Math 152, Section 202
Linear Systems
Course Information
The University of British Columbia
Winter 2012

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Text: Online notes by UBC Professors R. Froese and B. Wetton available at
http://www.math.ubc.ca/~yxli/Notes_Root.pdf
Math 152 Website: http://www.math.ubc.ca/~yxli/m152_2012.html
Section 202 Website: http://www.math.ubc.ca/~jgonza/teaching.html

Background and Goals:

Many applied problems from Science, Engineering and Finance can be written in terms of Linear Algebra questions. This is also true of Calculus, which is why these two fields are stressed in undergraduate Mathematics education at UBC and other universities. The goal of the course is to enable students to
1. Recognize linear algebra questions (for which there are straight-forward analytic and numerical solution techniques) as parts of applied problems.
2. Make the connection between geometric properties and analytic quantities (determinants, dot and cross products, eigenvalues, etc.).
3. Recognize that linear systems of equations can have unique, infinite or no solutions and know how to determine all solutions or that none exist.
4. Recognize matrix multiplication as a linear transformation and that such transformations (to the same dimensional space) can be simplified using eigen-analysis.
5. Use complex numbers, which arise naturally in the eigen-analysis of matrices.

Content:

The subject of the course is Linear Algebra, focusing on three main topics: vectors and matrices and connections to geometry, linear systems, and eigen-analysis of matrices. Several applications are considered including resistor networks and random walks.

Grading:

Your final grade for the course is based on your scores on **three exams** (two Midterm Exams and a Final Exam), your scores on the **weekly homework** and your scores on the **biweekly computer labs**. The corresponding percentages are as follows.
- First Midterm Exam (February 7):
  Covers Chapters 2 and 3 from the online course notes.   15%
- Second Midterm Exam (March 20):
  Covers Chapters 4 and 5 and Section 6.1 from the online course notes.   15%
- Final Exam (common to all Math 152 sections):
  Cumulative, covers Chapters 2, 3, 4, 5 and 6 from the online course notes.   50%
- Weekly Homework: 10%
- Biweekly Computer Labs: 10%

Notes: Grades on the two Section Midterms may or may not be adjusted according to the section's average on the common final exam. **You must pass the final exam in order to pass the course!**

Rules for the Midterm Exams and the Final Exam:

Calculators and notes are **NOT** allowed any of the three exams. Missing an exam results in a mark of 0. The instructor must be notified within 48 hours of a missed test to claim medical emergency and a doctor's note must be presented.

Weekly Homework Assignments:

Weekly homework assignments will be posted at the end of each week on the website

http://www.math.ubc.ca/~yxli/m152_hw_2012.html

These assignments are collected at the beginning of class the following Thursday. Solutions to each assignment will be posted online the following Friday afternoon. The **weekly homework** will count for 10% of your final grade. In order to do well in class, you must keep up with the weekly assignments. **Homework marking rules**: Late homework assignments receive a grade of 0. The number of each homework problem should be clearly printed. Illegible handwriting will result in the loss of marks. You receive two marks for each collected homework: one for the completeness and one for the correctness of added problems. For the added problems, only some important steps and the final answer will be checked.

Biweekly Computer Lab Assignments:

The course includes six one-hour computer labs using the software, **MATLAB**. These are given to small groups of students every other week starting in the second week of the term. Locations and times for the lab sections can be found following a link from the course web page. The **biweekly computer labs** will count for 10% of your final grade. The website for the Labs is

http://www.ugrad.math.ubc.ca/~math152/

All the information about the Labs can be found in this page.

Important Dates:

The following dates are posted to help you organize your schedules. They are subject to modification but that is unlikely. Please, check our section's website for current information.

Last day to withdraw:	Without a W standing: Monday, January 16.
	With a W standing: Friday, February 10.
First Midterm:	Tuesday, February 7. During class.
Second Midterm:	Tuesday, March 20. During class.
Final Exam:	Date to be announced. Exam Dates: April 11-25.

Office Hours:

I will have two office hours per week. I will hold my office hours on:

Office Hour 1: Tuesday, 9:30-10:30am, LSK 126F.
Office Hour 2: Thursday, 9:30-10:30am, LSK 126F.

These times might be modified later in the semester if we find other times that better fit the schedules of the students in the class.