

Math 2280: Introduction to Differential Equations- Syllabus

University of Utah

Spring 2014

1 Basic Information

Instructor - Patrick *Dylan* Zwick

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Phone - 801-651-8768

Office Hours - 2:00 PM to 3:00 PM M and 1:00 PM to 2:00 PM H.

Office - JWB Math Building Room 129

Webpage - <http://www.math.utah.edu/~zwick/>

Meeting Time - MTWF 12:55 PM - 1:45 PM

Meeting Location - LCB (Leroy Cowles Building) Room 219 MTWF

Textbook - *Differential Equations and Boundary Value Problems*
by Edwards and Penney, 4th Edition

2 Course Objectives

The objective of this course is to teach you ordinary differential equations! Or, at least, the basics of ordinary differential equations. (It's a huge and difficult subject, and the focus of much active research today!) By the end of the semester you should have a firm understanding of the basic concepts of differential equations; what a differential equation is, how to solve linear differential equations, how to solve systems of linear differential equations, some basic numeric methods, Laplace transforms, and

Fourier series methods. By the final exam you should understand what all these concepts mean, and know how to use them to solve problems.

3 Course Overview

This is the second in a two-semester sequence of classes designed for undergraduate math, science, and engineering majors who want to get a very firm understanding of linear algebra and differential equations. Math 2280, the second in the sequence, covers the differential equations part. I will assume you have a firm understanding of calculus and linear algebra.

We'll be working our way through most of Edwards and Penney's textbook at the rate of approximately one section per lecture. We have four classes each week, and we'll get through much of the book. This class moves fast and we cover a lot of material, so please be prepared!

We'll be learning the foundations and important ideas behind differential equations, along with how to solve them. In the "real world" these problems come up *all the time*. So, it's important that you understand this material.

As mentioned above, we'll be following the textbook pretty closely. However, I will be writing up lecture notes, and these will be posted on the class website. I'll try to stay a few days ahead with my notes. You should download the lecture notes, print them out, and use them to follow along during class. If you can, try to read them before class. In these notes I won't include solutions to example problems. I'll just leave some blank space for you to write the solution down as I go over it. You have to have something to do during lecture! However, in case you can't be there, once the lecture is over I'll post lecture notes that include the worked example problems.

Please note that all the material for the class will be posted on the class webpage, along with announcements and review material. It's an important resource for this class, so please use it.

I'm looking forward to a good class. I hope you are too!

4 Homework and Exams

4.1 Homework

We'll have weekly homework assignments. The assignments will usually be due on Friday, and will be posted at least a week before they're due. A subset of the assigned problems, usually two or three, will be graded each week by a grader.

I will be posting solutions to each homework assignment. I will usually not accept late homework, but I will definitely not accept late homework after the solutions have been posted. In calculating your final grade, I will drop your lowest homework score.

4.2 Exams

We will have an in-class exam approximately every three weeks, and a comprehensive final exam at the end of the semester. In calculating your final grade I will drop your lowest exam score (of the three during the semester, not the final). So, if you need to miss one of the exams for any reason, or do particularly badly on one exam, it won't ruin your final grade.

4.3 Grades

The grade breakdown for the class will be:

Homework - 25%

Exams - 40%

Final - 35%

I already let you drop your lowest exam score. If you do better on the final than on your next lowest exam, I'll replace the second lowest exam score with your final exam score, effectively dropping the second lowest exam and making the final worth 55%.

What percentage ranges will map to what grades is not predetermined, and will be decided based upon class scores and the difficulty of the exams. I guarantee that anything higher than a 93% will be an A.

5 Students with Disabilities

The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements and accommodations.

6 Schedule

Here is the tentative schedule for the class. Please note this schedule is not set in stone, and may change depending on the dynamics of the class.

January 7th - Introduction and Edwards and Penney Section 1.1

January 8th - Edwards and Penney Section 1.2

January 9th - Edwards and Penney Section 1.3

January 11th - Edwards and Penney Section 1.4

January 14th - Edwards and Penney Section 1.5

January 15th - Edwards and Penney Section 1.6

January 16th - Edwards and Penney Section 2.1

January 18th - Edwards and Penney Section 2.2

January 20th - No Class (Martin Luther King Jr. Day)

January 21st - Edwards and Penney Section 2.3

January 22nd - Edwards and Penney Section 2.4

January 24th - Edwards and Penney Section 3.1

January 27th - Edwards and Penney Section 3.2

January 28th - Edwards and Penney Section 3.3

January 29th - Review

January 31st - *Exam 1*

February 3rd - Edwards and Penney Section 3.4

February 4th - Edwards and Penney Section 3.5

February 5th - Edwards and Penney Section 3.6

February 7th - Edwards and Penney Section 3.7

February 10th - Edwards and Penney Section 3.8
February 11th - Edwards and Penney Section 4.1
February 12th - Edwards and Penney Section 4.2
February 14th - Edwards and Penney Section 5.1
February 17th - No Class (President's Day)
February 18th - Edwards and Penney Section 5.2
February 19th - Edwards and Penney Section 5.4
February 21st - Edwards and Penney Section 5.5
February 24th - Edwards and Penney Section 5.6
February 25th - Edwards and Penney Section 7.1
February 26th - Review
February 28th - *Exam 2*
March 3rd - Edwards and Penney Section 7.2
March 4th - Edwards and Penney Section 7.3
March 5th - Edwards and Penney Section 7.4
March 7th - Edwards and Penney Section 7.5
March 10th - No Class (Fall Break)
March 11th - No Class (Fall Break)
March 12th - No Class (Fall Break)
March 14th - Still No Class (Fall Break)
March 17th - Edwards and Penney Section 7.6
March 18th - Edwards and Penney Section 8.1
March 19th - Edwards and Penney Section 8.2
March 21st - Edwards and Penney Section 8.3
March 24th - Edwards and Penney Section 8.4
March 25th - Edwards and Penney Section 8.5
March 26th - Edwards and Penney Section 9.1
March 28th - Edwards and Penney Section 9.2
March 31st - Edwards and Penney Section 9.3
April 1st - Edwards and Penney Section 9.4
April 2nd - Edwards and Penney Section 9.5
April 4th - Edwards and Penney Section 9.6
April 7th - Edwards and Penney Section 9.7
April 8th - Edwards and Penney Section 6.1

April 9th - Review

April 11th - *Exam 3*

April 14th - Edwards and Penney Section 6.2

April 15th - Edwards and Penney Section 6.3

April 16th - Edwards and Penney Section 6.5

April 18th - Review

April 21st - Review

April 22nd - Review

April 23rd - Review

Final Exam is on Tuesday, April 29th, 2014 from 1:00 PM to 3:00 PM in our usual classroom.