Math53: Ordinary Differential Equations
Winter 2004

Course Information

Course Description

This is an introductory course in ordinary differential equations (ODEs). The primary focus will be on techniques for finding explicit solutions to ODEs. We will also study some nonlinear equations, elementary numerical methods, and ways of qualitatively describing solutions of ODEs without solving them explicitly.

Prerequisites

Math 51 or equivalent is required for this course. In particular, you should be familiar with one-variable differentiation and integration, two-variable differentiation, vectors, matrices, systems of linear equations, determinants, and inverses, though some of this material is covered in Chapter 7 of the text and will be briefly reviewed in the course.

Course Instructor

Name: Aleksey Zinger *Office:* 380-383B (3rd floor of Building 380) *Phone:* 723-1872
E-mail: azinger@math.stanford.edu *Website:* http://math.stanford.edu/~azinger/math53
Office Hours: M11-12, T4-5, F10-11, and by appointment

Note: There will be additional, irregular, office hours throughout the term. They will be announced in class. Please feel free to drop by my office outside of office hours as well.

Course Assistant

Name: Isidora Milin *Office:* 380-380S (basement of 380) *E-mail:* milin@math.stanford.edu
Office Hours: M12-1, W12-2, R3-5

Course Time and Location

MTWRF 2:15-3:05 in 380-380Y (basement of Building 380)

Exams

There will be two midterms and a final. The midterms will be held at the usual class time, 2:15-3:05p.m., on January 28 and February 25. The final exam will take place 7-10p.m. on Monday, March 15. The locations for the midterms and the final will be announced later in the term.

Grading

Problem Sets: 15% *Midterms:* 45% *Final:* 40%

Text

The book *Differential Equations* by Polking, Boggess, and Arnold, is required and is available at the bookstore in hardcover. The paperback student solution manual available at the bookstore is not required, but you may find it very useful if you decide to work through the odd-numbered exercises in the textbook.

Tutoring Help

The Stanford University Mathematics Organization (SUMO) provides a free tutoring service for students in the Math50s sequence. This tutoring service is available 6-10p.m. on Mondays and Wednesdays, starting on Monday, 1/12, in 380-381T, on the first floor of the math building.

Homework Assignments

There will be six homework assignments. These will consist of a reading assignment and exercises for each class. The exercises listed on each homework assignment will constitute a problem set. Please try to do as much as possible of every daily assignment soon after the corresponding lecture. As the best way to learn the techniques covered in this class is to practice using them, you are encouraged to work through as many of the odd-numbered exercises in the textbook as possible. You will find answers and solutions to these problems in the textbook and in the student solution manual, respectively.

Problem Sets

There will be six problem sets, which will be due in class by 2:15p.m. on the due date. You can also hand your problem set to me any time, or day, before 2p.m. of the due date. Late problem sets will not be accepted.

You are encouraged to discuss any aspect of this class, including the material covered in lectures, the readings, and the problem sets, with anyone, including other students in the class and the SUMO tutors. You can also consult any source that may help you with the class in general and the problem sets in particular. However, you must write your own solutions to the problem sets.

Course Website

The course website is http://math.stanford.edu/~azinger/math53. It will contain all handouts distributed in class and occasional announcements.

Miscellaneous

Please do not hesitate to ask questions during lecture. I will also appreciate any comments and suggestions concerning the class, including any corrections to the handouts I distribute in class. Updated versions of any material handed out in class will be posted on the course website and marked as such.