MATHEMATICS 2051

Linear Algebra II

Semester: Fall 2023
CRN: 40939
Time: Mon, Tue, Thu 1:00–1:50 p.m.
Classroom: SN-4063

Professor: Dr. Mikhail V. Kotchetov
Office: HH-2002
Phone: 864-7947
Email: mikhail@mun.ca

Text: *Elementary Linear Algebra with Applications* (Ninth Edition)
by Bernard Kolman and David R. Hill, Prentice-Hall (2008)

Prerequisites: MATH 1000 and MATH 2050

Evaluation:

Homework	15%	weekly, due on Tuesdays
Midterm exam	30%	in class on October 19, closed book
Final exam	55%	2.5 hours, closed book

Office Hours: Mondays 2 – 3 p.m., Thursdays 11 a.m. – 12 noon, or by appointment.

Course Web Page: Announcements, assignments, solutions, and grades will be posted on Brightspace (formerly known as D2L) at https://online.mun.ca

Attendance: You are expected to attend and participate in class. If you miss a class, you are responsible for finding out what material was covered and studying it on your own.

Assignments: All assignments should be written neatly on one side of $8\frac{1}{2} \times 11$ paper and stapled. Do not use a folder. Do make sure your name, student number, and assignment number are clearly written on the first page.

Missing an assignment or the midterm: *There is no possibility of writing a deferred midterm exam or of receiving credit for a late or missing homework assignment.* If you miss the midterm exam and provide an acceptable reason in writing within seven calendar days, the percentage allotted to the midterm exam will be assigned to the final exam. If you do not turn in a homework assignment and provide an acceptable reason, your total homework mark will be based on the assignments that you completed. At most two assignments may be forgiven in this manner.

Missing the final exam: It is a part of the responsibility of students to discover the correct time and date of the final examination in each course for which they are registered. If you miss the final examination for unacceptable reason, you will receive a final exam mark of zero. Acceptable reasons are outlined in Section 6.8 of the University Regulations. Students must use the department's online form to apply for a deferral. Applications must include supporting documents.

Supplementary exams: The Department of Mathematics & Statistics offers supplementary examinations for first and second year courses to students who are in clear academic standing, who have a passing term mark, and whose final grade is between 45 and 49 (inclusive). Application for supplementary examinations must be made using the department's online form within one week of the official release of grades. Regulations governing supplementary exams are in Section 8 of the Faculty of Science in the University Calendar.

Electronic devices: The use of electronic communication devices such as cell phones is prohibited in class. If you have one in your possession, please make sure it is in silent mode. No electronic devices (including calculators and cell phones) are allowed at your desk or on your person during examinations.

Accommodation of students with disabilities: Memorial University of Newfoundland is committed to supporting inclusive education based on the principles of equity, accessibility and collaboration. Accommodations are provided within the scope of the University Policies for the Accommodations for Students with Disabilities. Students who may need an academic accommodation are asked to initiate the request with the Glenn Roy Blundon Centre at the earliest opportunity.

Academic integrity: Students are expected to adhere to those principles which constitute proper academic conduct. A student has the responsibility to know which actions, as described under Academic Offences in the University Regulations, could be construed as dishonest or improper. Students found guilty of an academic offence may be subject to a number of penalties commensurate with the offence including reprimand, reduction of grade, probation, suspension or expulsion from the University. For more information regarding this policy, students should refer to the University Regulations for Academic Misconduct (Section 6.12 of the University Regulations in the University Calendar).

Important Dates:

Classes begin	Wednesday, September 6
Last day to add courses (or drop with 100% refund)	Wednesday, September 20
National Day for Truth and Reconciliation observed	Monday, October 2
Lectures will follow the Monday schedule	Wednesday, October 4
Midterm break	Mon and Tue, Oct 9–10
Lectures will follow the Tuesday schedule	Thursday, October 12
Midterm exam	Thursday, October 19
Last day to drop without academic prejudice	Wednesday, November 1
Remembrance Day observed	Monday, November 13
Lectures will follow the Monday schedule	Friday, November 17
Last day of lectures	Monday, December 4
Examination period	December 7–15

Syllabus

(sections marked with * will be covered if time permits)

- Introduction: Axioms, Theorems and Proofs

- Chapter 4: Real Vector Spaces

  4.2 Vector Spaces

  4.3 Subspaces

  4.4 Span

  4.5 Linear Independence

  4.6 Basis and Dimension

  4.7 Homogeneous Systems

  4.8 Coordinates and Isomorphisms

  4.9 Rank of a Matrix

- Chapter 6: Linear Transformations and Matrices

  6.1 Definitions and Examples

  6.2 Kernel and Range of a Linear Transformation

  6.3 Matrix of a Linear Transformation

  6.5 Similarity

- Chapter 5: Inner Product Spaces

  5.3 Inner Product Spaces

  5.4 Gram–Schmidt Process

  5.5 Orthogonal Complements*

- Chapter 7: Eigenvalues and Eigenvectors

  7.2 Diagonalization and Similar Matrices

  7.3 Diagonalization of Symmetric Matrices

- Chapter 8: Applications of Eigenvalues and Eigenvectors

  8.6 Real Quadratic Forms

  8.7 Conic Sections*

  8.8 Quadric Surfaces*