

MA 226 A1
Differential Equations
Summer Term 1 2008
Elizabeth Zollinger

Class time and location: Mon, Tues, Wed, Thurs 9-11 in MCS B23

Please note we have class Friday May 30 as well.

Text: Blanchard, Devaney, and Hall: *Differential Equations* (third edition, purple sunrise and Zakim bridge on cover), Brooks/Cole Publishing Company, 2006. ISBN number 0-495-01265-3.

In this course, we study the solutions of ordinary differential equations using three general approaches. Solutions are obtained using analytic, geometric, and/or numerical techniques. All three approaches have their advantages, and we will learn when to use the appropriate technique. We begin by deriving a few classical examples with an emphasis on the phenomena that they model. We then discuss first-order equations using all of the techniques mentioned above. Next we study first-order systems. Using a little linear algebra (not a prerequisite), we derive a systematic approach to the solution of linear systems. Unfortunately, nonlinear systems are more difficult to investigate, but we learn how to apply what we know from the linear case to the nonlinear case. The course concludes with a discussion Laplace transforms.

Our goal is to be able to say as much as possible about the solutions of a differential equation even in cases where it is not possible to derive formulas for them.

Course web page: <http://math.bu.edu/people/eaz/MA226.html>

Exams and grading: We will have two in-class exams during the term, both at the normal class time. They will be held on Thursday June 5 and Thursday June 26. In addition to the in-class exams, you will be required to submit written work during the term. This will consist of two group projects— one due Monday June 9 and the other due Monday June 23.

Grades will be determined as follows:

- Test 1 35%
- Test 2 35%
- Project 1 15%
- Project 2 15%

Make-up exams: I have an absolutely firm policy of not giving make-up exams. If you miss an exam, then you must provide an acceptable, **written** excuse (not an email message) for your absence or you will receive a grade of zero. A valid reason for missing an exam would be something serious like illness (not a slight cold) or a family emergency. Neither poor preparation nor sleeping through an exam are acceptable. If possible (particularly if you want to be sure that your excuse is an acceptable one), contact me before missing an exam.

Homework: Assignments from the text will be made at the end of each class, and you are expected to work on these exercises before the next class. I will not be collecting these problems as the summer term goes too quickly to have an acceptable turn around. You are encouraged to ask about the problems but I expect you to be able to tell me how far you got when you tried it on your own. You will not benefit from simply watching me do the problems.

Office: MCS Room 151

email address: eaz@math.bu.edu

I find that email is a good way to leave messages, but it is not a good way to get help on your homework. For help with the mathematics in this course, I encourage you to visit me in my office. If you miss class, please do not send me email asking for answers to questions that were covered in class. You should get the notes from someone first. Also be aware that if you email late at night I will probably not get the email until the next morning and probably will not reply until after class.

Office hours: Tuesday 11:30-12:30 and Wednesday 12:30-1:30. I will be available in my office during these hours for consultation on a first-come-first-serve basis. You do not need an appointment in advance. In addition, many brief matters can be handled directly after class, and in special cases, we can schedule appointments at other times.

Academic conduct: Your work and conduct in this course are governed by the CAS Academic Conduct Code. This code is designed to promote high standard of academic honesty and integrity as well as fairness. A copy of the code is available in CAS Room 105 if you cannot access it on the web, and it is your responsibility to know and follow the provisions of the code. In particular, all work that you submit in this course must be your original work. For example, the computations that you do for your group projects as well as the text of your reports must be original to your group, and all group members are responsible for all aspects of the group projects. Any cases of suspected academic misconduct will be referred to the CAS Student Academic Conduct Committee.

BU Policy: Please be aware of the drop dates for this class. Tuesday, May 27 is the last day to drop without a W grade. Monday, June 16 is the last day to drop with a W grade. If you decide to drop the class please do so officially with the registrar, do not just stop coming to class. So if you are in the course after June 16 you will receive an academic grade (A-F) for your work at the end to the term. I will not let students who are doing poorly avoid a failing grade by granting an incomplete.