

COURSE OUTLINE 2010-2011
MATHEMATICS 152 section 207
Linear Systems

Corequisite: MATH 101.

Instructor:

Joel Feldman

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office hours	Tue 2:30–3:30, Wed 2:00–3:00, Thurs 2:00–3:00

Text:

Richard Froese and Brian Wetton, Linear Systems, UBC Math 152 Lecture notes, free on the web at http://www.math.ubc.ca/~wetton/m152_common.html#notes

Problem sets and solutions and various other handouts will be posted on the main course web page at

http://www.math.ubc.ca/~wetton/m152_common.html

I will post various handouts on the section 207 web page at

<http://www.math.ubc.ca/~feldman/m152/>

Detailed Course Outline:

week #1	Jan 5–Jan 7	vectors and coordinate representation; vector length, dot product, projection;
week #2	Jan 10–Jan 14	determinants; cross product; lines in 2D and 3D and planes in 3D;
week #3	Jan 17–Jan 21	geometry of solutions of linear systems; linear dependence and independence; solving linear systems;
week #4	Jan 24–Jan 28	solving linear systems (cont.); echelon form and rank; homogeneous equations;
week #5	Jan 31–Feb 4	resistor networks; review; Test #1;
week #6	Feb 7–Feb 11	resistor networks (cont.); matrix multiplication; linear transformations; rotations, projections and reflections in 2D;
	Feb 14–Feb 18	Spring Break
week #7	Feb 21–Feb 25	matrix representation and composition of linear transformations; random walks; transpose;
week #8	Feb 28–Mar 4	matrix inverse; matrix representation of resistor network problems; determinants;
week #9	Mar 7–Mar 11	determinants (cont.); complex numbers; complex linear systems;
week #10	Mar 14–Mar 18	eigenvalues and eigenvectors; review; Test #2;
week #11	Mar 21–Mar 25	eigenvalues and eigenvectors (cont.); powers of a matrix; application of eigen-analysis to random walks;
week #12	Mar 28–Apr 1	vector differential equations; application of vector DEs to electrical networks;
week #13	Apr 4–Apr 6	review;

Grading:

- There will be weekly homework assignments. They will be posted each Monday and collected the following Monday. Assignments are due at the beginning of class. No late assignments will be accepted. Solutions will be posted Tuesday afternoon. They will count for 10% of the course grade. For each student, the lowest assignment grade will be dropped.
- The first homework assignment is due Monday, January 10.
- You are responsible for completing six one hour computer labs using MATLAB. They will be held once every two weeks. There is no lab during the first week of classes. For more details concerning the labs, see <http://www.ugrad.math.ubc.ca/~math152/>. Lab material may be tested on the midterms and on the final exam. The labs count for 10% of the course grade.
- There will be two 50 minute midterms on Friday, February 4 and Friday, March 18. Each will count for 15% of the course grade. There will be common tests for the MWF sections and common tests for the T/Th sections.
- There is a common final exam for all sections of Math 152. The final exam will count for 50% of the course grade.
- In order to make course grade standards consistent across sections the raw final grade will be scaled.

Policies:

- The midterms and final examination will be strictly closed book: no books, notes, formula sheets or calculators will be allowed.
- There is no supplemental examination in this course.
- Missing a midterm normally results in a mark of 0. Exceptions may be granted, at the instructor's discretion, for medical or other reasons (official written verification, for example a physician's note, must be submitted promptly). In these cases, the final mark is averaged proportionally over the other course components.
- No make-up midterms or exam will be given.