

## Winter 2021

# MATH 2107B, Linear Algebra II

**Instructor:** Ayse Alaca

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**Textbook:** Linear Algebra and Its Applications (with MyLab Access Card), 6E, by David C. Lay, Steven R. Lay, Judi J. McDonald.

You will need to create a MyLab Math account. An e-textbook with a MyLab Access Card is available for purchase at the university bookstore.

**Prerequisites:** (i) MATH 1104, or a grade of C- or higher in MATH 1107 or MATH 1109; and (ii) a grade of C- or higher in MATH 1007 or equivalent; or MATH 1152 and permission of the School.

**First class:** Monday January 11.

**Last class:** Wednesday, April 12.

**First tutorials:** Wednesday, January 27.

**Last tutorial:** Wednesday, April 7.

	Day	Time
<b>Lectures</b>	Monday & Wednesday	8:35 am--9:55 am
<b>Tutorials</b>	Wednesday	4:35 pm--5:25 pm
<b>Office hour</b>	Wednesday	1:00--2:00 pm

Tutorial Groups	B1	B2	B3
TA's e-mail: <a href="mailto:@cmail.carleton.ca">@cmail.carleton.ca</a>	soroushkazemi	emilyfu	noahrubin
TA's office hours (online)	TBA	TBA	TBA

During the tutorial sessions, a TA will work out selected problems and/or answer your questions.

**Quizzes:** There will be 7 quizzes during the term due on Wednesdays **Feb. 3, 10, 24; Mar. 10, 17, 24 and Apr. 7 at 11:30 pm**. The quizzes will be held online via "MyLab Math". Please register for an account well in advance using the instructions that are

posted on cuLearn. No make up, early, or delayed quizzes.

**Term tests:** There will be two 50-minute tests during the regular tutorial hours on Wednesdays **March 3 and 31**. No make up, early, or delayed tests. Instructions for the tests will be posted on cuLearn as they become available.

**Final examination:** This is a three hour exam scheduled by the University and will take place sometime during the examination period **April 16--27**. It is the responsibility of each student to be available at the time of the examination.

**Evaluation:** 7 quizzes 28% (4% each), 2 tests 32% (16% each), and final examination 40%. **Important notes:**

- Lectures will be online via Zoom during the scheduled class times. Lecture notes will be posted on cuLearn in advance. Students are expected to study the assigned pages of the lecture notes and the relevant sections of the textbook before each class. During the online lecture times, you will have an opportunity to ask your questions. The classes are not a substitute for studying the lecture notes and/or the relevant sections of the textbook by yourself prior to each class.
- If you are physically in a different time zone, please email me (using your Carleton e-mail account) during the first week of classes with the details of your time zone to discuss suitable accommodation.
- Tests, quizzes and final examination will be run through cuLearn. Details will be posted on cuLearn.
- You are responsible for keeping up with information announced on cuLearn, or sent to your Carleton e-mail account.
- According to Carleton University policy under the Freedom of Information of Privacy Act (FIPPA), please use your Carleton e-mail account for all course related emails.
- You are responsible to make sure that your test marks are recorded correctly by visiting **cuLearn**. The deadline to make any corrections to your term marks is **April 12**.

### **Policies:**

**Academic Integrity:** Be sure that you know the academic integrity standards at Carleton which can be found [here](#).

**Religious obligations and/or accommodations for pregnancy:** Write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, see the Student Guide: [Academic Accommodation](#).

**Academic Accommodations for Students with Disabilities:** The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first scheduled test or exam requiring accommodation (if applicable). For the deadline to request accommodations, and for more details, visit the [PMC website](#).

**MATH 2107B, CLASS OUTLINE FOR WINTER 2021**

<b>LECTURE #</b>	<b>DATES</b>	<b>TESTS/QUIZZES</b>	<b>SECTIONS</b>	<b>TOPICS</b>
1 & 2	Jan. 11, 13	~	4.1, 4.2	Vector Spaces and Subspaces. Null Spaces, Column Spaces, Row Space.
3 & 4	Jan. 18, 20	~	4.2, 4.3	Linear Transformations. Linearly Independent Sets, Bases.
5 & 6	Jan. 25, 27	~	4.4, 4.5	Coordinate Systems. The Dimension of a Vector Space.
7 & 8	Feb. 1, 3	<b>Quiz 1</b>	4.6	Change of Basis.
9 & 10	Feb. 8, 10	<b>Quiz 2</b>	5.1, 5.2	Eigenvectors and Eigenvalues. The Characteristic Equation.
~	<b>Feb. 15--19</b>	<b>WINTER</b>	<b>BREAK</b>	<b>NO CLASSES</b>
11 & 12	Feb. 22, 24	<b>Quiz 3</b>	5.3, 5.4	Diagonalization. Eigenvectors and Linear Transformations.
13 & 14	Mar. 1, 3	<b>Test 1</b>	5.4, 5.5	Complex Eigenvalues.
15 & 16	Mar. 8, 10	<b>Quiz 4</b>	6.1, 6.2	Inner Product, Length and Orthogonality. Orthogonal Sets.

17 & 18	Mar. 15, 17	<b>Quiz 5</b>	6.3, 6.4	Orthogonal Projections. The Gram-Schmidt Process.
19 & 20	Mar. 22, 24	<b>Quiz 6</b>	6.5, 6.6	Least-Squares Problems. Least-Squares Lines. Least-Squares Fitting of Other Curves.
21 & 22	Mar. 29, 31	<b>Test 2</b>	6.7	Inner product Spaces.
23 & 24	Apr. 5, 7	<b>Quiz 7</b>	7.1	Diagonalization of Symmetric Matrices. The Spectral Theorem for Symmetric Matrices.
25	Apr. 12	~	7.2	Quadratic Forms. The Principal Axes Theorem.

**The above class outline is subject to change depending on the progress of the course.**

**Last modified: January 12, 2021**