

Introduction to Differential Equations: Math 307 F - Summer 2018

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Class web page: sites.math.washington.edu/~zhaozh/Math307.html

Lecture: Class meets 10:50-1:00 on Mondays, Wednesdays and Fridays. In the class web page, there is a calendar detailing the plan for each session.

How short term 307 is different: The pace is significantly faster! There are 13 lectures in total, midterm and final exam included. This means we will cover more than double the material in a given week, and moreover, twice as much homework is due each week. Thus it is very important to keep up with the lectures, get your questions answered timely, and try not to fall behind. I also need to adjust the grading to adapt to the tight schedule, see Exams and Problem sessions below.

Office Hours: TBD

Homework: Homework will be assigned through an online homework platform WebAssign. Typically homework will be due on Tuesdays and Thursdays.

You will need to purchase a "WebAssign access code". Buy your access online at www.cengagebrain.com/course/3075476 for \$22.95. This is the only place to buy access.

The primary goal of the homework is to practice and master the skills and concepts of the course. Ultimately you will show your mastery of the material on the exams.

Recommended Textbook: Boyce and Diprima, *Elementary Differential Equations and Boundary Value Problems* or *Elementary Differential Equations*. Any edition is fine. Older editions cost less. Paperback version called *Introduction to Differential Equations* is available at the bookstore.

Exams: There will be one midterm (70 minutes long) and one final exam (130 minutes long). **Note that in the summer quarter, the exams take place in the usual class time.** The midterm will cover up to section 3.4 (included), and the final exam is cumulative.

Problem sessions: For short term 307, class sessions are 130 minutes long. I understand it is difficult to pay attention for that long, so we will have a 10-minute break in the middle. This is time for you to use the restroom, stand up and stretch; I will also assign a short problem for you to work on with your classmates during the break. My hope is that working on practice problems will help you internalize what you just learn in a low stress environment.

I will collect your solutions, but only grade for participation. You don't have to finish the problem on such short time.

Grading: The weight for each part of the course is given below.

<u>Category</u>	<u>Weight</u>
Homework	15
Problem sessions	10
Midterm (Wed, August 8)	30
Final Exam (Fri, August 17)	45
Total	100

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.

Calculators and notes: You will need a scientific calculator for 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 exams in Math 307. A graphing calculator is any device with a multiline display that has the ability to graph mathematical functions. A single, **hand-written** 8.5 x 11 inch sheet of notes is allowed during exams. You may write on both sides.

Make-Ups: Late homework will not be accepted for any reason. In case of observance of religious holidays or participation in university sponsored activities, arrangements must be made at least 1 week in advance for exams. You will be required to provide documentation for your absence.

Resources: • Math Study Center is open 11am to 5pm Mondays through Thursdays. This is the only open tutoring center on campus in the summer (CLUE is not open in summer). They focus on 100-level courses, but will help 300-level students as well.

- To request disability accommodation, contact the Disability Services Office at least ten days in advance.