DALHOUSIE UNIVERSITY

Faculty of Science Course Syllabus
Department of Mathematics and Statistics
Math 2030, Matrix Theory and Linear Algebra I
Fall 2017

Instructor: Peter Selinger, Chase 303
Email: selinger@mathstat.dal.ca (please mention "2030" in the subject line)

Lectures: MWF 8:35-9:25, McCain Auditorium 2 (Ondaatje Hall)

Tutorials: 10 Tutorials, 50 minutes each

Course Description
This course is a self-contained introduction to Matrix Theory and Linear Algebra. Topics include: subspaces, linear transformations, determinants, eigenvalues and eigenvectors, systems of linear equations. Students should note that this is a second-year course and, although it has no formal first-year prerequisites, certain mathematical maturity is expected.

Course Prerequisites
Nova Scotia advanced Mathematics 11 or 12

Course Objectives/Learning Outcomes
Students will learn the basic concepts of linear algebra, including vector operations, lines and planes in n-dimensional space, the qualitative and quantitavite solution of linear systems, matrix operations and matrix algebra, rank and determinant, eigenvalues and eigenvectors, linear independence and dependence, subspaces and spanning sets, bases and dimension.

Course Materials
- *Textbook: We will use an open source textbook, which will be made available on Brightspace. "A First Course in Linear Algebra", Dalhousie 2017/18 edition.*
- *Course website on Brightspace is accessed through dal.brightspace.com*

Course Assessment

Quizzes	*5%*	*In the tutorials.*
Homework	*15%*	*Online, accessed via Brightspace.*
Midterm 1	*20%*	***October 13, 6-8pm**, McCain Auditorium 2 (Ondaatje Hall).*
Midterm 2	*20%*	***November 15, 6-8pm**, McCain Auditorium 2 (Ondaatje Hall).*
Final Exam	*40%*	*3 hours – Scheduled by the Registrar. Must pass final exam to pass the course.*

Other course requirements
Tutorial attendance is mandatory. Reading assignments will be given and will be tested in the quizzes.

Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale

A+ [90-100]	**B+** [77-80)	**C+** [65-70)	**D** [50-55)
A [85-90)	**B** [73-77)	**C** [60-65)	**F** [0-50)
A- [80-85)	**B-** [70-73)	**C-** [55-60)	

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Course Policies

1. Students can get help with this course in the Student Resource Centre which is located in Room 119 on the 1st floor of the Chase Building. A tutor will normally be available Mondays-Thursdays 10am-6pm and Fridays 10am-4pm on a first come, first served basis, free of charge (with additional hours near exam time).The schedule is subject to change; check online (https://www.dal.ca/faculty/science/math-stats/about/learning-centre.html) for up-to-date information. The Resource Centre also has large tables where you can work together.
2. You will also be given reading assignments from the textbook.
3. Calculators, textbooks, and notes are not allowed for Midterm Tests or the Final Examination.
4. Late homework will not be accepted except with the instructor's prior permission.
5. A missed midterm cannot be written at another time. If you miss the midterm without prior permission, then it will count as a 0. Exceptions are made in two cases: (1) if you obtain the instructor's prior permission to miss a midterm, or (2) if you have an officially valid excuse such as a medical doctor's note. In these cases, the weight of the missed midterm will be shifted to the final exam (e.g., the final exam will then count 60% instead of 40%). There is no make-up option for the final exam except in cases of an officially valid excuse such as a medical doctor's note.
6. Students are encouraged to study in groups, but each student must complete their own online homework, quizzes, and exams.

Course Content (dates are approximate)

September 6	Systems of equations
September 11-15	Systems of equations, Vectors in R^n
September 18-22	Vectors in R^n, lines and planes
September 25-29	Matrix operations
October 2-6	OCTOBER 2 – LAST DAY TO DROP WITHOUT "W" Matrices: transpose and inverse
October 9-13	OCTOBER 9 – THANKSGIVING (NO CLASS) OCTOBER 13 – MONDAY TUTORIALS TAKE PLACE ON FRIDAY OCTOBER 13 – FRIDAY –MIDTERM, 6-8pm Elementary matrices, linear transformations
October 16-20	Span and linear independence
October 23-27	Subspaces and bases.
Oct 30-Nov 3	OCTOBER 31 – LAST DAY TO DROP WITH "W" Determinants, cofactors
November 6-10	STUDY BREAK (NO CLASS)
November 13-17	NOVEMBER 13 – REMEMBRANCE DAY (NO CLASS) NOVEMBER 15, WEDNESDAY – MIDTERM, 6-8pm Eigenvalues and eigenvectors
November 20-24	Diagonalization
Nov 27-Dec 1	Applications
December 4-5	DECEMBER 5 –TUESDAY FOLLOWS MONDAY SCHEDULE Review

University Policies and Statements

See Brightspace for Section B of this syllabus, "University Policies and Statements".