MATH 310 Abstract Linear Algebra
Course Outline (January-April, 2020)

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Office Hours: 4:00 pm-5:00 pm on Monday, and 10:00 am-11:00 am on Wednesday and Friday

Textbook: The optional textbook for this course is *Linear Algebra*, Fifth edition, by Stephen H. Friedberg, Arnold J. Inseland Lawrence E. Spence. The optional textbook is available at the UBC Bookstore. ISBN 10 digit: 0134860241, ISBN 13 digit: 9780134860244.

Syllabus: The topics we will cover are as follows:

- Complex numbers, the fundamental theorem of algebra
- Vector spaces, subspaces, linear combinations, linear dependence, linear independence, bases, dimension
- Linear transformations, null Spaces, ranges, isomorphisms, the change of coordinate matrix, dual spaces
- Elementary matrices, the rank of a matrix and matrix inverses
- Eigenvalues and eigenvectors, diagonalizability and direct sums
- The Jordan Canonical Form
- Inner products and norms, the adjoint of a linear operator, normal and self-adjoint operators, the spectral theorem, the singular value decomposition
- Determinants and traces

Grading Schemes . Your grade will be computed based on the following formula:

1 Final Exam 60%

2 Two midterms 16% + 16% = 32%

3 Hand-in assignments 8%

Exam Dates and Policies:

THE FINAL EXAM **for this course will take place in April at a date to be announced.** Please do not make end-of-term travel plans before this date has been released.

- **THE MIDTERM EXAMS** for this course will take place at the following dates:
  - Midterm 1: Monday, February 10,
  - Midterm 2: Friday, March 20.
- Midterms are non-cumulative, but the final exam is based on the entire syllabus for the course.
- **Exam aids:** No unauthorized electronic devices will be allowed in the midterms or in the final exam. This includes calculators, cell phones, music players and all communication devices. Students should not bring their own formula sheets or other memory aids. Common formula sheets may be provided to all students depending on the material covered, in which case the content of the formula sheet will be disclosed in class prior to the exam.
- **Missing midterms:** If a student misses a midterm, that student shall provide a documented excuse or a mark of zero will be entered for that midterm. Examples of valid excuses are an illness which has been documented by a physician and Student Health Services, or an absence to play a varsity sport (your coach will provide you with a letter). **There will be no make-up midterms, and the weight of the missed midterm will be transferred to the final examination. To be eligible for this arrangement, you must notify your instructor of your failure to take the test within a week of the missed midterm, and come up with a timeline acceptable to both for producing appropriate documentation for your absence.** Please note that a student may NOT have 100% of their assessment based on the final examination. A student who has not completed a substantial portion of the term work normally shall not be admitted to the final examination.
- **Missing the Final Exam:** You will need to present your situation to your faculty's Advising Office to be considered for a deferred exam. See the Calendar for detailed regulations . Your performance in a course up to the exam is taken into consideration in granting a deferred exam status (for instance, failing badly normally means you will not be granted a deferred exam). For deferred exams in mathematics, students generally sit the next available exam for the course they are taking, which could be several months after the original exam was scheduled.
- **Please bring your student ID-s to both midterms and the final.**

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