Department of Mathematics & Statistics
Concordia University

MATH 204
Vectors and Matrices
Fall 2016

Instructor*: _____

Office/Tel No.: _____

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.

Textbook: *Elementary Linear Algebra*, Custom Version, 11th Edition, by H. Anton & C. Rorres (John Wiley & Sons).

Prerequisite: Math 201 or equivalent.

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: The material in this course requires 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 sessions conducted once per week for one hour for every section of this course to provide additional support to students outside the lecture class time. These sessions are conducted by tutors who will help with solving problems on the topics learned in class that week, with particular emphasis on the material that students may have difficulties with in this course. Students are strongly encouraged to participate and be active at these problem-solving sessions. Tutorials are an important resource to help you succeed in this course.

Math Help Centre: In addition to Tutorials, a Math Help Centre staffed by graduate students is available. The schedule of its operation will be posted in the Department and on the Department webpage (https://www.concordia.ca/artsci/math-stats/services/math-help-centre.html).

WeBWorK: Every student will be given access to an online system called **WeBWorK**. The system provides you with many exercises and practice problems. Students will use this system to do online assignments (see **Assignments** below). In addition, before the midterm test and before the final exam, a number of practice problems will be posted in WeBWorK to help you review the material of the course.

Assignments: Students are expected to submit assignments online using **WeBWorK**. Late assignments **will not** be accepted. Assignments contribute 10% to your final grade. Working regularly on the assignments is essential for success in this course. Students are also strongly encouraged to do as many problems as their time permits from the list of recommended problems included in this outline, as well as practice problems. A solutions manual for all odd-numbered questions is packaged with the textbook.

Calculators: Only calculators approved by the Department (with a sticker attached as a proof of approval), such as **Sharp EL 531** or the **Casio FX 300MS**, available at the Concordia Bookstore, are permitted for the class test and final examination. See https://www.concordia.ca/content/dam/artsci/math-stats/docs/AppCalculatorList.pdf for a list of Approved and Not-Approved calculators.

Midterm Test: There will be one **midterm test,** based on the material of weeks 1-6, which will contribute up to 25% to your final grade (see the **Grading Scheme** below). The test will be **common** for all sections of this course and will be held on **Sunday, October 23, 2016 at 2:00 PM.** Students who will not be able to write the test that day for a valid reason, e.g. religious (to be reported to the section's **instructor** in advance) or illness (***a valid medical note required***), may write an alternate midterm test on **Saturday, October 29, 2016 at 10:00 AM.**

NOTE: It is the Department's policy that tests missed for any reason, **including illness,** cannot be made up. If you miss both the midterm and alternate test **because of illness *(medical note required)*** the final exam will count for 90% of your final grade, and the assignments will count for the remaining 10%.

Final Exam: The final examination will be three hours long and will cover all the material in the course.
NOTE: Students are responsible for finding out the date and time of the final exams once the schedule is posted by the Examinations Office. Conflicts or problems with the scheduling of the final exam must be reported directly to **the Examinations Office**, **not to your instructor**. It is the Department's policy and the Examinations Office's policy that **students are to be available until the end of the final exam period. Conflicts due to travel plans will not be accommodated.**

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

a) 10% for the assignments,
25% for the midterm test,
65% for the final exam.

b) 10% for the assignments,
10% for the midterm test,
80% for the final exam.

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

Weeks	Section	Topics	Recommended problems
1	1.1 1.2	Systems of Linear Equations Gaussian Elimination	1.1: 21 1.2: 3,6,8,16
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,17,22,29 1.5: 4cd,15
4	1.6 1.7	Linear Systems and Invertible Matrices Diagonal, Triangular and Symmetric Matrices	1.6: 5,12,16,19 1.7: 44, 45
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: 11 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: 10d, 20, 21, 27 3.2: 9,11a
7		**Midterm Test**	
8	3.3 3.4 3.5	Orthogonality Geometry of Linear Systems Cross Product	3.3: 4, 8, 13, 21, 25, 27 3.4: 4,10,13,16 3.5: 7,16,18
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: 2 4.4: 1, 12, 13
11	4.5 4.9	Dimension Matrix Transformations from R^n to R^m	4.5: 2,6,7 4.9: 1, 5, 9
12	 5.1 5.2	Examples of Matrix Transformations on the Plane. Eigenvalues and Eigenvectors Diagonalization	4.9: 31, 35 5.1: 5ab,10 5.2: 6, 7, 8, 20c
13		**REVIEW**	