

Math 310: Abstract linear algebra  
Section 201  
Math Annex 1100 - MWF 14-15

Instructor:  
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Office: MATH 229D  
Office hours: MF 15-16:30.

Book:  
Title: Linear algebra done right  
Author: Sheldon Axler  
Publisher: Springer Verlag  
Edition: Second  
ISBN: 978-0-387-98258-8

Course Web Page:  
<http://www.math.ubc.ca/~jsouto/310.html>

Syllabus: I will mostly follow the book linearly.

- (1) Complex numbers and polynomials (parts of Chapter 1 and Chapter 4): fast review of complex numbers and polynomials. State fundamental theorem of algebra.
- (2) Vectorspaces (Chapter 1 and Chapter 2): Definition, subspaces, sums, span, linear independence, basis, dimension.
- (3) Linear maps (Chapter 3): definitions, rank theorem, matrix of a linear map.
- (4) Eigenvalues and eigenvectors (Chapter 5): polynomials applied to linear maps, existence of eigenvectors and eigenvalues.
- (5) Inner products (Chapter 6 and Chapter 7): definition, ON-basis, adjoint, self-adjoint operator, spectral theorem, positive operators, polar and singular value decompositions.
- (6) Jordan normal form (Chapter 8): characteristic polynomial, minimal polynomial, Jordan normal form.
- (7) Trace and determinant (Chapter 10): definition of trace and determinant and basic properties.

In any case, I will keep in the course web page a more or less updated list of the material covered in class. You will also find a list of recommended problems there in. I will not read solutions for these problems but if you want to discuss them during office hours I will be more than happy to do so.

Exams and quizzes:  
Homework: There will be no homework for this class.

Quizzes: Every week or two, a quiz will take place in class on wednesday.

Midterm: Wednesday, February 6th in class.

Final exam: determined by the university.

- The final grade will be computed as follows: Quizzes 10%, Midterm 30% and Final 60%.
- No aids of any kind (books, notes, calculators, cell phones, ipods, etc...) will be allowed during the exams and the quizzes.
- Pencils cannot be used to write exams and quizzes. You will have to have your UBC ID at the exams.
- Any student missing the midterm exam or a quiz is required to present a physician's note asserting that the student is medically unfit to write the exam on the day in question. Failure to provide this documentation will result in a score of 0 in the said exam/quiz. The grade of those students who miss the midterm exam or a quiz and provide a valid physician's note will be computed by increasing the relative weight of the other course components.