Department of Mathematics University of Manitoba http://www.math.umanitoba.ca MATH 1300 Vector Geometry and Linear Algebra 2016 Winter Term Information for Students

INSTRUCTORS:

(A01) MWF 10:30-11:20, Armes 200, [Tutorials B01, B02, B03, B04]J. Chipalkatti, 534 Machray Hall, phone: (204) 474-6924e-mail: Jaydeep.Chipalkatti@umanitoba.ca

(A02) TuTh 10:00-11:15, St Paul 100, [Tutorials B05, B06, B07, B08] T. Kucera, 430 Machray Hall, phone: (204) 474-6921 e-mail: Thomas.Kucera@UManitoba.CA web: server.math.umanitoba.ca/homepages/tkucera.html/

(A03) MWF 13:30-14:20 HumEc 206, [Tutorials B09, B10, B11, B12] Ievgen Bilokopytov, 501 Machray Hall, phone: (204) 474-1579 e-mail: Ievgen.Bilokopytov@UManitoba.CA

More details about your instructors, their office hours, and matters particular to your class section will be announced separately.

TEXT AND REFERENCE MATERIAL:

Selected Chapters from the book "Elementary Linear Algebra", by Howard Anton. This is a special printing of the parts of Elementary Linear Algebra (11th edition) by Anton and Rorres, and is available through the bookstore.

We strongly recommend that you acquire a copy of the text. The full edition is of course also completely acceptable, but is more expensive.

Additional references: Suitable books are found in the library under the call letters QA 184, with some more advanced texts on the same topic filed under QA 251.

EVALUATION: You will receive marks for work in the tutorials (10%), a formal Midterm Exam (30%), and a formal final exam (60%).

We DO NOT "mark on a curve" (predetermined numbers of students receiving each letter grade). We DO NOT work to a "fixed scale" (predetermined cutoffs to translate percentage scores to letter grades). The instructors meet in committee, review the relative difficulties of the quizzes and exams, and make a sound academic decision on the assignment of letter grades, with due regard to the standards of previous terms. We will however guarantee that a score of 60% or better will always earn at least a letter grade of "C".

Midterm Exam: Thursday, February 25, 17:30–18:45, locations to be announced. Deferrals are granted only for the reasons the University normally accepts for deferral of a final examination.

Quizzes: There will be five short quizzes held during the tutorial sessions, on dates to be announced by your instructor. We will use the average of the best four out of the five scores that you receive on these quizzes to determine 10% of your final grade. No other accommodation will be made for missed quizzes.

Final Exam: There will be a two hour formal final exam in the regular Examination period in April.

PROHIBITED AT EXAMS: Quizzes and exams are **closed book**, and **no** texts, notes, reference materials such as dictionaries, or mechanical or electronic aids such as calculators, electronic dictionaries, cell phones or personal computing devices may be used during a quiz or exam.

CLASSES, TUTORIALS, OFFICE HOURS, MATHEMATICS HELP CENTRE:

In order to succeed in this course, you must take advantage of all the services we provide:

Classes: You cannot hope to succeed if you do not attend the lectures regularly. Your instructor will guide you through the facts and the theory of the subject, and demonstrate relevant examples.

Tutorials: You must register in and attend one of the tutorial sections associated with your lecture session. Tutorials begin January 14. A teaching assistant will present additional examples, and respond to your questions about problems from the text. Pay special attention to exercises that your instructor may suggest in class, and go to your tutorials prepared to ask questions.

Office Hours: Your instructor will announce office hours, and will be available to discuss any relevant questions about the course work that you may have.

Help Centre: The Mathematics Help Centre is located in 412 Machray Hall (turn left after you leave the elevator or stair well). Hours of operation will be posted on the Mathematics Department web site.

Finally, success in the course depends on the work that *you* put into it. Learning is an active process: we teach, but you are responsible for learning. Review your lecture notes, read and study the text, and practice, practice, practice with the suggested exercises.

WITHDRAWAL: The Voluntary Withdrawal deadline for Winter Term courses is Friday, March 18, 2016.

COURSE OUTLINE:

Selected Chapters from the book "Elementary Linear Algebra", by Howard Anton.

- 1. Systems of linear equations. Gaussian elimination. Matrices and matrix operations. Inverses, elementary matrices. Theory of linear systems. [Chapter 1, 1.1–1.7]
- Determinants. Cofactor expansion. Evaluation by row-reduction. Properties of determinants. Cramer's Rule. [Chapter 2, 2.1–2.3]
- 3. Vector geometry in the plane and 3-space. Norm, dot product, and distance. Orthogonality, projections. The geometry of the solutions to linear systems. The cross product in 3-space. [Chapter 3, 3.1–3.5]
- 4. Linear transformations. Matrix representation of linear transformations. Geometry of transformations: rotations, reflections, dilations. [Chapter 1, 1.8 and Chapter 4, 4.9]
- 5. Eigenvalues and eigenvectors. Similar matrices and diagonalization. [Chapter 5, 5.1 and 5.2]

Faculty of Science Statement on Academic Dishonesty

http://umanitoba.ca/faculties/science/undergrad/resources/webdisciplinedocuments.html http://umanitoba.ca/faculties/science/resources/Science_StatementOnAcademicDishonesty2013.pdf

The Faculty of Science and The University of Manitoba regard acts of academic dishonesty in quizzes, tests, examinations, laboratory reports or assignments as serious offences and may assess a variety of penalties depending on the nature of the offence.

Acts of academic dishonesty include, but are not limited to bringing unauthorized materials into a test or exam, copying from another individual, using answers provided by tutors, plagiarism, and examination personation.

Note: cell phones, pagers, PDAs, MP3 units or electronic translators are explicitly listed as unauthorized materials, and must not be present during tests or examinations.

Penalties that may apply, as provided for under the University of Manitoba's Student Discipline By-Law, range from a grade of zero for the assignment or examination, failure in the course, to expulsion from the University. The Student Discipline By-Law may be accessed at:

http://umanitoba.ca/admin/governance/governing_documents/students/868.htm

Suggested minimum penalties assessed by the Faculty of Science for acts of academic dishonesty are available on the Faculty of Science web-page:

http://umanitoba.ca/faculties/science/resources/Acad_Dishon_TABLE_RevCSS_AdminC_Jul2012_WEB.pdf

All Faculty members (and their teaching assistants) have been instructed to be vigilant and report all incidents of academic dishonesty to the Head of the Department.

In addition, all students are referred to the Department of Mathematics Statement on Academic Dishonesty at: http://www.math.umanitoba.ca/resources/academic_dishonesty.php