

Math 344 is a second-quarter course in linear analysis, in which we make the transition from the simple guess-and-check method of solving differential equations to the more advanced theory of transforms. We begin with naively searching for series solutions to differential equations, which for periodic functions leads naturally to Fourier series. In attempting to extend the techniques of Fourier series to non-periodic functions we will discover the Fourier transform and the related Laplace transform. These tools offer a powerful new approach to solving differential equations, completely transforming the original differential equation into something else entirely. The overall goals of the course are to:

- ▶ Learn how to find series solutions to differential equations, including power series, Frobenius series, and Fourier series;
- ▶ Develop the Fourier transform and explore how it can be used to solve differential equations; and
- ▶ Explore the related notion of Laplace transform and use it to solve differential equations.

Instructor Information

NAME: Robert Easton
EMAIL: rweaston@calpoly.edu
OFFICE: 25-320
PHONE: (805) 756-1679

Course Website

We have a dedicated course website, where you can find the homework assignments, information on the latest quizzes (including solutions), exam information, and the schedule for the quarter.

<http://robertweaston.com/teaching/math344>

Important Dates

<i>April 2</i>	Classes begin
<i>April 19</i>	Exam I
<i>May 17</i>	Exam II
<i>May 27</i>	Academic holiday (Memorial Day observed)
<i>June 7</i>	Classes end
<i>June 10-14</i>	Final Exam Week

Textbook

The course will follow Chapters 10 and 11 in *Differential Equations and Linear Algebra, 4th ed.*, by Stephen Goode and Scott Annin, as well as Chapters 1-4 in *The Fourier Transform and its Applications*, by Brad Osgood (freely available in PDF format).

Homework

Homework is assigned weekly. Homework will not be collected, but quiz and exam problems will be based on the homework. It is important to work through enough of the assigned problems until you feel comfortable with all of the material.

Exams

There are three types of exams throughout the quarter: weekly quizzes, in-class midterm exams, and a final exam. All exams are **closed book** and **closed notes**, and **calculators are not allowed**.

There are two in-class midterm exams, tentatively scheduled for:

- ▶ Exam 1: Friday, April 19
- ▶ Exam 2: Friday, May 17

The final exam is scheduled for:

- ▶ *Section 03*: 1:10-4pm on Wednesday, June 12
- ▶ *Section 04*: 1:10-4pm on Friday, June 14

Make-up Policy

If you have a scheduling conflict with an exam, contact me *prior* to the exam in order to schedule a make-up. Exams may be taken *early* or *the following class day*. Exams taken two or more class days late will be subject to a **late exam penalty** of 10% per day. All make-ups must be completed within one week of the original exam date.

Accommodations

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact me as well as the Disability Resource Center (Building 124, Room 119; Tel: (805) 756-1395), as early as possible in the term.

Grading

The overall course score is determined as follows:

- ▶ Quiz Average (lowest dropped): 25%
- ▶ Exam I: 20%*
- ▶ Exam II: 20%*
- ▶ Final Exam: 35%*

If your percentage on your final exam is higher than your percentage on an in-class exam, then the worth of your final exam will increase by 5% and the worth of the in-class exam will decrease by 5%. This applies to both exams, so if your final exam score is better than both of your in-class exams, then your final exam will be worth 45% of your overall score and each of your two in-class exams will be worth 15%.