Department of Mathematics
MATH 1300 Vector Geometry and Linear Algebra
January - April 2010

TEXT: 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)**

   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 **Monday, February 22, 2010, 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 <u>associated with your lecture</u>.
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, January 11, 2010. 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 19, 2010**.

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.

Are You Well-Prepared for MATH 1300?
Our 50-question Diagnostic Test will tell you.

Information concerning the Mathematics Diagnostic Test and
Remedial Mathematics Program "Preparing for University Mathematics"

The Department of Mathematics has developed two new programs available *on a voluntary basis* to all students registered in Mathematics courses 1200, 1210, 1300, 1310, 1500, 1510, 1520, 1700, 1710 and 1690.

The diagnostic test is a voluntary online 50 question test, whose purpose is to measure your potential for success in the above Mathematics courses. The questions test your knowledge and skill in topics contained in the high school mathematics curriculum, principally Pre-Calculus 40S. The test provides you with an assessment of your knowledge and skill level, and provides advice about actions you should take in order to increase your chances of success in mathematical courses.

Access to the Mathematics Diagnostic Test is gained from your personal WebCT Homepage. (If you have not already done so, you must claim your UMnetID from the University's homepage at address "pasweb.cc.umanitoba.ca/webapp/gu/claimid/" in order to log on to your WebCT homepage.)

From your WebCT homepage select the link "Mathematics Diagnostic Test." Follow the instructions in order to complete the test, submit your test for grading, and immediately obtain results of your test. Finally, from your WebCT homepage, you should select the "Test Feedback" link, which will appear after you have submitted your test for grading. It will provide you with advice as how you should interpret the results of your test.

If your results on the diagnostic test indicate that you would benefit by improving your mathematical skills, you should purchase a copy of the notes prepared for this purpose, entitled "Preparing for University Mathematics." The notes are available at the Bookstore. There are two methods in which you could use these notes to improve your mathematical skills and knowledge:
1. Self-study: carefully work through those sections of the notes in which weaknesses have been identified by the diagnostic test,
2. Enroll in one of the sections of the non-credit course MATH 0500 "Preparing for University Mathematics": this course will be offered on Saturday mornings (9:00 am until noon) during the first half of the term. Enrollment in each section will be limited to 25 students. During these sessions a graduate student from the Department of Mathematics will serve as a tutor, helping you and the other students registered in that section work your way through the course material.

It is very important to note that in order for the remedial course to be of any benefit, students must complete it as thoroughly and as quickly as possible, whether it be done by self-study or tutor-guided study.