Tandon School of Engineering, New York University
Department of Electrical and Computer Engineering

ECE-GY 5253: *Applied Matrix Theory*

Instructor:	Prof. Z. P. Jiang	Contact hours:	before/after class
	Phone: (646) 997-3646		or, by appointment
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Course Outline

Week	Subject
I	Elementary facts about matrices and determinants
II	Theory of linear equations
III	Eigenvalues and eigenvectors
IV-VI	Canonical forms and transformations
VII	The Jordan canonical form
VIII	**Midterm**
IX-X	Norms, location of eigenvalues, and the singular value decomposition (SVD)
XI	Matrix analysis of differential and difference equations
XII	Application to stability analysis of linear systems
XIII	Nonnegative matrices
XIV	Computational issues
XV	**Final** (mid-December, 2019)

References:
• (Recommended Text) R.A. Horn and C.R. Johnson, *Matrix Analysis*. 2nd edition. Cambridge Univ. Press, 2013. ISBN: 978-0-521-54823-6
• A. J. Laub, *Matrix Analysis for Scientists and Engineers*. SIAM, 2005.
• (Math.-oriented) F. R. Gantmacher, *The Theory of Matrices*. Vol. I & Vol. II, Chelsea Pub. Company, 1953.
• Class notes.

Grading Policy:
Attendance: 5% ,   Midterm: 35% ,   Final: 45%,   Homework: 15%