Introduction to Differential Equations: Syllabus & Course Info

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Office Hours: Tuesdays 14:00-16:00

Text: The official textbook is *Elementary Differential Equations and Boundary Value Problems, 10th Ed.* by William E. Boyce. A custom version containing only the chapters needed for MATH307 is available for purchase in the bookstore. If you plan to take Math 309, there is hardbound text with the same title by William E. Boyce and Richard C. DiPrima which covers the material from both courses. Access to the textbook is required, as homework questions will be taken from the book. You are welcome to work from earlier editions of the book (e.g. 8th & 9th editions), but know that the onus is on you make sure you account for any differences between versions *including any homework problems taken from the textbook.*

Webpage: http://www.math.washington.edu/~mlungu/teaching/math307wi14/index.html.
Course announcements and material will be posted on this page, so please check regularly.

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, each for about three weeks:

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

Organization and Grading:

- Lecture times & location: MWF 09:30-10:20 pm in CDH 110B. There will be no lectures on Monday January 20 (Martin Luther King Day) and Monday February 17 (Presidents Day).
- Midterm times & location:
  - Wed 29 Jan 09:30-10:20 pm in CDH 110B during class
  - Wed 5 Mar 09:30-10:20 pm in CDH 110B during class
- Final exam time & location: Wed 19 08:30-10:20 March in CDH 110B, covering material from the whole course.
- Weekly homeworks: Handed out every Wednesday in class, and due the next Wednesday at the beginning of class. There will be no homework due the first Wednesday of term (Jan 8) or on midterm weeks (Jan 29 & Mar 5, weeks 4 & 8 respectively), making for 7 graded homework sets total.

Grading Breakdown:

The highest 6 of your 7 homework scores will be counted. Then, whichever of the following two weightings garners you the higher overall average will be used:

- Homeworks 18%, Midterm 1 20%, Midterm 2 20%, Final 42 %, or
- Homeworks 12%, Midterm 1 15%, Midterm 2 15%, Final 58 %.

I will set the grade scale for the course at the end of the quarter. My preliminary estimate is that the scale will be linear, with 4.0 = 95% and 2.0 = 70%. The actual grading scale will be no tougher than this preliminary estimate, so your course grade will be at least as good as the preliminary scale indicates.

Allowed Materials:

Scientific calculators and one two-sided page of handwritten note will be allowed during midterms and exams. Graphing calculators will not be allowed during exams.

Collaboration is permitted on the homeworks, but you must write up your own homework individually. Please give written acknowledgement to whomever you worked with on each homework set.

Missed Exams: In case of observance of religious holidays or participation in university sponsored activities, arrangements must be made at least one week in advance. If you miss an exam to *unavoidable, compelling, and well-documented* reasons, I will either give you a make up test (in the case of the final exam being missed), or reweight your score based on your remaining graded performance (in the case of a midterm being missed).