Math 215-201 Tentative Schedule, January - April 2014

Week 1 [Jan 6, 8, 10] - Introduction

- 0.2: Introduction to differential equations
- 1.1: Integrals as solutions
- 1.2: Slope fields
- 1.3: Separable Equations

Week 2 [Jan 13, 15, 17] - Linear ODEs
Jan 13: quiz 1
Jan 17: lab 1 (Newton's Law of Cooling)
Jan 17: homework 1 due
Jan 17: WebWorK 1 due

- 1.4: Linear equations and the integrating factor
- 3.1: Introduction to systems of ODEs

Week 3 [Jan 20, 22, 24] - Linear Systems
Jan 20: deadline to drop without 'W'
Jan 24: WebWorK 2 due

- 3.2: Matrices and linear systems
- 3.3: Linear systems of ODEs

Week 4 [Jan 27, 29, 31] - Linear Systems
Jan 27: homework 2 due
Jan 27: quiz 2
Jan 30: midterm 1
Jan 31: WebWorK 3 due

- 3.4: Eigenvalue method

Week 5 [Feb 3, 5, 7] - Introduction to Nonlinear Systems and Stability
Feb 7: WebWorK 4 due

- 3.5: Two dimensional systems and their vector fields
- Notes: nonlinear systems introduction, examples, critical points, linearization
- Notes: local phase portraits, stability

Week 6 [Feb 12, 14] - Applications of Nonlinear Systems
Feb 10: Family Day - no class!
Feb 14: lab 2 (biological systems)
Feb 14: homework 3 due

- Notes: applications of nonlinear ODE systems

Week 7 - Reading Week
Feb 17-21: no class!

Week 8 [Feb 24, 26, 28] - Second Order ODEs
Feb 24: quiz 3
Feb 27: midterm 2
Feb 28: WebWorK 5 due

- 2.1: Second order linear ODEs
- 2.2: Constant coefficient second order linear ODEs

Week 9 [Mar 3, 5, 7] - Nonhomogeneous Second Order ODEs
Mar 7: homework 4 due
Mar 7: WebWorK 6 due

- 2.4: Mechanical vibrations
- 2.5: Nonhomogeneous equations (excluding variation of parameters)

Week 10 [Mar 10, 12, 14] - Resonance
Mar 14: lab 3 (forced harmonic oscillators and damping)
Mar 14: WebWorK 7 due

- 2.6: Forced oscillations and resonance
- 1.6: Autonomous equations

Week 11 [Mar 17, 19, 21] - Numerical Methods and the Laplace Transform
Mar 21: homework 5 due
Mar 21: WebWorK 8 due

- 1.7: Numerical methods: Euler's method
- 6.1: The Laplace transform

Week 12 [Mar 24, 26, 28] - Laplace Transform Properties
Mar 24: quiz 4
Mar 27: midterm 3
Mar 28: WebWorK 9 due

- 6.2: Transforms of derivatives and ODEs
- 6.3: Convolution

Week 13 [Mar 31; Apr 2, 4] - Laplace Transform Applications and Systems
Mar 31: optional project due
Apr 4: WebWorK 10 due
Apr 4: optional practice final exam

- 6.4: Diract delta and impulse response
- 3.9: Nonhomogeneous systems

Week 14 [Apr 7] - Review
Apr 7: homework 6 due