

## Math 285 D1: Differential Equations

Monday, Wednesday, and Friday, 11:00-11:50 am  
156 Henry Administration Bldg.

**Prerequisite:** Math 241.

**Credit:** 3 undergraduate hours (Credit not given for both Math 285 and any of Math 284, Math 286, or Math 441)

**Instructor:** Dr. Aldo J. Manfroi

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Office: 231 Illini Hall

Phone: 333-0217 (**not** recommended)

Office hours: Monday 8:30 - 9:30 am, Wednesday 9:30 - 10:30 am,  
or by e-mail appointment.

Webpage: <http://www.math.uiuc.edu/~amanfroi/285D1>

**Text:** Edwards and Penney, *Differential Equations and boundary value problems*, 4th Ed., 2008, Pearson Education.

### Course description and goals

This course is an introduction to differential equations. It is intended for engineering students and others who require a working knowledge of differential equations. Topics to be covered include techniques for solving and applications of ordinary differential equations and an introduction to partial differential equations, separation of variables and Fourier series. The focus will be on understanding the physical meaning of the equations and their solutions, and not on rigorous proofs.

### Attendance and class preparation

Class attendance is expected. While attendance will not constitute part of your grade, coming to lecture regularly can increase your chances for success in the course. You can assume that anything that is covered in class may be tested in the written exams (unless I say otherwise). The time in class will be divided between lecturing (mostly for proofs or important concepts) and discussion and problem solving. Therefore your participation is encouraged.

I will inform you in advance of the material that will be covered and strongly encourage you to read ahead. That way you can come to class prepared for the discussion and know which topics you want to have further clarified.

## **Homework, tests, final exam, and grading**

You will receive a numerical score rather than a letter grade on assignments and tests, and your final score will then be converted to a letter grade. But after each test I will indicate approximate grade ranges, so that you have some idea of how you are doing. Also, 20% of your grade will depend on the homework, 5% on your lowest graded test, and 25% on each of the remaining tests (Tests include midterms and final).

### **Homework**

I will be assigning homework almost daily. Most of the homework will not be graded, but you are strongly encouraged to do it to practice the methods learned in class and to verify your understanding of the material. Some of the homework, usually assigned every other week, will count toward your grade and will need to be turned in typically the second lecture after it was assigned. I will specify which ahead of time and identify them as *graded homework* and these will be corrected and graded. The other (ungraded) homework may be discussed in class. To encourage you to do all of the homeworks, I will choose at least one question to be included on each test and exam from the homework assignment. (The numbers used could be different...)

You are free to discuss the homework with your classmates, but I strongly encourage you to understand the solution yourself. Do not assume you understand something just because someone told you how to do it. You do need to turn in your own solution. Remember that no collaboration will be allowed during in-class tests and exams.

Please return the homework with your name and the section you are in on the upper right corner of every sheet of paper and please write only on one side of the paper.

The graded homework are due on the due date at the beginning of class or 10 minutes before class in my mailbox in Altgeld. You will receive full credit only on homework returned on time on the due date. You can return the homework up to a week late, but you will receive only half credit for it. Beyond that you will receive a zero on that homework. Before calculating

your final score, the homework with the lowest score will be dropped and not counted toward your homework average score. Your homework average makes up 20% of your final grade.

### **Midterms and final exam**

There will be three in-class midterm tests and a comprehensive final exam. You may **not** use notes, books, calculators or computers during any of the tests. The test with your lowest score will count for 5% of your grade. If you miss a test, that will count as your lowest graded test. (Note that University policy requires that you take a final exam.) Each of the remaining tests will be worth 25% of your final grade.

Make up tests will be given **only** if you present written evidence, as soon as possible, that you did (or will have to) miss an exam for a legitimate reason, e.g. illness or family emergency. A note that you have visited McKinley is **not** proof of a legitimate reason. Travel and leisure plans are not a legitimate reason.

### **Grading**

Letter grades (F, D, C, B, A, and A+) will be assigned at the end of the semester based on your combined score in the class (from graded homeworks, midterms, and final). However, at any time during the semester you are welcome to ask me what grade your performance so far corresponds to so that you have an idea of how you are doing.

### **Suggestions for success in the class**

- Please come to class prepared. This does not mean you have to understand everything. In fact, if you don't understand something you will have the opportunity to ask about it and we can discuss it in class.
- Please let me know if you are having trouble with something, and do so **before** it becomes an issue on a test or exam. Do make use of office hours.
- While reading your text I strongly encourage you to work through the proofs and examples yourself on paper. This is a very useful way to increase your understanding of the material.

- After reading something, try to summarize the important concepts. This will help create a mental framework into which to fit the problems you will be working on.
- I have setup an anonymous feedback page on the website. Please use it to improve the class:  
<http://www.math.uiuc.edu/~amanfroi/285D1>