Course Guide Linear Algebra 321: Fall 2025: DH 2082, M-W-F 3:15-4:05 PM

Date	Topic	Notes	Assignment
M: 8-18	matrix algebra and notation proofs via index calculation	1.1, 1.2, 1.3, 1.4	
W: 8-20	systems of equations over a field, the linear correspondence, structure of solution sets	1.5, 1.6, 1.7	
F: 8-22	Definition of vector space, examples, and subspace test	2.1, 2.2	
M: 8:25	linear combinations, span is subspace, linear dependence and independence	2.3, 2.4	
W: 8-27	theory of dimension	2.5	Mission 1
F: 8-29	basis and coordinates	2.6	
M: 9-1	subspace theorems	2.7	
W: 9-3	linear transformations	3.1	Mission 2
F: 9-5	linear transformations	3.2	
M: 9-8	matrix of a linear transformation	3.3	
W: 9-10	coordinate change & matrix congruence	3.4 & 3.5	
F: 9-12	Quiz 1[35pts] / Mission 3 collected		Mission 3
M: 9-15	Questions		
W: 9-17	Test 1		
F: 9-19	invariant subspace theory	4.1	
M: 9-22	Eigenvectors and the problem of diagonalization	4.2-4.3, 4.9	
W: 9-24	Cayley Hamilton Theorem	4.4	
F: 9-26	Jordan form for split characteristic polynomials	4.5	
M: 9-29	Jordan form for split characteristic polynomials	4.6	
W: 10-1	complexification	4.7	
F: 10-3	real Jordan form	4.8, 4.9, 4.10	
M: 10-6	real Jordan form	4.8, 4.9, 4.10	
W: 10-8	Systems of linear differential equations and the matrix exponential	4.11	
Fall Break	no class 10-9 & 10-10		
M: 10-13	Systems of linear differential equations and the matrix exponential	4.11	
W: 10-15	Inner product spaces, norm, Cauchy Schwarz and triangle inequalities	5.1, 5.2	Mission 4
F: 10-17	Orthogonality, orthonormality, Gram Schmidt algorithm,	5.1, 5.2	
M: 10-20	Orthogonal complement, projection, closest vector	5.1, 5.2	
W: 10-22	Adjoint of a linear map and properties thereof, musical morphism might go here	5.3	
F: 10-24	Adjoint and normal operators, Schur's theorem applied	5.4	
M: 10-27	Orthogonal and unitary operators and matrices	(not typed)	
W: 10-29	Orthogonal projections and real spectral theorem	(not typed)	
F: 10-31	Quiz 2[35pts] / Mission 4 collected		Mission 5
M: 11-3	Questions		
W: 11-5	Test 2		

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F: 11-7	Quotient space and the first isomorphism theorem	6.1	
M: 11-10	Dual space, double-dual isomorphism, components, annihilators	6.2	
W: 11-12	Multilinear algebra	6.3, 6.4	
F: 11-14	Multilinear algebra	6.3, 6.4	
M: 11-17	Multilinear algebra	6.3, 6.4	
W: 11-19	Introduction to algebras and the regular representation	6.5	
F: 11-21	Wedge product	6.6, 6.7	
	Thanksgiving Break		
M:12-1	Wedge product	6.6, 6.7	
W: 12-3	Musical morphisms	6.8	
F: 12-5	Quiz 3[30pts] / Mission 5 collected / Questions		Mission 6
	Final Exam on Wednesday, December 10, 3:30-5:30 PM		

1. Grading: usual 1000pts scale with:
   Test 1 = 200pts,
   Test 2 = 200pts,
   Missions = 300pts,
   Quizzes = 100pts.
   Final = 200pts.