

Math 22A: Linear Algebra (Section 1)
Spring Quarter 2023 at UC Davis

(Tentative) Schedule:

Disclaimer: The following schedule is tentative, and there may be changes. I will send an announcement on Canvas to notify students of any changes.

Also see the department syllabus for Math 22A (https://www.math.ucdavis.edu/courses/syllabus_detail?cm_id=58).

Lecture 1: Introduction to Linear Equations, Linear Systems, and Matrices; Geometric Interpretation of Linear Systems.
(Section 1.1)

Lecture 2: The Idea of Elimination; Elimination Using Matrices; Gaussian Elimination and Reduced Row Echelon Form.
(Section 1.2)

Lecture 3: Rules for Matrix Operations, and Matrix Multiplication. (Section 1.3)

Lecture 4: Inverse Matrices; Solving $A\mathbf{x} = \mathbf{b}$ When A is Invertible. (Section 1.4)

Lecture 5: Parametrizing Solutions to a System With Infinitely Many Solutions. (Section 1.6)

Lecture 6: Elementary Matrices and Elimination Matrices. (Section 9.1)

Lecture 7: LU and LDU decompositions. (Section 9.1)

Lecture 8: Transposes and Symmetric Matrices; Permutation Matrices and PLU Decompositions. (Sections 1.7 and 9.1)

Lecture 9: Minors, Cofactors, and Determinants. (Section 2.1)

Lecture 10: Properties of the Determinant. (Sections 2.2 and 2.3)

Lecture 11: Vectors, Linear Combinations, and the Dot Product. (Sections 3.1 and 3.2)

MIDTERM 1

Lecture 12: Orthogonal Vectors, Projections, and the Cross Product. (Sections 3.3, 3.4, and 3.5)

Lecture 13: General Vector Spaces. (Section 4.1)

Lecture 14: Vector Subspaces. (Section 4.2)

Lecture 15: Linear Independence, Span, and the Wronskian. (Sections 4.3 and 4.4)

Lecture 16: A Basis for a Vector Space, and Dimension. (Sections 4.5 and 4.6)

Lecture 17: The Four Subspaces: the Row Space, the Column Space, the Null Space, and the Left Null Space. (Section 4.8)

Lecture 18: Rank and Nullity, and Orthogonal Subspaces. (Section 4.9)

Lecture 19: Projection Matrices. (Section 6.4)

Lecture 20: Least Squares Approximations. (Sections 6.4 and 6.5)

Lecture 21: Orthogonal Matrices. (Section 7.1)

Lecture 22: The Gram-Schmidt Process, and QR -Decomposition. (Section 6.3)

MIDTERM 2

Lecture 23: Introduction to Eigenvalues and Eigenvectors. (Section 5.1)

Lecture 24: Diagonalizing a Matrix. (Section 5.2)

Lecture 25: Catch-up/Review.

Lecture 26: Catch-up/Review.

FINAL EXAM

APRIL						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2	3 Lecture 1	4	5 Lecture 2	6	7 Lecture 3	8
9	10 Lecture 4 Homework 1 due by 10:00pm (on Gradescope) Technology Assignment (optional) due by 10:00pm (on Gradescope)	11	12 Lecture 5	13	14 Lecture 6	15
16	17 Lecture 7 Homework 2 due by 10:00pm (on Gradescope)	18	19 Lecture 8	20	21 Lecture 9	22
23	24 Lecture 10 Homework 3 due by 10:00pm (on Gradescope)	25	26 Lecture 11	27	28 MIDTERM 1	29
30						

MAY						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 Lecture 12 Homework 4 due by 10:00pm (on Gradescope)	2	3 Lecture 13	4	5 Lecture 14	6
7	8 Lecture 15 Homework 5 due by 10:00pm (on Gradescope)	9	10 Lecture 16	11	12 Lecture 17	13
14	15 Lecture 18 Homework 6 due by 10:00pm (on Gradescope)	16	17 Lecture 19	18	19 Lecture 20	20

21	22 Lecture 21 Homework 7 due by 10:00pm (on Gradescope)	23	24 Lecture 22	25	26 MIDTERM 2	27
28	29 HOLIDAY	30	31 Lecture 23 Homework 8 due by 10:00pm (on Gradescope)			

JUNE						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2 Lecture 24	3
4	5 Lecture 25 Homework 9 due by 10:00pm (on Gradescope)	6	7 Lecture 26	8	9 NO CLASS	10
11	12	13	14	15 FINAL EXAM 8:00-10:00am	16	17