Math 2114: Introduction to Linear Algebra
Spring 2024

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Text:	*Linear Algebra: A Modern Introduction*, 4th ed. by Poole (w/ WebAssign access)		
Supplemental Text:	*Elementary Linear Algebra*, 8th ed. by Larson		
Canvas:	https://canvas.vt.edu/courses/187483		
WebAssign Site:	https://www.webassign.net		
Course Website:	https://www.math.vt.edu/undergrad-math/courses/math-2114.html		

Course Content and Delivery:
This course covers: Vector and matrix algebra, systems of linear equations, linear equations, linear independence, bases, matrices, determinants, eigenvalues and eigenvectors, orthonormal bases, rank, linear transformations, diagonalization, and some applications of all of the above. This is an *in-person course*.

Per Math Department policy, no further specifics of this course policy sheet may be made publicly available.

Tentative Schedule

Week 1   M.L.K. Junior Day
  §1.1 - The Geometry and Algebra of Vectors
  §1.2 - Length and Angle: The Dot Product
  §2.1 - Introduction to Linear Systems

Week 2   §2.1 - Introduction to Linear Systems
  §2.2 - Direct Methods for Solving Linear Systems

Week 3   §2.2 - Direct Methods for Solving Linear Systems
  §2.3 - Spanning Sets and Linear Independence

Week 4   §3.1 - Matrix Operations
  Exam 1 Review

Week 5   Exam 1
  §3.2 - Matrix Algebra
  §3.3 - The Inverse of a Matrix

Week 6   §3.3 - The Inverse of a Matrix
  §3.5 - Subspaces, Basis, Dimension, and Rank

Week 7   §3.5 - Subspaces, Basis, Dimension, and Rank
  §6.3 - Change of Basis
  §3.6 - Introduction to Linear Transformations

Week 8   Spring Break

Week 9   §3.6 - Introduction to Linear Transformations
  Exam 2 Review

Week 10   Exam 2
  §4.1 - Introduction to Eigenvalues and Eigenvectors
  §4.2 - Determinants

Week 11   §4.2 - Determinants
  §4.3 - Eigenvalues and Eigenvectors of $n \times n$ Matrices

Week 12   §4.3 - Eigenvalues and Eigenvectors of $n \times n$ Matrices
  §4.4 - Similarity and Diagonalization

Week 13   §3.7 - Applications (Markov Chains)
  Exam 3 Review

Week 14   Exam 3
  §5.1 - Orthogonality in $\mathbb{R}^n$
  §5.2 - Orthogonal Complements and Projections

Week 15   §5.2 - Orthogonal Complements and Projections

§5.3 - The Gram–Schmidt Process and QR-Factorization

§7.3 - Least Squares

Week 16   Final Exam Review