

## The Plan

Here is the plan for the rest of the semester:

- **March 22** Maple Lab 2
- **March 24** Determinants: (6.1-6.2)
  - Introduction to the determinant
  - Sarrus' Rule
  - Laplace expansion down a column
  - Determinant of a triangular matrix
  - Determinant of a partitioned matrix
  - Elementary row operations and determinants
  - Determinant of a product, inverse, transpose
  - Determinant as a linear transformation.
- **March 29** Determinants and Introduction to Dynamical Systems (6.3 and 7.1)
  - Determinant of an orthogonal transformation
  - Geometrical interpretation of the determinant
  - Cramer's Rule
  - Introduction to eigenvalues through discrete dynamical systems
  - Computer Lab II due.
- **March 31** Eigenvalues and eigenvectors (7.1-7.3)
  - What are eigenvalues and eigenvectors?
  - How do we calculate them?
  - Algebraic & geometric multiplicity
  - Finding an eigenspace
  - Finding an eigenbasis
  - **Read** pages 342-346 for class on April 5.
- **April 5** Complex Eigenvalues and Stability (7.5 & 7.6)
  - How do we find complex eigenvalues and eigenvectors?
  - Discrete dynamical systems revisited.
  - What is a stable equilibrium of a dynamical system?
  - How can we use eigenvalues and eigenvectors to determine stability?
  - Chapter 6 Homework due.

- **April 7** Diagonalization (7.4)
  - **Quiz III** (Note: this is a change from the syllabus.)
- **April 12** Symmetric Matrices and Singular Values(8.1 & 8.3)
  - What is an orthogonally diagonalizable matrix?
  - What is the spectral theorem?
  - What is the singular value decomposition?
  - **Read** handout for next class
- **April 14** Relating Linear Algebra to Ordinary Differential Equations
- **April 19** Inner Product Spaces (5.5) & Application #1.
  - What are inner product spaces?
  - How do we find a basis?
  - How do we project onto an inner product space?
  - Chapter 7 Homework due.
- **April 21** Application #2.
- **April 26** Review
- **May 4** Final 3:30-5:30 PM.
  - Comprehensive final, breakdown of new material vs. old TBD.
  - Chapter 8 and Application Homework due.