Department of Mathematics & Statistics
Concordia University

MATH 204
Vectors and Matrices
Summer 2015

Instructor*: _____

Office/Tel.: _____

Office hours: _____

*Students should get the above information from their instructor during class time. The instructor is the person to contact should there be any questions about the course, not the course examiner.

Course Examiner: Dr. E. Cohen.

Text: *Elementary Linear Algebra*, Custom Version, 10th Edition, by H. Anton & C. Rorres (John Wiley & Sons).

Office Hours: Your professor will announce her/his office hours during which she/he will be also available to give a reasonable amount of help. Note, however, that if you missed a class it is not reasonable to expect your professor to cover the missed material for you.

Tutorials: Vectors and Matrices require a lot of practice. There is not enough class time to do all the examples and problems needed to learn the material thoroughly. The Department has therefore organized special ***tutorial*** classes conducted once per week to provide additional support to students outside the lecture classes' environment. They are conducted by senior students who will help with solving the problems on the topics learned in class during the lectures that week that students may have difficulties with in this course. Some quizzes contributing up to 3 bonus marks to the grade will be given at the tutorial sessions (see below). Although attendance is not mandatory, students are strongly encouraged to participate and be active at these problem-solving classes.

Math Help Centre: In addition to tutorial sessions, a Math Help Centre staffed by graduate students is available. The schedule of its hours of operation and its location will be posted in the Department

WeBWorK: Every student will be given access to an online system called **WeBWorK**. Students will use this system to do online assignments.

Assignments: Students are expected to submit assignments online using **WeBWorK**. Assignments contribute 10% to your final grade (see the **Grading Scheme** below); therefore working on the assignments is essential for success in this course. Note that there is not enough class time to do all the examples needed for a good understanding of the material, therefore students are strongly encouraged to do as many problems on their own as their time permits, in particular, the problems recommended on pages 2 and 3 of this Course Outline.

Midterm Test: There will be one class test in the seventh lecture.

NOTE: It is the Department's policy that tests missed for any reason, *including illness*, cannot be made up. If you miss the midterm test because of illness ***(to be confirmed by a valid medical note***) the final exam can count for 90% of your final grade.

Final Exam: The final examination will be three hours long. It covers material from the entire course.

Final Grade: The final grade will be based on the higher of (a) or (b) below:

a) 10% for the WeBWorK assignments, 25% for the midterm test, and 65% for the final.
b) 10% for the WeBWorK assignments, 10% for the midterm test, and 80% for the final.

For both schemes, an additional 3% (bonus marks) will be available from tutorial quizzes.

IMPORTANT: **PLEASE NOTE THAT THERE IS NO "100% FINAL EXAM" OPTION IN THIS COURSE.**

Calculators: Only calculators approved by the Department (with a sticker attached as proof of approval) are permitted in the class test and final examination. The preferred calculators are the **Sharp EL 531** and the **Casio FX 300MS**, available at the Concordia Bookstore.

Lectures	Section	Topics	Recommended problems
1	1.1 1.2	Systems of Linear Equations Gaussian Elimination	1.1: 15 1.2: 3,6,8,18
2	 1.3	Gaussian Elimination Matrices and Matrix Operations	1.2: 26,28 1.3: 3fj,6de,7d
3	1.4 1.5	Inverses; Algebraic Properties of Matrices Elementary Matrices; Method to find A^{-1}	1.4: 1b,2c,17,22,25 1.5: 4cd,13
4	1.6 1.7	Linear Systems and Invertible Matrices Diagonal, Triangular and Symmetric Matrices	1.6: 5,12,16,19 1.7: 37
5	2.1 2.2 2.3	Determinants by Cofactor Expansion Evaluating Determinants by Row Reduction Properties of Determinants, Cramer's Rule	2.1: 3c,25 2.2: 15 2.3: 22,27
6	3.1 3.2	Vectors in 2-space, 3-space, Norm, Dot Product, Distance in R^2,R^3	3.1: 14f,28,31,34 3.2: 9,11a,13a
7		**Midterm Test**	
8	3.3 3.4 3.5	Orthogonality Geometry of Linear Systems Cross Product	3.3: 8,10,14,19,29,33,37 3.4: 4,10,13,16 3.5: 3,16,18
9	4.1 4.2	Real Vector Spaces: (Subspaces of R^n ONLY) Subspaces	4.1: 17,18 4.2: 1,6,8a,11a
10	4.3 4.4	Linear independence Coordinates and Basis	4.3: 2abd 4.4: 2,8,9
11	4.5 4.9	Dimension Matrix Transformations from R^n to R^m	4.5: 2,6,7 4.9: 8c,10c,12d
12	 5.1 5.2	Examples of Matrix Transformations on the Plane. Eigenvalues and Eigenvectors Diagonalization	4.9: 14,16,18 5.1: 5ab,14 5.2: 12,14,15,24c
13		**REVIEW**	