MATH 136   LINEAR ALGEBRA 1   WINTER 2012

Course Objectives:

• To understand several important concepts in linear algebra, including spanning and linearly independent sets of vectors; systems of linear equations and their solutions; matrices and their properties; linear mappings; vector spaces; subspaces, bases, and dimension of vector spaces; determinants and matrix inverses; eigenvalues, eigenvectors, and diagonalization.

• To improve your ability to prove mathematical results.

• To learn to use MATLAB to perform computations and explore linear algebra concepts.

Course Schedule

Week	Dates	Sections	Topics
1	Jan 4 - 6	1.1	Vectors in $\mathbb{R}^n$, Spanning
2	Jan 9 - 13	1.1, 1.2, 1.3	Linear Independence, Subspaces, Dot Product
3	Jan 16 - 20	1.4, 2.1	Projections, Systems of Linear Equations
4	Jan 23 - 27	2.2, 3.1	RREF, Rank, Matrix Operations
5	Jan 30 - Feb 3	3.1, 3.2	Matrix Multiplication, Linear Mappings
6	Feb 6 - 10	3.3, 3.4	Special Subspaces, Operations on Mappings
7	Feb 13 - 17	4.1, 4.2	Vector Spaces, Subspaces, Bases
8	Feb 20 - 24		READING WEEK
9	Feb 27 - Mar 2	4.2, 4.3	Dimension, Coordinates, Change of Coordinates
10	Mar 5 - 9	5.1, 5.2	Matrix Inverse, Elementary Matrices
11	Mar 12 - 16	5.3, 5.4	Determinants, Cofactor Method
12	Mar 19 - 23	5.4, 5.5, 6.1	Cramer's Rule, Area and Volume, Matrix of a Mapping
13	Mar 26 - 30	6.2, 6.3	Eigenvalues, Diagonalization
14	Apr 2	6.4	Powers of Matrices

Text Book: Linear Algebra Course Notes by Dan Wolczuk. Available in the bookstore.

Grades: Final Exam: 60%; Term Tests: 30%; Assignments 10%

Tests: Term Test 1: Monday, Feb 6th, 7:00 - 8:30 pm
            Term Test 2: Monday, Mar 12th, 7:00 - 8:30 pm
            Final Exam : TBA

            NOTE: Missed tests will count as 0 unless suitable medical documentation is provided. There will not be any make-up tests.

Additional Help: Tutors will be available in the tutorial center (MC 4066) on Mondays and Tuesdays (times TBA). Additionally, your instructor will post office hours when they are available to answer questions.

Calculators: Calculators will not be allowed on tests.

Assignments: Assignments are due on Wednesdays by 3:30 pm in the designated drop boxes in front of MC 4066/4067. It is your responsibility that you hand your assignment into the correct drop box. **Late assignments or assignments submitted to the wrong drop box will receive a grade of 0**.

Your solutions should be legible and well-organized. Complete solutions will be posted on D2L on Fridays. Not all questions on the assignments will be marked, so it is important that you collect your assignment and check your own answers.

The assignments will reflect our expectations as to the midterm and final exam; however, it is strongly recommended that you do additional problems to ensure a solid understanding of the material. Unclaimed assignments/midterms will be shredded at the end of term.

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility.

[Check www.uwaterloo.ca/academicintegrity/ for more information.]

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4,

http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm.

When in doubt please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity to avoid committing academic offenses and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic adviser, or the undergraduate associate dean. For information on categories of offenses and types of penalties, students should refer to Policy 71, Student Discipline,

http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm.

For typical penalties check Guidelines for the Assessment of Penalties,

http://www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm.

Appeals: A decision made or penalty imposed under Policy 70, Student Petitions and Grievances (other than a petition) or Policy 71, Student Discipline may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72, Student Appeals, http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm.

Note for students with disabilities: The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.