MATH 204 Vectors and Matrices *Winter 2024* 

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:	<i>Elementary Linear Algebra</i> , Custom Version, 12th Edition, by H. Anton, C. Rorres & A. Kaul (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. The Department has therefore organized special tutorial sessions conducted every week to provide additional support to students outside the lecture environment. 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 within this course. Students are strongly encouraged to participate and be active in these problem-solving sessions. Tutorials are an important resource to help students succeed in this course.
Math Help Centre:	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 <b>WeBWorK</b> . The system provides you with many exercises and practice problems. Students will use this system to do online assignments (see <b>Assignments</b> below). In addition, before the midterm test and before the final exam, a number of practice problems will be posted in <b>WeBWorK</b> to help you review the material of the course.
Assignments:	Students are expected to submit assignments online using <b>WeBWorK</b> . Late assignments <b>will not</b> 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 proof of approval) are permitted for the class test and final examination. For a list of Approved calculators see <a href="https://www.concordia.ca/artsci/math-stats/services.html">https://www.concordia.ca/artsci/math-stats/services.html</a>

Midterm Test:There will be one midterm test, based on the material of weeks 1-6 (as listed in the<br/>CONTENTS below), which will contribute up to 30% to your grade (see the Grading<br/>Scheme). The test will be common for all sections of this course and will be held on Sunday,<br/>March 10, 2024 at 14:00 (i.e. 2:00 P.M.)

Students who are unable to write the midterm test for a valid reason must inform their instructor in advance to request a 90% final exam option in calculating their grade (*see below*). Such a request **will not** be granted unless it is made in writing by email, and the reason is accepted as valid and supported by appropriate documentation or other evidence. **Valid reasons** for missing the midterm test include time conflicts (coinciding exam times) with other exams, religious observances (must be reported to the instructor *in advance*); illness (to be reported as soon as possible and supported by a valid medical note). Students who miss the midterm test but were not approved for 90% final exam option as described above will not be granted it and will forfeit the marks for the midterm test.

**N.B: Travel arrangements or participation in sports events** are not considered a valid reason for missing the test.

**NOTE**: If you are taking another course with a common midterm test <u>at the same time (NOT</u> just the day) <u>as this one</u>, you may choose which of the two tests you want to write. You must then inform the instructor of the other (to be missed) course that you will not write that test because of the time conflict between the two courses, indicating clearly the other course and its section. In this case, the "90% final +10% assignments" scheme will be applied to calculate your grade.

**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.

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

- a) 10% for the assignments, 30% for the midterm test, 60% for the final exam.
- b) 10% for the assignments, 10% for the midterm test, 80% for the final exam.

1         1.1         Systems of Linear Equations         1.1: 12, 15b, 20, 21           1.2         Gaussian Elimination         1.2: 3, 6, 8, 17, 18, 22, 23           2         1.3         Matrices and Matrix Operations         1.3: 3fj,6de,7d           1.4         Inverses;Algebraic Properties of Matrices         1.4: 1b, 2c, 17, 22, 29           3         1.5         Elementary Matrices; Method to find A <sup>-1</sup> 1.5: 4cd, 15, 17           1.6         Linear Systems and Invertible Matrices         1.6: 5, 12, 16, 19	Lectures	Sections	Topics	Recommended
1.2       Gaussian Elimination       1.2: 3, 6, 8, 17, 18, 22, 2: 25, 26, 28, 33, 37         2       1.3       Matrices and Matrix Operations       1.3: $3f_{1}, 6de, 7d$ 1.4       Inverses; Algebraic Properties of Matrices       1.4: 1b, 2c, 17, 22, 29         3       1.5       Elementary Matrices; Method to find A <sup>-1</sup> 1.5: 4cd, 15, 17         1.6       Linear Systems and Invertible Matrices       1.6: 5, 12, 16, 19         1.6       Determinants by Cofactor Expansion       2.1: 3c, 25         2.2       Properties of Determinants by Row       2.1: 3c, 25         2.1       Determinants by Cofactor Expansion       2.2: 11         Reduction       2.1: 3c, 25       2.2: 11         7       3.4       Vectors in 2-space, 3-space       2.3: 22, 27, 34, 35         7       3.4       Geometry of Linear Systems       3.2: 9, 11a         3.1       Vectors in 2-space, 3-space       3.2: 9, 11a         3.3       Orthogonality       3.3: 4, 8, 13, 21, 25, 27         7       3.4       Geometry of Linear Systems       3.4: 4, 10, 13, 16         8       3.5       Cross Product       3.5: 7, 16, 18         9       4.2       Subspaces       4.2: 1, 6, 8a, 11         9       4.3, 4.4       Spanning Sets, Linear indep	Lectures	Sections		•
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