

QUEEN'S UNIVERSITY AT KINGSTON
MATHEMATICS 111 SCHEDULE – FALL/WINTER 2009/10

INSTRUCTOR: Peter Taylor, Jeffery 513, 533-2434.
 Office hours: Jeff 513 by appointment. peter.taylor@queensu.ca
 LECTURES Slot 14, Ellis Auditorium (Fall)

TEXT: Linear Algebra Class Notes and Problems—Given out in class. Cost \$20 cash (or cheque made out to Dept Math&Stats). Total of 200 – 300 pages. The first half will be given out in the first week of class. Buy a 3-ring binder to hold these plus other notes you will want to take. Keep a bunch of blank paper in your binder too.

TUTOR: Eril Berkok 8ejb@queensu.ca

Tuesday tutorial 5:30-6:30 JEFF 234	Tuesday tutorial 5:30-6:30 JEFF 234	Wed. Test (in class)
Oct. 27	Nov. 2	Nov. 4
Nov. 17	Nov. 24	Nov. 25
Feb. 2	Feb. 9	Feb. 10
Mar. 2	Mar. 9	Mar. 10
Mar. 23	Mar. 30	Mar. 31

PREREQUISITES. What's important is not so much what you've learned, but how good a learner you are. You definitely need a solid grounding in high school algebra. It helps if you've worked a bit with vectors and matrices, but that's not essential. We'll start all that from the beginning. Problem-solving skills will help you too. Hopefully you will develop these during the course.

COURSE WEB PAGE. <http://www.mast.queensu.ca/~math111/>
 Complete notes, assignments, solutions, etc. will appear here.

Tutorials are held in the 1-week period before a test.

The Math Help Centre, Jeff 201 is staffed most of the time and 111 help is available there also.

You are urged not to miss lectures—many of the application will be difficult to understand or master without the experience of the classroom. Even more—the class is more than a collection of individual learners; it is a community which grows and develops throughout the year. If you're not there, the community is diminished.

Summary of marks:	6 mid-term tests	30
	Journal problems 5+5	10
	December exam	30
	April exam	30

Midterm tests (in class).	Term 1 Oct. 13, Nov. 4, 25
	Term 2 Feb. 10, Mar. 10, 31.

The terms will be treated separately, with 50 marks per term and both exams treated as final exams and covering only the material of that semester. The 3 in-class tests each term worth 5 marks apiece will be based on the problems given out for that semester, particularly those that are more technical, so preparing for them should be fairly routine. The two exams will involve more problem-solving and will be based on the more conceptual problems that are given out. Also certain problems will be assigned during the year and these must be solved, written-up in your best possible style *in your own handwriting*, and submitted in December and April as a "Journal." These will be marked with attention paid to writing style, clarity, organization and correctness.

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability or health consideration that may require accommodations, please feel free to approach the instructor and/or the Accessibility Services Office as soon as possible. The Accessibility Services staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. The sooner you let us know your needs, the quicker we can assist you in achieving your learning goals in this course.

MATH 111

2009-10

FALL 2009

Chapter 1. (weeks 1-3)

11. Vectors and linear combinations
12. The geometry of vectors
13. Matrix multiplication
14. Matrix inverse
15. A few theoretical results

Chapter 2. (weeks 4-7)

21. Lines and planes
22. Projection and orthogonal decomposition
23. Approximation and best-fit
24. The hat problem and error-correcting codes

Chapter 3. (weeks 8-11)

31. Linear transformations
32. Affine transformations
33. Continuous transformations
34. Geometric factorization
35. Constructing a shear

WINTER 2010

Chapter 4. (weeks 1-5)

41. Counting Trains
42. Eigenvalues and Eigenvectors
43. Dynamical systems
44. Investigations

Chapter 5. (weeks 6-11)

51. Board games
52. The pass-fail game
53. Complex systems

Appendices

- A1 Solving equations
- A2 Induction
- A3 Complex numbers
- A4 Skunk redux