

**Department of Mathematics**  
**MATH 1300 Vector Geometry and Linear Algebra**  
**Winter 2012**

**TEXT:** Selected Chapters from Elementary Linear Algebra (Ninth Edition) by Anton  
**COURSE WEBSITE:** <http://www.math.umanitoba.ca/courses>

**COURSE OUTLINE:**

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

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

Vectors and geometry in the plane  $\mathbf{R}^2$  and in the space  $\mathbf{R}^3$ : norm of a vector, vector operations, dot product, projections, cross product, lines and planes in  $\mathbf{R}^3$ , Euclidean  $n$ -space. (Sections 3.1 – 3.5, Section 4.1)

General vector spaces: real vector spaces, subspaces, linear independence, basis and dimension, row and column spaces, null space. (Sections 5.1 – 5.5)

**MIDTERM TEST:** There will be a one-hour midterm test, which will be held on **Tuesday, February 28, 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 the 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, January 9, 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 **April**. 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 **Friday, March 16, 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.

**CALCULATORS:** Calculators are **not** permitted for any of the quizzes, tests or exams.

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.