Canonical Forms
Computer usage:	None.
Assignments:	6 to 8 homework assignments
Projects:	None.
Grading:	Assignments: 15 % Midterm exams: 35% Final exam: 50 %
Further readings:	[1] Carl D. Meyer, Matrix Analysis and Applied Linear Algebra, SIAM, 2000, [2] Gilbert Strang; 3rd ed., Thomson Learning Inc., Linear Algebra and its Applications, 1988.
Prepared by:	Yazdanpanah, Professor, School of ECE
Date:	August 15, 2017.

*EE: Electrical Engineering		CE: Computer Engineering	
Com	Communications	SW	Software
E	Electronics	HW	Hardware
P	Power	IT	Information Technology
B	Bioelectronics		
Con	Control		
D	Digital System		