Text: *Linear Algebra and Its Applications, 5th ed.* by David C. Lay, S. R. Lay, J. J. McDonald.

Class Attendance: Attendance is required. Please check the Faculty Senate Class Attendance Policy at: `https://www.unl.edu/facultysenate/s`

Technology: Since working with matrices involves a considerable amount of calculation, a calculator is recommended. Any calculator will do as long as it is capable of working with (e.g., row-reducing) matrices. Calculators will be allowed on most exams and quizzes. A more comprehensive tool for matrix computations is *Matlab*, a computer algebra system, which is made free of charge to all UNL students. Go to this page to install it onto your computer: `http://procurement.unl.edu/matlab-licenses`.

Homework: We learn the best by doing. Recommended exercises are assigned as in the syllabus. However, there will be one or two homework assignments due weekly that are required for submission to Canvas for credit. The assignments will be posted on Canvas. Here are the minimal requirements for homework submission:

1. Your submission must contain the problem statement verbatim, in the assigned order.
2. Your submission must be neat and legible. If it is done on paper before photographed for submission, use ink pens or ballpoint pens. Pencil work does not show up well in photos.
3. Your submission must be a work of your own. You are encouraged to work with others. But your submitted work must not be shared in written form.

Exams: There will be two Hour Exams and one Final Exam. See Syllabus for approximate dates for the Hour Exams. All exams will be in-class, closed-book exams.

Grades: Here is an approximate composition for the total points you will try to get: 100 for each Hour Exam, 200 for the Final Exam, 150 total for Homework, and 30 for the Group Project if time permits. Your course grade will be assigned by the standard conversion from your earned percentage point to the letter grade, e.g., [80, 83.3) for B, [83.3, 86.6) for B+, and [86.6 – 90) for A-, etc.

University and Department Policies:
Ace Outcome 3: This course satisfies ACE Outcome 3: "Use mathematical, computational, statistical, or formal reasoning (including reasoning based on principles of logic) to solve problems, draw inferences, and determine reasonableness." Your instructor will provide examples, you will discuss them in class, and you will practice with numerous homework problems. The exams will test how well you've mastered the material. The final exam will be the primary means of assessing your achievement of ACE Outcome 3.
ADA Notice: Students with disabilities are encouraged to contact the instructor for a confidential discussion of their individual needs for academic accommodation. It is the policy of the University of Nebraska-Lincoln to provide flexible and individualized accommodation to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office [www.unl.edu], 132 Canfield Administration, 472-3787 voice or TTY.
Course Evaluation: The Department of Mathematics Course Evaluation Form will be available through your Blackboard account during the last two weeks of class. You'll get an email when the form becomes available. Evaluations are anonymous and instructors do not see any of the responses until after final grades have been submitted. Evaluations are important—the department uses evaluations to improve instruction. Please complete the evaluation and take the time to do so thoughtfully.
Departmental Grading Appeals Policy: Students who believe their academic evaluation has been prejudiced or capricious have recourse for appeals to (in order) the instructor, the departmental chair, the departmental appeals committee, and the college appeals committee.
Academic Integrity: The university is dedicated to educating all students, faculty, and staff about academic integrity. Please refer to the Student Code of Conduct as stated in `https://studentconduct.unl.edu/academic-integrity` for academic honesty.

Math 314 Linear Algebra, Course Syllabus, Spring 2026

The following table shows the material expected to be covered and the corresponding tentative problem assignments for each week of the semester. Note that what is shown here is approximate; please be alert for changes throughout the semester. Textbook: *Linear Algebra and Its Applications, 5th ed.* by David C. Lay, S. R. Lay, J. J. McDonald.

Week of	Section	Recommended Exercises
1. Jan. 12	1.1 Systems of Linear Equations	1, 3, 5, 9, 10, 11, 15, 18, 19, 20, 23, 24, 25, 31
	1.2 Row Reduction and Echelon Forms	1, 3, 7, 11, 13, 15, 17, 19, 21, 22, 23, 24, 25, 26
	1.3 Vector Equations	1, 3, 5, 7, 9, 11, 13, 14, 15, 17, 18, 19, 23, 24, 25, 28
2. Jan. 19	*Monday, January 19, Martin Luther King Day Holiday*	
	1.4 The Matrix Equation $A\mathbf{x} = \mathbf{b}$	1, 3, 7, 9, 11, 13, 14, 15, 17–24
	1.5 Solution Sets of Linear Systems	2, 5, 6, 7, 8, 9, 11, 12, 13, 15, 16, 20, 23, 24, 25, 40
	Friday, after January 24 all full semester course withdrawals noted with a grade of "W" on academic record	
3. Jan. 26	1.7 Linear Independence	1, 3, 5, 7, 8, 9, 13, 14, 15, 17, 19, 21, 22, 23, 24, 28, 30
	1.8 Introduction to Linear Transformations	1, 2, 3, 5, 7, 9, 11, 13–16, 19, 21, 22, 32, 33, 34
	1.9 The Matrix of a Linear Transformation	1, 5, 7, 8, 13, 15, 17, 22–25, 38
4. Feb. 2	2.1 Matrix Operations	1, 3, 5, 7–11, 15, 16, 19, 22, 24
	2.2 The Inverse of a Matrix	1, 3, 5, 7, 8, 9, 10, 13, 20, 21, 23, 24, 29, 31, 32, 33
	2.3 Characterization of Invertible Matrices	1–7(odd), 11, 12, 13, 16, 17, 19, 22, 33, 37
5. Feb. 9	2.5 Matrix Fractorizations	3, 5, 9, 11, 19
	Catch Up and Review	
	Midterm Exam I	
6. Feb. 16	3.1 Introduction to Determinants	1–13 (odd), 39, 40
	3.2 Properties of Determinants	1–8, 11, 15, 18, 19, 25, 27, 28, 31
	4.1 Vector Spaces and Subspaces	1–15, 17, 19, 20, 21, 23, 24, 25, 27
7. Feb. 23	4.2 Null Spaces, Column spaces	1, 2, 3, 5, 7, 11, 12, 15, 17, 19, 20, 21, 25–28, 30, 35, 37
	4.3 Linearly Independent Sets; Bases	1–19 (odd), 21–25, 31, 32
	4.4 Coordinate Systems	1, 3, 5, 7, 8, 11, 13, 15, 16, 27, 28, 29
8. Mar. 2	4.5 The Dimension of a Vector Space	1–5, 7–17 (odd), 19, 20, 21, 29, 30, 31
	4.6 Rank	1, 3, 4, 5–15 (odd), 17, 18, 19, 21, 25, 27–29
	4.7 Change of Basis	1–9 (odd), 11, 12, 13, 15
	Friday, March 6 is the last day to change to P/NP	
9. Mar. 9	5.1 Eigenvectors and Eigenvalues	1–15 (odd), 19, 21, 22, 23, 24, 25, 27, 31, 33
	5.2 The Characteristic Equation	1, 3, 7, 9, 11, 13, 17, 21, 22, 23, 24
	5.3 Diagonalization	1, 3, 5, 7, 11, 15, 16, 19, 21, 22, 23, 24, 25, 27, 29
10. Mar. 15 - 22	**Spring Semester Break**	
11. Mar. 23	5.4 Eigenvectors and Linear Transformations	1, 3, 5, 8, 9, 11, 13, 19, 23, 27
	5.5 Complex Eigenvalues	1, 5, 9, 13, 16
	Catch Up and Review	
12. Mar. 30	6.1 Inner Product, Length and Orthogonality	1–19 (odd), 20, 25–31
	Midterm Exam II	
	6.2 Orthogonal Sets	1, 5, 9, 11, 13, 15, 17, 23, 24, 27–29
13. Apr. 6	6.3 Orthogonal Projections	1, 5, 7, 9, 11, 13, 15, 17, 21, 22, 23, 24
	6.4 The Gram-Schmidt Process	1, 5, 9, 11, 15, 17, 18, 19, 22
	6.5 Least-Squares Problems	1, 3, 5, 7, 11, 15, 17, 18, 19, 21
	Friday, April 10 is the last day to withdraw from one or more courses	
14. Apr. 13	7.1 Diagonalization of Symmetric Matrices	1–19 (odd), 23, 25, 26, 28, 29, 36
	7.2 Quadratic Forms	1–13 (odd), 21, 22, 23, 24
	7.4 Singular Value Decomposition	1, 3, 5, 7, 9, 11
15. Apr. 20	7.4 Singular Value Decomposition	12, 13, 17, 18, 23
	1.6, 6.6, Applications	1.6: 3(a,b),7, 14; 6.6: 2, 4
	4.9, 7.4, Applications	4.9: 5, 8; 7.4: 23, 24
16. Apr. 27	Catch Up and Review for Final Exam	
	Catch Up and Review for Final Exam	
	Catch Up and Review for Final Exam	
17. May 4		
	Final Exam: 7:30 to 9:30 a.m. Friday, May 8	