

Math 223: Linear Algebra (Honours Version)

Schedule: Section 201, 10:00-11:00 MWF in CSCI 460

Instructor: Yaniv Plan

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OFFICE HOURS: Tentatively 11-12 Mondays in my office as well as 4-5 Thursdays in room TBA.

Website: <http://www.yanivplan.com/math-223>

Textbook: *Linear Algebra and Its Applications*, by David C. Lay. Accessible and eloquent explanations, but problems in general too elementary. The assignments will be independent of the text.

Extra resources:

- The text, *Linear Algebra*, by Friedberg, Insel, and Spence, is often used for Math 223. It has a more theoretical focus and may make good supplementary reading.
- Richard Anstee has written a series of notes that gives an intuitive approach to the subjects in this class. We follow these notes. They will be posted on the webpage.
- **Math Learning Centre.** (MLC for short) A space for undergraduate students to study math together, with friendly support from tutors.

Outline: This course is aimed at excellent students who can go through the material at a faster pace than in MATH 152 or MATH 221. Focus will be put on creative thinking and abstract thinking. The following is a list of topics that will certainly be covered although not exactly in the order given.

- Linear and Matrix Algebra in 2×2 case various. Chapters. Notes provided online.
- Gaussian Elimination and some of its uses. Ch.1 (1.1, 1.2, 1.3, 1.4, 1.5, 2.2)
- Determinants Ch.3 (3.1, 3.2, 3.3)
- Vector Spaces in R^n (also lines, planes). Ch.4 (1.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7)
- Eigenvalues and Eigenvectors. Ch.5 (5.1, 5.2, 5.3, 5.5)
- Linear Transformations and matrices. (1.9, 3.3, 5.4)
- Orthogonality and Least Squares. Ch.6 (6.1, 6.2, 6.3, 6.4, 6.5) (Orthogonal)
- Diagonalization of Symmetric Matrices. Ch.7 (7.1, 7.2)

Grading: 50% final, 30% midterm, 20% assignments.

Assignments: There will be about 10 assignments. Students may work together on assignments but must write up their work independently. Copying is forbidden. Any 2 (or more) assignments with some virtually identical answers deemed the result of copying will be given 0 total credit. The students are reminded of the plagiarism policies of the University.

Midterm: One 50 minute midterm scheduled for Friday, Feb 17 (in class).

Final: 3 hours.

Missed work: Missing homework will result in a score of zero for that assignment, but the lowest homework score will be dropped from the final grade. Nevertheless, I recommend completing all homework assignments to best learn the material. In the case of the Final Exam, the students should contact the Faculty of Science office and the missed final will be handled in a formal way.