Math 260 – Linear Algebra (CRN: 36217)
Syllabus (Spring 2025)

Instructor Information

Name: Greg Miller E-mail: gmiller@riohondo.edu
Office: S 233B Office Hours: MW 3:15pm - 4:45pm and TR 5-5:30pm
Website: www.gregsriohondomathpage.com

Class Information

Book: *Linear Algebra with Applications by W. Keith Nicholson* (OER book)
Meeting times: TR 10:25am - 12:30pm, from 1/28/2025 to 5/20/2025
Room: S-203

Course Description

This course is an introductory study of linear algebra with applications to problems in the physical and social sciences. It includes the solution of systems of linear equations, matrix algebra with inverses, determinants, vectors and vector spaces, linear transformations, Eigenvalues and Eigenvectors, orthogonality and diagonalization.

This course will cover the following sections from our book (not necessarily in this order):

Chapter 1: sections 1-5	Chapter 2: sections 1-6, 9	Chapter 3: sections 1-3
Chapter 4: sections 1-2, 4	Chapter 5: sections 1-5	Chapter 6: sections 1-3
Chapter 7: sections 1-2	Chapter 8 : sections 1-3, 9	Chapter 9: 1-2
Chapter 10: sections 1-3	Appendices: B and C	

Student Learning Outcomes

1. Determine if a given set with given operations for vector addition and scalar multiplication forms a vector space
2. Find a basis for the row space, column space and null space for a given matrix
3. Solve applications using Markov chains. Related exiting skill: Use matrix algebra to compute sums, products, inverses, powers, and transposes of matrices
4. Use the definition of linear transformation to determine if a given transformation is linear
5. Use the theory of eigenvectors and eigenspaces to determine if a given matrix is diagonalizable

Exams & Assignments

Homework: There will be 2 types of homework assignments in this course: online homework and paper homework.

- The online homework is available through the Lyryx website (https://login.lyryx.com/). Each online homework assignment will be due on the Tuesday following the lecture on that material.
- The paper homework will be assigned when I need to supplement the online homework with extra problems that are not available online. These will be announced in class and can be found on my website (www.gregsriohondomathpage.com) under the "Paper Homework Assignments" link.

Your total homework score at the end of the semester will be scaled to 120 points. Late homework will not be accepted.

Exams: There will be 3 exams (worth 160 points each) and 1 final (worth 250 points). The exams will be cumulative, but will mainly focus on the material covered after the point where the previous midterm left off. The final will be cumulative. All exams will be closed book. Each exam can cover anything assigned prior to the exam day (see the tentative lecture schedule on the last page of the syllabus for the dates of your exams). No make-up exams will be given.

Quizzes: All quizzes will be assigned over the weekend and due on Tuesdays at 10:25am. You will be given a quiz almost every weekend. 2 quizzes will be dropped. No make-up quizzes will be given and late quizzes will not be accepted.

Extra Credit: Some of your quizzes and/or other assignments may be designated as extra credit and can only improve your grade. However, I do not guarantee that I will assign extra credit.

Grading Policy

Your grade will be determined based on the total number of points on all your assignments. Specifically your grade will be determined using the table below:

GRADE	PERCENTAGE RANGE	POINT RANGE
A	**90%-100%**	**900-1000 points**
B	**80%-89%**	**800-899 points**
C	**70%-79%**	**700-799 points**
D	**60%-69%**	**600-699 points**
F	**0%-59%**	**0-599 points**

where your points come from

Tests $\times 3$ (160 each) ---------- 480 points possible
Quizzes $\times ?$ (scaled) ---------- 150 points possible
Online Homework (scaled) ---------- 120 points possible
Final (Comprehensive) ---------- 250 points possible
Total ---------- 1000 points possible

Attendance and Make-Up Assignments

You are expected to attend every class and to know everything discussed for any days missed. If you miss **three or more** classes, you will be dropped from this course regardless of academic progress.

There will be no make up quizzes or exams. If you have to miss a class for any reason, make sure to stay caught up on all the material covered in class.

Important Dates

Last day to add course: 2/9/2025
Last day to drop course for a refund: 2/9/2025
Last day to drop course w/out receiving a "W": 2/21/2025
Last day to drop and receive a "W": 4/25/2025

Note: It is the student's responsibility to add, drop, or withdraw from the class by the dates above, otherwise the student will receive the grade that their work merits.

Behavior

Please respect me and your classmates and make the class more conductive to learning by not talking in class unless called on, even if you are discussing the problem that is on the board. If you must talk, either do it in a soft enough voice so as not to disturb your classmates, or leave the room and come back when you are done. As a rule of thumb, just try to avoid disrupting class.

Cheating Policy

Cheating constitutes academic dishonesty and the penalty can range from a 0 on that assignment to an F in the course. This decision will be at my discretion depending on the severity of the incident.

Cell Phones

The use of cell phones is prohibited during class. Please make sure you turn OFF your cell phones before coming to class (not just on silent). The first time a cell phone is used during class or goes off in class, it will be confiscated. The second time a cell phone is used or goes off during class, the student will be asked to leave the class and counted as absent.

Calculators

A TI-83 or TI-84 is required for this course.

Tentative Lecture Schedule

Day	Date	Scheduled
T	1/28	Intro to the Course
		Sections 1.1-1.3: Solving Systems of Linear Equations
R	1/30	Sections 1.1-1.3: Solving Systems of Linear Equations (continued)
T	2/4	Sections 1.1-1.3: Solving Systems of Linear Equations (continued)
		Sections 1.4-1.6: Applications of Systems of Linear Equations
R	2/6	Proving "FOR ALL" Statements
T	2/11	Section 2.1: Matrix Addition, Scalar Multiplication, and Transposition
R	2/13	Section 2.1: Matrix Addition, Scalar Multiplication, and Transposition (continued)
		Sections 2.2-2.3: Matrix Multiplication
T	2/18	Sections 2.2-2.3: Matrix Multiplication (continued)
R	2/20	Section 2.4: Matrix Inverses
T	2/25	Section 2.4: Matrix Inverses (continued)
R	2/27	Section 2.5: Elementary Matrices
T	3/4	Proofs: Mathematical Induction
		Section 3.1: Determinants - The Cofactor Expansion
R	3/6	Section 3.1: Determinants - The Cofactor Expansion (continued)
T	3/11	**Exam 1 (on sections 1.1-1.6, proving "FOR ALL" statements, and sections 2.1-2.5, Mathematical Induction proofs)**
R	3/13	Section 3.2: Determinants and Matrix Inverses
T	3/18	Section 3.2: Determinants and Matrix Inverses (continued)
		Section 3.3: Diagonalization and Eigenvalues
R	3/20	Section 3.3: Diagonalization and Eigenvalues
T	3/25	No Class (Spring Break)
R	3/27	No Class (Spring Break)
T	4/1	Chapter 4 Videos
R	4/3	Chapter 5 & 6 Section 1 – Vector Spaces (Part 1)
T	4/8	**Exam 2 (on sections 3.1-3.3, and chapter 4 videos)**
R	4/10	Chapter 5 & 6 Section 1 – Vector Spaces (Part 2)
		Chapter 5 & 6 Section 2 – Subspaces (Part 1)
T	4/15	Chapter 5 & 6 Section 2 – Subspaces (Part 1)
		Chapter 5 & 6 Section 3 – Span and Spanning Sets (Part 1)
R	4/17	Chapter 5 & 6 Section 3 – Span and Spanning Sets (Part 2)
T	4/22	Chapter 5 & 6 Section 4 – Independence, Basis and Dimension (Part 1)
R	4/24	Chapter 5 & 6 Section 4 – Independence, Basis and Dimension (Part 2)
T	4/29	Section 5.4: The Rank of a Matrix (Part 1)
R	5/1	Section 5.4: The Rank of a Matrix (Part 2)
		Chapter 7: Linear Transformations (Part 1)
T	5/6	**Exam 3 (on sections 5.1-5.2, 5.4, 6.1-6.4)**
R	5/8	Chapter 7: Linear Transformations (Part 2)
T	5/13	Sections 8.1,10.1 & 10.2: Inner-Product Spaces and the Gram-Schmidt Orthonormalization Process (Part 1)
R	5/15	Sections 8.1,10.1 & 10.2: Inner-Product Spaces and the Gram-Schmidt Orthonormalization Process (Part 2)
		Section 2.9: Markov Chains
T	5/20	**Final Exam (9:05am-12:05pm)** **You are allowed a 1-page (8.5in x 11in) hand written sheet of notes/formulas and you may use your graphing calculator. Make sure you submit your notes/formulas sheet with your final. Good luck!!!**

This syllabus is subject to change without notice. Any serious changes will be announced in class.