



UNIVERSITY OF
CALGARY

Faculty of Science

DEPARTMENT OF MATHEMATICS AND STATISTICS

Course Information Sheet

Course:	MATH 411	Winter 2010
Lecture/Time/Session	L01 M W F	13:00 MS 431
Instructor/e-mail:	Elena Braverman	maelena@math.ucalgary.ca
T01 R	9:00 MS 431	Elena Braverman
Office/Phone/Hours:	MS 444, 220-3956	
Office Hours:	MW 14:00-15:15, R 10:00-11:00, F 10:30-11:30	
Course's homepage:	www.math.ucalgary.ca/~maelena/411.html	
Prerequisites:	MATH 311 and one of MATH 353, AMAT 309, MATH 331	

1. **The university policy on grading** and related matters is described in the current University Calendar, Academic Standings. In determining the overall grade in the course, the following weights will be used:

Assignments	[best 4 of 5]	10 %
Mid-term exams	[2]	20 % each
Final exam	[1]	50 %

A passing grade on the final exam is necessary to pass the course. There will be a three-hour final examination scheduled by the Registrar's Office. **The use of a calculator will be allowed on all tests.**

2. **The midterm tests** will be in class on Wednesday **February 10** and on Friday **March 19**, 2010. There will be five assignments (due February 5, February 26, March 15, March 26 and April 12).
3. **Recommended textbook:** K. Hoffman and R. Kunze, Linear Algebra, Second edition, or S. Lipschutz and M. Lipson, Schaum's Outline of Linear Algebra.
4. **Missed Components of Term Work.** The regulations of the Faculty of Science pertaining to this matter are outlined in the current University Calendar, faculty of Science, section 6A. It is the student's responsibility to familiarize herself/himself with these regulations.
5. **Note:** The Faculty of Science policy on pre- and co-requisite checking is outlined in the current University Calendar (see www.ucalgary.ca/pubs/calendar), Faculty of Science, section 5C. It is students' responsibility to ensure that they have the prerequisites for the course and if they do not, they will be withdrawn from the course without notice. There are no co-requisites to this course.
6. **Fee policy:** After the last day to drop/add courses (January 22, Friday), there will be no refund of tuition fees if a student withdraws from a course, courses or the session.
7. **Academic Accommodations:** It is student's responsibility to request academic accommodations. A student with a documented disability who may require academic accommodation must register with the Disability Resource Centre to be eligible for formal academic accommodation. DRC registered students are required to discuss their needs with the instructor no later than fourteen (14) days after the start of the course.

8. **Academic misconduct** (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please see: <http://www.ucalgary.ca/honesty>

MATHEMATICS 411

“Linear Spaces with Applications”

Calendar Description: H(3-1T)

Linear operators and matrices. Jordan forms. Eigenvalue problems. Quadratic forms. Applications.

Syllabus

Dates	Topics	Tests
11.01-15.01	Fields, algebras, vector spaces over a field	
18.01-22.01	Linear transformations, matrix representations	
25.01-27.01	Linear functionals	
29.01-1.02	Polynomials	
3.02-8.02	Characteristic polynomials, similarity	Assign # 1
8.02-12.02	Invariant subspaces, primary decomposition	Midterm # 1
22.02-5.03	Jordan Forms	Assign # 2
5.03-8.03	Inner product spaces	
10.03-12.03	Adjoint operators	
15.03-17.03	Unitary, normal operators	Assign # 3
19.03-26.03	Bilinear, quadratic forms	Midterm # 2
29.03-2.04	LU , QR decompositions	Assign # 4
5.04-16.04	SVD, pseudoinverse	Assign # 5

No classes February 15-19 (reading week), April 2 (Good Friday).