Dawson College
Linear Algebra
201-105-DW-S05
Fall 2009

Instructor: Yann Lamontagne
Office: 7B7
Telephone: (514) 931-8731 #1777
E-mail: ylamontagne@dawsoncollege.qc.ca
Website: http://www.obeymath.org
The website contains the solutions to the quizzes, tests and additional examples.

Term Work: *(possibly worth 50% of final grade, see Grading Policy)*:

3Class Tests*   worth a total of 40% on:

Test 1	**Friday, September 25th** in room 4H.8
Test 2	**Friday, October 30th** in room 4C.1
Test 3	**Friday, December 4th** in room 4C.1

Quizzes or Assignments   worth a total of 10%

a minimum of one a week and none on test weeks.

* Each class test is an hour and half long.

Important:
There will be no make-up tests or make-up quizzes or assignments. If a valid medical note is presented the weight of the quiz or test will be transferred to the weight of the final examination.

DAWSON COLLEGE
MATHEMATICS DEPARTMENT
201-105-DW
LINEAR ALGEBRA
STUDY GUIDE
PONDÉRATION: 3-2-3

Prerequisite: High school or CEGEP Functions. Note, however, that the majority of the students who take this course have already passed Calculus I and Calculus II so they exhibit a fair degree of mathematical maturity.

Text: Elementary Linear Algebra (Abridged Version) 9th Ed., by H. ANTON.

References:
1)   Linear Algebra with Applications, by W.K. NICHOLSON.
2)   Linear Algebra, by S. GROSSMAN.

Additional Sources:
1)   Elementary Linear Algebra, by R.M. McKENZIE.
2)   Problem Assignments, by S. PHULL.
3)   Linear Algebra Problem Sets Plus, by I. GOMBOS.

Methodology: Lectures and problems sessions.

Term work: The term grade is based on a minimum of 4½ hours of tests/quizzes. A minimum of 3 class tests will be given.

Grading Policy: The student's grade shall consist of:
(a)   Term work for <u>50%</u> and Final Exam for <u>50%</u>
OR
(b)   Final Exam for <u>100%</u>.
To qualify for (b), the student must have obtained at least 50% on term work and have written more than 50% of the class tests.

Calculators: A calculator <u>without</u> text storage or graphing capabilities is allowed, for class tests and the Final Exam.

Cheating in Examinations, Tests, and Quizzes
Cheating includes any dishonest or deceptive practice relative to formal final examinations, in-class tests, or quizzes. Such cheating is discoverable during or after the exercise in the evaluation process by the instructor. Such cheating includes, but is not limited to

a.   copying or attempting to copy another's work.
b.   obtaining or attempting to obtain unauthorized assistance of any kind.
c.   providing or attempting to provide unauthorized assistance of any kind.
d.   using or possessing any unauthorized material or instruments, which can be used as information storage and retrieval devices.
e.   taking an examination, test, or quiz for someone else.
f.   having someone take an examination, test, or quiz in one's place.

Unauthorized Communication
Unauthorized communication of any kind during an examination, test, or quiz is forbidden and subject to the same penalties as cheating.

Plagiarism on Assignments and the Comprehensive Assessment
Plagiarism is the presentation or submission by a student of another person's assignments or Comprehensive Assessment as his or her own. Students who permit their work to be copied are considered as guilty as the plagiarizer is.

Obligation of the Teacher
Every instance of cheating or plagiarism leading to a resolution that impacts on a student's grade must be reported by the teacher, with explanation, in writing to the Chair of Mathematics and to the Dean of Pre-University Studies. A copy of this report must also be given to the student.

Penalties
Cheating and plagiarism are considered extremely serious academic offences.
Action in response to an incident of cheating and plagiarism is within the authority of the teacher. Penalties may range from zero on a test, to failure of the course, to suspension or expulsion from the college.

Literacy Policy: Problem-solving is an essential component of this course. Students will be expected to analyze problems stated in words, to present their solutions logically and coherently, and to display their answers in a form corresponding to the statement of the problem, including appropriate units of measurement. Marks will be deducted for work, which is inadequate in these respects, even though the answers may be numerically correct.

Religious Holidays:

Students who wish to observe religious holidays must inform each of their teachers in writing within the first two weeks of each semester of their intent to observe the holiday so that alternative arrangements convenient to both the student and the teacher can be made at the earliest opportunity. The written notice must be given even when the exact date of the holiday is not known until later. Students who make such arrangements will not be required to attend classes or take examinations on the designated days, nor be penalized for their absence.
It must be emphasized, however, that this College policy should not be interpreted to mean that a student can receive credit for work not performed. It is the student's responsibility to fulfill the requirements of the alternative arrangement.

TOPICS	SPECIFIC COMPETENCY	LEARNING ACTIVITIES
	(*indicates the topic is not covered in the text)	(**indicates a theoretical problem) (Time in weeks)
Systems of linear Equations	Solving systems of linear equations Properties of matrices and matrix operations Definition of matrix inverse Properties of elementary matrices, finding inverse matrices Theorems on invertibility and solutions of systems Diagonal, triangular and symmetric matrices	1.1 (1-11); 1.2 (1-10, 17, 22) 4 1.3 (1-8, 12-14) 1.4 (1-8, 14**, 17**, 20-22, 29, 31**, 32**, 35**, 36**) 1.5 (1-7, 9-12) 1.6 (1, 3, 4, 8, 9, 11, 12, 16-19, 21) 1.7 (1-9, 15, 16a**, 18**, 22**, 23**, 30**) **Supp. Ex.** (6, 7, 9, 11, 14**)
The determinant function	Cofactor expansions; the adjoint matrix; Cramer's Rule Evaluating determinants by row reduction Properties of determinants Properties of determinant function	2.1 (1-14, 16-19, 21) 3 2.2 (1-14, 19, 20) 2.3 (1-7, 12**, 16**, 18**, 20**, 21**, 22(a, b)**, 23d**) 2.4 (1-13, 18) **Supp. Ex.** (3, 12, 13)

Vectors	The definition of a vector, component notation for a vector
	Norm of a vector, vector arithmetic
	The dot product: vector projections and applications
	The Cross Product and its properties and applications,
	The Scalar Triple Product and its applications
	Lines and Planes in Space
	   ● point-normal and general forms for the equation of a plane
	   ● symmetric, parametric & vector equations for a line
	   ● calculations of distance: from a point to a plane,
	      from a point to a line
	   ● intersection problems: between a line and a plane, between 2 lines
		3.1 (1-6) 4
		3.2 (1-9)
		3.3 (1-17, 18**, 27, 29)
		3.4 (1-19, 21)
		
		3.5 (1-43)

Applications	Any two of the following topics Linear Programming Networks (Traffic Flow), The Leontief Input-Output Model	3 (Supplementary Notes) (Supplementary problems)