Department of Mathematics
MATH 1300 Vector Geometry and Linear Algebra

September - December 2012

TEXTS:

1. MATH 1300 WIKI:
http://cobalt.cs.umanitoba.ca/linearalgebra/index.php/Linear_Algebra_Wiki

2. Selected Chapters from Elementary Linear Algebra (Ninth Edition) by Anton

COURSE OUTLINE:

Systems of linear equations and matrices: Gaussian elimination, matrix operations, inverses, elementary matrices, and classes of matrices. **(Sections 1.1 – 1.7 in Anton)**

Determinants: co-factor expansion; evaluating by row reduction, properties, Cramer's rule. **(Sections 2.1 – 2.3 in Anton)**

Vectors and geometry in the plane $\mathbb{R}^2$ and in the space $\mathbb{R}^3$ norm of a vector, vector operations, dot product, projections, cross product, lines and planes in $\mathbb{R}^3$ **(Sections 3.1 – 3.5 in Anton)**

Euclidean *n*-space, linear transformations, properties of linear transformations **(Sections 4.1 – 4.3 in Anton)**

Eigenvalues, eigenvectors (**class notes, or Anton, or WIKI**)

The section Linear Transformation and Polynomials (4.4. in Anton) may be covered (time permitting)

MIDTERM TEST: There will be a one-hour midterm test, which will be held on **Monday, October 22, 2012, 5:30-6:30 p.m.** No make-ups or deferrals are permitted except for reasons the University normally finds acceptable for absence from a final exam.

CLASSES AND TUTORIALS:

You must register in and attend one of the tutorial sections associated with your lecture. There are three things you must do to succeed in this course:

- Attend lectures, where theory will be explained and examples calculated.
- Attend your tutorial, where a teaching assistant will present additional examples.

• Study the text and do *at least* the suggested homework questions. The tutorials (labs) begin on ~~**Monday, September 10, 2012**~~ **Thursday, September 13, 2012.** Five short quizzes will be given in the tutorial.

GRADING: There will be a two-hour final exam during the regular exam period in **December.** Your final grade will be based on 10% tutorial tests (best of 4 out of 5, **no deferrals allowed for any reason),** 30% midterm, and 60% final.

The **Voluntary Withdrawal** deadline is Wednesday, November 14, 2012.

EXERCISES: In order to learn the material of the course you will have to do a great deal of practice. Every student should work through the assigned problems in the exercises.

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

Acts of academic dishonesty include bringing unauthorized materials into a test or exam, copying from another student, plagiarism and examination personation. Students are advised to read section 7 (Academic Integrity) and section 4.2.8 (Examinations: Personations) in the "General Academic Regulations and Requirements" of the current Undergraduate Calendar.
Note, in particular that cell phones and pagers are explicitly listed as unauthorized materials, and hence may not be present during tests or examinations.

Penalties for violation include being assigned a grade of zero on a test or assignment, being assigned a grade of "F" in a course, compulsory withdrawal from a course or program, suspension from a course/program/faculty or even expulsion from the University. For specific details about the nature of penalties that may be assessed upon conviction of an act of academic dishonesty, students are referred to University Policy 1202 (*Student Discipline Bylaw*) and to the Department of Mathematics policy concerning minimum penalties for acts of academic dishonesty.

The *Student Discipline Bylaw* is printed in its entirety in the Student Guide, and is also available on-line or through the Office of the University Secretary. Minimum penalties assessed by the Department of Mathematics for acts of academic dishonesty are available on the Department of Mathematics web-page.

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