

# Math 2280 - Syllabus

University of Utah

Spring 2009

## 1 Basic Information

**Instructor** - Patrick Dylan Zwick

Email - [zwick@math.utah.edu](mailto:zwick@math.utah.edu)

Phone - 801-651-8768

Office Hour - 4:30 PM to 6:30 PM on Wednesdays

Office - JWB Math Building Room 214

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

**Meeting Time** - TH 4:35 PM - 6:30 PM

Meeting Location - LCB 22

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

## 2 Course Description

Math 2280 is an introductory course on ordinary differential equations that is designed as the second half of a year long course in linear method in mathematics. The first part of this course is math 2270, the linear algebra course, and you will be expected to understand and be able to use the material from that course. The other prerequisite is knowledge of both single and multivariable calculus, with a strong problem solving background in single variable calculus. The ideas and methods from these classes are the foundation for our study of differential equations.

This class is designed as an intermediate class for math majors, and as such it is a fair amount of work. We will be working through the entire textbook during this semester, so the class will move pretty fast. It is essential that you keep up in class and stay on top of things if you want to learn the material.

In the class we will cover linear ordinary differential equations, both of first order and higher order, along with both linear and nonlinear systems of differential equations. We will also cover more advanced methods for solving differential equations; such as Laplace transforms and Fourier series. We will conclude with an introductory study of boundary value problems, which will introduce you to some of the problems in partial differential equations.

Solving differential equations is hard, and in many cases impossible. In this class we cover the basic concepts behind them, including what makes them hard, and we introduce known methods for solving certain common and simple differential equations. One of the most, if not the most, powerful tool in modern mathematics for solving differential equations is the use of computers. As this is such an important tool, the use of computers and the mathematical problem solving application Maple will be a major part of this class.

Note that all handouts, announcements, and important information for the class will be posted on the webpage, so please check that often to make sure you're up to speed with the class.

## **3 Homework, Exams, and Grades**

### **3.1 Homework**

There will be homework assignments for this class every week. These will be assigned as well as suggested problems from the textbook. Each week I will choose two or three homework problems to grade from the set of assigned problems. Homework will be assigned in class every Tuesday, and it will be due on the Thursday of the next week. So, for example, the first homework assignment will be assigned on Tuesday, January 13th and will be due on Thursday, January 22nd.

I will be posting solutions to the homework on the Tuesday after it is due. Also, in calculating your homework grade I will drop the lowest

homework score, so you are allowed to miss one homework assignment during the semester. I also tend to be reasonably understanding about late homework (that's why I don't post solutions until the Tuesday after it's due) as long as you give me a good reason and you don't take advantage of my generosity.

Along with your weekly homework from the book there will be two Maple projects assigned during the semester. The first of these will go out at the end of the second week of class.

### **3.2 Exams**

During the semester there will be three quizzes and a comprehensive final. Your final grade can be used to replace your lowest quiz score if this will improve your grade. Note that this allows you to miss a quiz without it ruining your grade, but if you do miss a quiz it puts extra emphasis on the final.

### **3.3 Grades**

The grade breakdown for the class will be:

- Homework - 30%
- Maple Projects - 10%
- Quizzes - 30%
- Final - 30%

If you do better on the final than on one of the quizzes, I'll make the final worth 40% of your grade and drop the lowest quiz score.

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.