MATH 1104D Linear Algebra for Engineering or Science, Fall 2017

Instructor: Şaban Alaca, 4364HP
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Office hours: Mondays 1:30--2:20pm

Textbook: Linear Algebra and its Applications, Fifth Edition, David C. Lay, Steven R. Lay, and Judi J. McDonald. Loose-leaf/ "À la carte edition" copies are available in the university bookstore.

Prerequisite: Ontario Grade 12 Mathematics: Advanced Functions, or MATH 0005, or equivalent, or permission of the School.

Calendar Description: Systems of linear equations, matrix algebra, determinants, invertible matrix theorem, Cramer's rule. Vector space R^n, subspaces, bases. Eigenvalues, diagonalization. Linear transformations, kernel, range. Complex numbers (including De Moivre's theorem). Inner product spaces and orthogonality. Applications.

Lectures: Mondays and Wednesdays 2:30--4:00pm in RB 2200.

Lectures begin on Wednesday September 6, 2017 and end on Friday December 8, 2017.

Grading Scheme: Term tests 40%, Tutorial work 10% and Final exam 50%

Term tests: There will be three 50-minute tests during tutorial hours on **October 4, November 1** and **November 22, 2017**. The average of the best two out of three tests will make up 40% of your final grade. No make up, early or late tests will be given. Any missing test will be counted as zero. If you miss a test for medical reasons, an official and signed medical note must be presented. It is your responsibility to pick up your test paper in the following tutorial hour.

Tutorials: Wednesdays 1:30-2:30pm. There will be problem solving sessions during the tutorial hours. Tutorials start on September 13, 2017.

Final Exam: There will be a 3-hour exam scheduled during the usual exam period. It is the responsibility of each student to be available at the time of the final examination. In particular, no travel plans for the examination period in December should be made until the examination schedule is published.

Calculators: Only nonprogrammable calculators are allowed during the tests and the final examination. I reserve the right to disallow any calculators.

E-mail communication with instructor: Please use your Carleton e-mail account for all course related e-mails.

Announcements: You are responsible for keeping up with information announced in class, or sent to your Carleton e-mail account, or announced in cuLearn.

Tutorial Rooms and Teaching Assistants

Section	Location	Last Name	Teaching Assistant	Email: @cmail.carleton.ca
D1			Mohamed Hozayen	mohamedhozayen
D2			Xinlai Chen	jasonchen3
D3			Rachel Myrah	rachelmyrah
D4			Ezekiel Staats	ezekielstaats
D5			Juan Contreras	juanpablocontreras

Math Tutorial Centre:
You can study and get help from teaching assistants in the Math Tutorial centre. It is located in HP3422 and is open Monday-Thursday 11:00am-4:00pm, and Fridays 11:00am-3:00pm. For more information, visit
https://carleton.ca/math/math-tutorial-centre

Mathematics and Statistics Learning Assistance Program (MS-LAP):
Math & Stats Learning Assistance Program (MS-LAP) supports first year mathematics and statistics courses. This free of charge program helps students in achieving their goals. It provides learning support and solutions to homework questions through assistance videos. These services are available on cuLearn.

MS-LAP gives students tools to succeed while explaining step-by-step particular problem strategies and associated theory. The program is for anyone who wants to deepen their understanding at their own pace, and in the comfort and privacy of their home.
For more information, visit
https://carleton.ca/math/math-learning-assistance-program

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

Academic Accommodations for Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test requiring accommodation. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. For the deadline to request accommodations for the formally-scheduled exams, visit the PMC website
https://carleton.ca/pmc

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 see the student guide at https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

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Tentative Lecture Schedule (depending on class progress)

Dates	**Sections**	**Tests**	**Topics**
Sep 6	1.1		Systems of Linear Equations
Sep 11, 13	1.2, 1.3, 1.4		Row Reduction and Echelon Forms, Vector Equations, The Matrix Equation $\mathbf{Ax = b}$
Sep 18, 20	1.5, 1.7, 1.8		Solution Sets of Linear Systems, Linear Independence, Introduction to Linear Transformations
Sep 25, 27	1.9, 1.6, 1.10		The Matrix of a Linear Transformation, Applications of Linear Systems
Oct 2, 4	2.1, 2.2, 2.3	Test 1: Oct 4	Matrix Operations, The Inverse of a Matrix, Characterizations of Invertible Matrices
Oct 11	2.8, 2.9		Subspaces of $\mathbf{R}^n$, Dimension and Rank
Oct 16, 18	3.1, 3.2, 3.3		Introduction to Determinants, Properties of Determinants, Cramer's Rule
Oct 23--27			FALL BREAK
Oct 30, Nov 1	5.1, 5.2	Test 2: Nov 1	Eigenvectors and Eigenvalues, The Characteristic Equation
Nov 6, 8	5.3		Diagonalization
Nov 13, 15	Appendix B, 5.5		Complex Numbers, Complex Eigenvalues
Nov 20, 22	6.1	Test 3: Nov 22	Inner Product, Length and Orthogonality,
Nov 27, 29	6.2		Orthogonal Sets
Dec 4, 6, 8	6.3		Orthogonal Projections, Final Exam Review