

**LINEAR ALGEBRA, MATH 221
SUMMER 2026**

1. GENERAL INFORMATION

- Course: Math 221/111 (Linear Algebra), 2026 Summer Term 1.
- Instructor: Sabin Cautis, cautis@math.ubc.ca
- Time: MThF 2-4pm, W 2-3pm
- Location: Buchanan Building (BUCH), Floor 1, Room A101
- Course website: includes syllabus and additional information
<http://www.math.ubc.ca/~cautis/math221/>
- Text: <https://personal.math.ubc.ca/~tbjw/ila/index.html>

Homework: Online homework for the course will be provided via the WeBWorK system (which should be accessible through Canvas). There will be one assignment posted per week, each due the following week, as per the course schedule.

Please note the following items:

- (1) You may attempt each question more than once. There is no penalty for a wrong answer. This is to help you correct your own mistakes, and to get instant feedback on your attempts.
- (2) The questions are generated randomly, and the numbers are different for each student.
- (3) Please try to do the problems by yourself, and without the use of other calculators or software. Since calculators and software are not allowed in the exams, you should practice working without them. st minute.
- (4) In general, it is a good idea to start the assignments early rather than waiting till the last minute. The deadlines are enforced by the system, and it will shut down automatically when time is up, so give yourself plenty of extra time in case of problems.

Tests: There will be two midterm exams (in class) and a final exam. The tests will be closed book-closed notes tests. Calculators will not be allowed.

The (tentative) dates for the two midterms are: Wednesday May 27th and Wednesday June 10th.

Grades: Grades will be computed as the maximum of the following:

- Homework 10%, Midterms 20%+20%, Final exam 50% or
- Homework 10%, Best midterm score 20%, Final exam 70%.

Synopsis: The course will cover more or less the whole book (with some minor exceptions).

Linear algebra is a fundamental and extremely important topic in mathematics. In fact, many other areas attempt to reduce more complicated questions to problems in linear algebra. For example, calculus tries to reduce questions about curves and surfaces (or higher dimensional shapes) to ones about their tangent lines or tangent planes. These lines and planes are concepts in linear algebra. Perhaps another way of saying this is that the derivative, the key concept in calculus, is a linear map.

This course is a study of linear maps. We will learn what they are, how to manipulate them as well as tools (determinants, eigenvectors/eigenvalues, diagonalization) to better visualize them. Along the way we will also touch on various applications.

Other advice: Unlike a novel, reading mathematics is a slow process which is often not linear. One could very well spend hours reading one page but then skim over the next ten. So read things carefully until you understand. Be patient!

2. SCHEDULE

Here is a rough course schedule, subject to later adjustments.

- Week 1. §1.1,1.2, 2.1-2.4, 3.1-3.2
- Week 2. §3.3-3.6, 4.1-4.3
- Week 3. §4.3-4.6, 5.1-5.3
- Week 4. §6.1-6.6
- Week 5. §7.1-7.3
- Week 6. §7.4 + Loose ends and review

3. OFFICIAL STATEMENT ABOUT UNIVERSITY VALUES AND POLICIES

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious, spiritual and cultural observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available here:

<https://senate.ubc.ca/policies-resources-support-student-success>

<https://science.ubc.ca/students/wellbeing>