

Math 216 Differential Equations

Winter 2014 Syllabus / Sections 20, 30, 50

Some of the material covered, and some of the dates, may be changed at your instructor's discretion. Key: **blue text** indicates due dates for written assignments to be turned in to your recitation instructor, **magenta text** indicates closing times for the web homework assignments, and **red text** indicates scheduled exams. Prelab assignments are in the lab manuals provided at the course website. The Complex Numbers text supplement is also available on the course website.

Week 1:

Wednesday, January 8. Lecture.

Mathematical modeling with differential equations, solutions given by integrals, and slope fields. Edwards and Penney sections 1.1, 1.2, and 1.3.

Friday, January 10. Lecture.

Separable and linear first-order differential equations. Edwards-Penney sections 1.4 and 1.5.

Week 2:

Monday, January 13. Lecture.

Review.

Tuesday, January 14. Recitation.

Meet your recitation instructor.

Wednesday, January 15. Lecture.

Differential equations for population modeling. Edwards and Penney section 2.1.

Friday, January 17. Lecture.

Equilibria and their stability. Edwards and Penney section 2.2.

Web Homework Sets 0 and 1 close at 10 PM.

Week 3:

Tuesday, January 21. Lab.

Lab 1.

Due at the beginning of class: Homework Set 1.

Wednesday, January 22. Lecture.

Differential equations for kinematics of velocity and acceleration. Edwards and Penney section 2.3.

Friday, January 24. Lecture.

Euler's Method for numerical approximation of solutions of initial-value problems. Edwards and Penney section 2.4.

Web Homework Set 2 closes at 10 PM.

Week 4:

Monday, January 27. Lecture.

Higher order numerical methods. Edwards and Penney sections 2.5 and 2.6.

Tuesday, January 28. Recitation.

Review.

Due at the beginning of class: Homework Set 2 and Writeup of Lab 1.

Wednesday, January 29. Lecture.

Second-order linear differential equations. Edwards and Penney section 3.1.

Friday, January 31. Lecture.

Complex numbers—download from course website.

Web Homework Set 3 closes at 10 PM.

Week 5:

Monday, February 3. Lecture.

General facts about linear equations. Second-order linear homogeneous equations with constant coefficients. Edwards and Penney sections 3.2 and 3.3.

Tuesday, February 4. Lab.

Lab 2.

Due at the beginning of class: Homework Set 3 and Prelab assignment for Lab 2.

Wednesday, February 5. Lecture.

Edwards and Penney section 3.3, continued.

Friday, February 7. Lecture.

Review.

Week 6:

Monday, February 10. Lecture.

Review.

First Midterm Exam, 8:10–10:00 PM.

Tuesday, February 11. Recitation.

Review.

Wednesday, February 12. Lecture.

Differential equations governing mechanical vibrations. Edwards and Penney section 3.4.

Friday, February 14. Lecture.

Nonhomogeneous equations and the method of undetermined coefficients. Edwards and Penney section 3.5.

Web Homework Set 4 closes at 10 PM.

Week 7: (Fall Break)

Monday, February 17. Lecture.

The method of variation of parameters. Edwards and Penney section 3.5, continued.

Tuesday, February 18. Recitation.

Review.

Due at the beginning of class: Homework Set 4 and Writeup of Lab 2.