Department of Mathematics & Statistics
Concordia University

MATH 251
Linear Algebra I
Fall 2025

Instructor*: _____

Email: _____

Office Hours: _____

*Students should get the above information from their instructor during class time. The instructor is the person to contact should there be any questions about the course.

Textbook: *Linear Algebra*, by S. Friedberg, A. Insel and L. Spence, 5th Edition, Prentice Hall. The digital and print versions of the textbook will be available at: https://www.bkstr.com/concordiastore/home
Note: Students should order textbooks as early as possible, especially for print versions in case books are back ordered or there are any shipping delays.

Note: The 4th Edition of the textbook will suffice.

Assignments: Assignments are very important as they indicate the level of difficulty of the problems that students are expected to solve and understand independently. Students are expected to submit assignments weekly **as a single PDF file on the Moodle site**. Solutions must be written up carefully, showing all work for full credit. **Late assignments will not be accepted.**

Midterm Test: There will be one midterm test during lecture time in week 7 covering weeks 1-6. The **midterm test will be held on Friday, October 24, 2025, in class.**

PLEASE NOTE: It is the Department's policy that tests missed for any reason, including illness, cannot be made up. If you miss a test, the Final Exam will count for 85% of your final grade.

Final Exam: At the end of the course, there will be a final examination during the period assigned by Concordia's Exam Office.

PLEASE NOTE: Students are responsible for finding out the date and time of the final exam once the schedule is posted by the Examination Office. Any

conflicts or problems with the scheduling of the final exam must be reported directly to the Examination Office, **not** to your instructor. It is the Department's policy and the Examination Office's policy **that students are to be available until the end of the final exam period. Conflicts due to travel plans will not be accommodated.**

Final Grade: The highest of the following: (15% assignments + 25% midterm test + 60% final exam) or (15% assignments + 85% final exam).

If the grading scheme for this course includes graded assignments, a reasonable and representative subset of each assignment may be graded. Students will not be told in advance which subset of the assigned problems will be marked and should therefore attempt all assigned problems.

Calculators: Only calculators approved by the Department (with a sticker attached as proof of approval) are permitted for the class test and final examination.
For a list of Approved calculators see
http://www.concordia.ca/artsci/math-stats/services.html #calculators.

Week	Sections	Topics	Assignments
1. Sep. 01	1.2, 1.3	Vector Spaces, Subspaces	1.2: 18, 19 1.3: 10, 12, 17
2. Sep. 08	1.4, 1.5	Linear Combinations Systems of Equations Linear Dependence and Independence	1.4: 5(d, f, h), 6 1.5: 2(b, d, f), 8(a), 10
3. Sep. 15	1.6	Basis and Dimension	1.6: 3(b, d), 5, 8, 14, 30
4. Sep. 22	2.1	Linear Transformations, Null Spaces, Ranges	2.1: 3, 9(b), 11, 17
5. Sep. 29	2.2	Matrix Representation of Linear Transformations	2.2: 2(b, e), 4, 5(a, d, f)
6. Oct. 06	2.3	Composition of Linear Transformations, Matrix Multiplication	2.3: 3(a, b), 9, 11, 12(c), 13, 15
October 11 - October 17: Reading Week			
7. Oct. 20		**Review** **Midterm Test**	
8. Oct. 27	2.4, 2.5	Invertibility and Isomorphism	2.4: 6, 15, 2.5: 2(b, d), 3(f), 6(b, d)
9. Nov.03	3.1, 3.2, 3.3	Elementary Matrices, Rank of Matrices, Matrix Inverses, Systems of Equations	3.2: 2(f), 4(b), 5(h), 6(d, f), 20(a) 3.3: 2(d), 3(d), 6, 8(b)

10. Nov. 10	3.4	Systems of Equations – Computational Aspects	3.4: 2j, 6*, 8, 10, 12 (*In question 6: Determine A if the first, third and **FIFTH** columns …)
11. Nov. 17	4.4, 5.1	Summary about Determinants Eigenvalues and Eigenvectors	4.4: 3(h), 4(h) 5.1: 3(d), 4(b, d), 5(c, d, g)
12. Nov.24	5.2	Diagonalizability **Review**	

Student Services
You may wish to access the many services available to you as a Concordia student. An overview of these resources can be found here: https://www.concordia.ca/students/services.html

Academic Integrity and the Academic Code of Conduct
This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: https://www.concordia.ca/conduct/academic-integrity.html" *[Undergraduate Calendar, Sec 17.10.2]*

Behaviour
All individuals participating in courses are expected to be professional and constructive throughout the course, including in their communications.

Concordia students are subject to the Code of Rights and Responsibilities, which applies both when students are physically and virtually engaged in any University activity, including classes, seminars, meetings, etc. Students engaged in University activities must respect this Code when engaging with any members of the Concordia community, including faculty, staff, and students, whether such interactions are verbal or in writing, face to face or online/virtual. Failing to comply with the Code may result in charges and sanctions, as outlined in the Code.

Intellectual Property
Content belonging to instructors shared in online courses, including, but not limited to, online lectures, course notes, and video recordings of classes remain the intellectual property of the faculty member. It may not be distributed, published or broadcast, in whole or in part, without the express permission of the faculty member. Students are also forbidden to use their own means of recording any elements of an online class or lecture without express permission of the instructor. Any unauthorized sharing of course content may constitute a breach of the Academic Code of Conduct and/or the Code of Rights and Responsibilities. As specified in the Policy on Intellectual Property, the University does not claim any ownership of or interest in any student IP. All university members retain copyright over their work.

Extraordinary circumstances
In the event of extraordinary circumstances and pursuant to the Academic Regulations the University may modify the delivery, content, structure, forum, location and/or evaluation scheme. In the event of such extraordinary circumstances, students will be informed of the change.