Introduction to Differential Equations: Syllabus

Instructor: Manar Riman
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Office Hours: C-109 Padelford Hall, Monday and Friday 10:30-11:20 pm
Class: MWF 2:30-3:30 THO 135

Text: Elementary Differential Equations and Boundary Value Problems, 10th edition by Boyce and DiPrima. You are welcome to use other editions, but be aware that homework will come from the 10th edition and I am unable to help you discern the changes between editions.

Webpage: The course webpage is https://sites.math.washington.edu/~mnr6/Teaching.html.

I will be posting homework assignments as well as other important information on this site. It is your responsibility to check this site regularly and I highly recommend checking it twice a week. There is no excuse for missing a homework assignment because you failed to look on the course webpage.

Objectives: This course will introduce you to differential equations. We will focus on applications, namely setting up, solving, and interpreting differential equations. From time to time we will mention some of the underlying theory. There are three main topics that we will cover throughout the course:

- First order differential equations. Autonomous, separable, and linear equations which arise in physics (e. g. motion, mixing problems) and biology (population dynamics). (§2.1-§2.7)
- Second order differential equations. Second order constant coefficient differential equations which come up in the study of mechanical and electrical vibrations. (§3.1-§3.8)
- Laplace Transform. A technique which enables us to solve constant coefficient differential equations by converting them into an algebraic problem. (§6.1-§6.5)

The material for this course draws heavily from integral calculus. It will be imperative that you are comfortable working with integration techniques, in particular substitution, integration by parts, and partial fractions.

Organization and Grading: Lectures are MWF from 2:30-3:20 am in THO 135. There will be no lecture on Friday, November 10 in observation of Veterans Day and on Friday November 23 in observation of Thanksgiving. Your raw grade will be computed as follows:

- Homework (15%): There will be 7 weekly assignments due on MONDAY IN CLASS (see calendar). Homework assignments will be posted on the course website each week. Typically they will consist of somewhere from 10-20 problems from the book. A grader will give you a grade out of 10 for each assignment (typically two problems will be graded in detail for 3 points each and there will be an assessment of overall completeness worth 4 points). The primary goal of the homework is to practice and master the skills and concepts of the course! Then you will show your mastery of the material on the exams.
• **Midterms (25% each):** *Midterm 1 is on Friday, October 20, and midterm 2 is on Wednesday, November 15 both 2:30-3:20pm in our usual classroom.* You will need a scientific calculator for Math 307. It must have trigonometric functions, like Sin and Cos, as well as logarithms and exponentials (ln and exp). **GRAPHING CALCULATORS ARE NOT ALLOWED** on quizzes and exams in Math 307. A single, hand-written 8.5 x 11 inch sheet of notes is allowed during exams. You may write on both sides.

• **Final (35%):** *The final is scheduled for Tuesday, December 12, 2:30-4:20pm in our usual classroom.* It is cumulative. Like the midterms, you will be allowed a scientific non graphing calculator and a two sided sheet of notes.

After evaluating the performance of the class over the entire quarter, I will adjust the median grade accordingly. The median will most likely be somewhere between 2.6-3.2.

**General Guidelines:**

• **Writing up homework:** You must show all of your work to get credit. This means explaining your steps or methods clearly. Make sure that your homework is legible and easy to grade for the grader. If the grader cannot read or understand your steps, no credit will be awarded. Moreover, loose papers will inevitably get separated and/or lost, so you are required to staple your homework before coming to class (I will not have a stapler in class). The grader will deduct a point if your homework is not stapled.

• **Late Homework and Make-Up Exams:** No late homework will be accepted. In case of observances of religious holidays or participation in university sponsored activities, arrangements for make-up exams must be made at least one week in advance. If you miss an exam for *unavoidable, compelling, and well-documented* reasons, a make-up exam will be administered. If such a situation arises and you are unable to take an exam on the scheduled date, you need to let me know as soon as possible (preferably before the day of the exam and no later than the day after the exam). It is your responsibility to contact me for arrangements.

• **Disabilities:** To request academic accommodations due to a disability, please contact Disability Resources for Students (DRS). If you have a letter from DRS indicating that you have a disability which requires academic accommodations, please present the letter to me as soon as possible so we can discuss the accommodations you need. If you don’t do this before the day of the quiz/exam, I may not be able to accommodate you.