Carleton University
School of Mathematics and Statistics
Linear Algebra III
Math3107A, Winter 2016

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Office hours: 2:30pm -3:30pm Thursday; Other time is available by appointment.

Office Location: 4368HP

Day and time of course: Tuesday, Thursday : 10:05 am -11:25 am, Tory Building 202

Textbook: Applied linear algebra and matrix analysis, by Thomas S. Shores. Other suggested books:

Matrices, by Denis Serre.
Matrix analysis, by Roger A. Horn and Charles R. Johnson.
Applied linear algebra, by Ben Noble and James W. Daniel.

Prerequisites: i) a grade of C- or higher in MATH 1102 or MATH 2107; and ii) credit in MATH 1002 or MATH 2007; or permission of the School.

Evaluation: Midterm (15%), Tutorials (5%), Assignments (20%), and Final Examination (60%).

Tutorials: Thursday 11:35-12:25, Southam Hall 406. Tutorials are a very important part of this course. In each tutorial you will be given several questions to work on. You are grouped in a team of four or five students. You may have discussions with the TA and/or your study partners about the tutorial questions. At the end, each team submits one set of answer to the TA. Each member will have the same mark (0, or 2, or 4). TA's name and

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office hour will be announced later.

Midterm Exam: The midterm exam (Feb. 25) worth 15 marks.

Assignments: Two assignments (10 marks each). Due dates: Feb. 11 and Mar. 15.

Final Examination: This is a three hour closed-book exam scheduled by the University and will take place sometime during the examination period.

Academic Accommodation
You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: http://carleton.ca/equity/accommodation/student_guide.htm

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: http://carleton.ca/equity/accommodation/student_guide.htm

Students with disabilities requiring academic accommodations: in this course must register with the Paul Menton Centre for Students with Disabilities (PMC) for a formal evaluation of disability-related needs. Documented disabilities could include but are not limited to mobility/physical impairments, specific Learning Disabilities (LD), psychiatric/psychological disabilities, sensory disabilities, Attention Deficit Hyperactivity Disorder (ADHD), and chronic medical conditions. Registered PMC students are required to contact the PMC, 613-520-6608, every term to ensure that I receive your Letter of Accommodation, no later than two weeks before the first assignment is due or the first in-class test/midterm requiring accommodations. If you only require accommodations for your formally scheduled exam(s) in this course, please submit your request for accommodations to PMC by the last official day to withdraw from classes in each term. For more details visit the PMC website: http://www.carleton.ca/pmc/students/acad_accom.htm

Tentative lecture schedule

Week	Dates	Sections	Topics
1	Jan. 6-8	1.2; 2.4-2.6	Notations and complex numbers Elementary matrices.
2	Jan. 11-15	2.7, 4.1	LU factorization, standard norm
3	Jan. 18-22	4.2-4.3	Norms and inner products, Orthogonal and unitary matrices
4	Jan. 25 -29	5.1-5.2	Eigenvalue problem, similarity;
5	Feb. 1-5	5.3- 5.4	Discrete Dynamic systems, Orthogonal diagonalization
6	Feb. 8-12	5.5	Schur forms and triangulation **Assign # 1 due on Feb. 11**
7	Feb. 15-19		Winter break, no class
8	Feb. 22-26	5.6	The singular value decomposition **Midterm (Feb. 25)**
9	Feb. 29- Mar. 4	5.7	Computation of Eigensystems
10	Mar. 7-11	6.1	Normed spaces
11	Mar. 14-18	6.2-6.3	Inner product spaces, Gram-Schmidt Algorithms **Assign # 2 due on Mar. 15**
12	Mar. 21-25	6.3-6.4	Gram-Schmidt Algorithms, Linear systems revisited,
13	Mar. 28-Apr. 1	6.4-6.5	QR factorization, operator norms
14	Apr. 4-8	6.6	Perturbation Theorem, course review