

Methods of Applied Mathematics

Fall Quarter Curriculum

Week	Seminar/Student Presentations	Differential Equations	Linear Algebra	Multivariable Calculus
1		B&D 1.1-1.2 Intro. to Differential Eqns.	Lay 1.1-1.2 Row Reduction Workshop	Stewart 9.1-9.2 Vectors
		B&D 1.3-1.4 Slope Fields/Euler's Method CAL Lab: Programming in Mathematica	Lay 1.3-1.5 Linear Systems	Stewart 9.3-9.4 Dot and Cross Products
2	Sem: Mathematical Experience p 1-65 Lay 1.6 Applications of Linear Systems	B&D 1.5-1.6 Existence and Uniqueness	Lay 1.7-1.8 Linear Transformations	Stewart 9.5-9.6 Lines and Planes
		B&D 1.8-1.9 Linear Differential Eqns. Workshop	Lay 2.1-2.3 Matrix Operations Workshop	Stewart 9.7 and Mathematica Lab
3	Sem: Mathematical Experience p 68-119 Lay 1.9 Linear Models in Business and Science B&D Lab 1.3 Logistic with Harvesting	B&D 2.1-2.2 First Order Systems	Mathematica Lab Test Chapters 1	Stewart 10.1-10.2 Space Curves
		Test on Chapter 1 B&D 2.3 Analytic Methods CAL B&D Lab 2.1	Lay 2.8-2.9 Subspaces, Dimension/Rank	Test on Chapter 9 Stewart 10.3 Arc Length and Curvature
4	Sem: Math Experience p 122-200 Lay 2.6 Leontief Model B&D Lab 1.5 Extinction of Pigeon	B&D 2.4 Numerical Methods CAL B&D Lab 2.1	Lay 5.1-5.2 Eigenvalues/Eigenvectors	Stewart 10.4 Frenet Frame Kepler's Laws Workshop pg 735
		B&D 3.1-3.2 Linear Systems Workshop	Lay 5.5 Complex Eigenvalues	Stewart 10.5 Parametric Surface Mathematica Lab
5	Sem: Math. Experience p 272-359 Lay 2.7 Computer Graphics B&D Lab 2.5 Shock Absorbers	B&D 3.3-3.4 Phase Planes	Lay 5.3 Diagonalization Mathematica Lab	Stewart 11.1-11.2 Multivariable Functions
		B&D 3.5 Special Cases CAL B&D Lab 3.1 and Lab 3.3	Lay 2.4-2.5 Matrix Partion/Factorization	Stewart 11.3 Partial Derivatives Mathematica Lab
6	Sem: Math. Experience p 363-411 Lay 4.9 Markov Processes B&D Lab 2.2 Species Dynamics	B&D 3.6-3.7 2 nd Order Linear Diff. Eqns.	Lay 3.1-3.2 Determinants Mathematica Lab	Stewart 11.4.-11.6 Directional Derivatives
		B&D 4.1-4.2 Forced Oscillations Workshop	In Cass Test on Chapter 2 and 5	In Class Test on Chapter 10
7	Lay 5.6 Discrete Dynamical Systems Lay 3.3 Areas and Volumes B&D Lab 3.2 RLC Circuits B&D Lab 3.5 or 3.6 Oscillators	In Class Test on Chapters 2 and 3	Lay 4.1-4.3 Vector Spaces Workshop	Stewart 11.7 Max and Min values Workshop
		B&D 4.3-4.4 Damping Resonance CAL Lab 4.1	Lay 4.4-4.5 Coordinate Systems	Stewart 11.8 Lagrange Multipliers Mathematica Lab
8	B&D 4.5 Tacoma Narrows Lay 4.8 Applications to Difference Eqns. B&D Lab 4.2 Force RLC Circuit B&D Lab 4.3 Tacoma Narrows	B&D 5.1-5.2 Intro to Nonlinear Systems	Lay 6.1-6.2 Inner Product/Orthogonal Set Mathematica Lab	Stewart 12.1-12.3 Double Integrals
		B&D 5.3 Hamiltonian systems Workshop	Lay 6.3-6.4 Projections/Gram-Schmidt Workshop	Stewart 12.4-12.5 Applications Workshop
9	Lay 6.6 Applications to Linear Models Lay 5.8 Eigenvalues: Iterative Estimates B&D Lab 5.1 Hard and Soft Springs B&D Lab 5.2 Higher Order Pendulum	TBA	Lay 6.5 Least Squares Mathematica Lab	Stewart 12.6-12.7 Surface and Volume Integrals
		TBA Workshop	Lay 6.7-6.8 Inner Product Spaces	Stewart 12.8 Cylindrical /Spherical Workshop
10	Lay 7.5 Image Processing Lay 6.8 Inner Product Applications B&D Lab 5.3 Predator Prey B&D Lab 5.4 Glider Dynamics	TBA Review Workshop	TBA Review Workshop	12.9 Change of Variables Review Workshop
		Cumulative Final Exam	Cumulative Final Exam	Cumulative Final Exam