

MATH 436 Linear Algebra Fall 2022 Schedule

Lec.	Date	Section	Topic
1	8/22	1.A	Introduction. Complex numbers. \mathbb{R}^n and \mathbb{C}^n .
2	8/24	1.B,C	Vector spaces. Subspaces.
3	8/26	1.C	Examples. Sums and direct sums of subspaces.
4	8/29	2.A	Linear combinations and span. Polynomials.
5	8/31	2.A	Linear dependence and linear independence.
6	9/2	2.A	Linearly independent and spanning lists. Finite-dimensional subspaces.
-	9/5		<i>Labor Day - no classes.</i>
7	9/7	2.B	Bases.
8	9/9	2.C	Dimension.
9	9/12		Team Worksheet 1.
10	9/14	3.A	Linear maps.
11	9/16	3.A,B	The space of linear maps. Null space and range.
12	9/19	3.B	Fundamental Theorem of Linear Maps and corollaries.
13	9/21	3.C	Matrices. Matrices of linear maps.
14	9/23	3.D	Invertible linear maps. Invertible operators on V .
15	9/26	3.D	Isomorphic vector spaces.
16	9/28		Team Worksheet 2.
17	9/30		Review.
18	10/3		Exam 1 covering Sections 1.A - 3.C.
19	10/5	3.E	Products of vector spaces. Affine subsets.
20	10/7	3.E, p.137	Quotient space. Quotient operator.
21	10/10	4	Zeros and factorization of polynomials.
22	10/12	5.A	Eigenvalues and eigenvectors.
23	10/14	5.B	Existence of eigenvalues.
24	10/17		Team Worksheet 3.
25	10/19	5.B	Upper triangular matrices.
26	10/21	5.C	Diagonalizable operators.
27	10/24	10.B	The determinant of a matrix and of an operator. <i>(Notes.)</i>
28	10/26	9.A, 10	Characteristic polynomial. Trace. Complexification. <i>(Notes.)</i>
29	10/28	6.A	Inner products and norms.
30	10/31	6.A	Inner products and norms.
31	11/2		Team Worksheet 4.
32	11/4		Review.
33	11/7		Exam 2 covering Sections 3.D-F, 4, 5.A-C, 10.
34	11/9	6.B	Orthonormal lists and bases.
35	11/11	6.B	Orthonormal bases. Linear functionals on inner product spaces.
36	11/14	6.C	Orthogonal complement and orthogonal projection.
37	11/16	6.C, 7.A	Minimization problems. The adjoint.
38	11/18	7.A	Properties of the adjoint. Self-adjoint and normal operators. <i>(Notes.)</i>
	11/20-26		<i>Thanksgiving break - no classes</i>
39	11/28	7.B	The Spectral Theorem.
40	11/30	7.B,C	The Real Spectral Theorem. Isometries.
41	12/2	7.C	Isometries.
42	12/5		Team Worksheet 5.
43	12/7		Team Worksheet 6.
44	12/9		Review.

Final Exam: Wednesday, 12/14, 6:50-8:40 p.m.