

# Syllabus for MATH 307: Introduction to Differential Equations, Section L

Instructor: Jian Zhai

2019 Winter

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Class Hours: MWF 10:30-11:30am

Class Room: Condon Hall 110A

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## Suggested Textbook

- Boyce and DiPrima, Elementary Differential Equations and Boundary Value Problems or Elementary Differential Equations or Introduction to Differential Equations (by Boyce and available at the bookstore)

## Prerequisites

Minimum grade of 2.0 in MATH 125

## Assessments

- 10% Homework.
- 50% Two in-class midterms: Friday Feb. 1 and Wednesday Feb. 27.
- 40% Final exam

## Homework

We will use the online homework system WebAssign. You will need to purchase access. WebAssign can be accessed at <https://www.webassign.net/washington/login.html>. Assignments are usually due on Tuesday evenings at 11:59 pm. The due date is subject to change, so please notice the exact time for each assignment. The first assignment is due on Friday.

## Schedule

The schedule is tentative and subject to change.

- **Jan.7-11.** §1.1(Modeling), §1.2 Solutions to Differential Equations and §1.1 Direction Fields
- **Jan.14-18.** §2.2 Separable First Order ODE §2.1 Linear First Order ODE
- **Jan.23-25.** §2.3 Modeling with First Order ODE and §2.5 Population Dynamics
- **Jan.28-Feb.1.** §2.7 Euler's Method, Review and **Midterm #1**
- **Feb.4-8.** §3.1 Second Order Constant Coefficient ODE, §3.1 Homogeneous equations with distinct real roots and §3.3 Homogeneous equations with complex roots
- **Feb.11-15.** §3.4 Homogeneous equations with repeated roots, §3.7 Harmonic Oscillator, §3.5 Method of Undetermined Coefficients and §3.8 Forced Harmonic Oscillator
- **Feb. 20-22.** §3.8 Force Undamped Harmonic Oscillator Beats and Resonance, §3.8 Forced Damped Harmonic Oscillator-Frequency Response and Phase
- **Feb. 25-Mar. 1.** Review, **Midterm #2** and §6.1 Laplace Transform
- **Mar. 4-8.** §6.2 Tables of Laplace Transform, §6.3 Inverse Laplace Transform using tables, §6.3 Solving IVP with Laplace Transforms and §6.4 Step functions and time delay
- **Mar. 11-15.** §6.4 Step functions and time delay, §6.5 and §6.6 Impulse Response and Convolution and Review for Final Exam

## Disability Accommodations

If you have a letter detailing disability accommodations, please present to me.