Syllabus

MATH 300A (Introduction to Mathematical Reasoning)
Autumn 2010

Patrick Perkins

Meetings: 11:30 - 12:20, MWF in Condon 223A
Text: Daniel Velleman, *How to Prove It, Second Edition*
Section Web Site: http://www.math.washington.edu/~perkins/300AAut10

E-mail: **perkins@math.washington.edu**
Office: **Communications B-014**
Office hours: **Monday and Wednesday 2:00-3:00**

Introduction

The most important things for you to learn in this course are: techniques of proof, how to (start to) think like a mathematician, and how to communicate your ideas effectively. This course is a prerequisite for several others, and as such it is expected to train you in these skills, not in any particular fields of mathematics. In other words, the mathematical subjects covered in this course are somewhat secondary. Roughly speaking, though, we will be covering Chapters 1 through 5 of the text book, and some of Chapter 6.

Grading

Your raw grade will be based on several components: homework (30% total), a midterm (30%), and a final exam (40%). The overall distribution of raw grades, as well as your participation, will determine your final four-point-scale grade.

Homework

The homework is a very important part of this class. It is where you practice your writing skills. Each week there will be homework due on Wednesday. (You can also hand in your homework during my office hours that day.) I encourage you to work with others on the assignments but you must submit your own solution, in your own words. Late homework will not be accepted. I will also ask you to read certain sections from the book in preparation for each lecture. These sections, together with each week's homework assignment, can be found on the course webpage noted above. This will greatly expand the utility of the lectures for you.

Midterm exam

There will be one midterm exam. I expect it to cover chapters 1, 2 and 3 through section 3.3. The exam is tentatively scheduled for Friday, October 29. Notes are not allowed on the midterm. Please bring photo ID.

Final exam

The (cumulative) final exam will be given 2:30 - 4:20 p.m. on Wednesday, December 15. Notes are not allowed. Please bring photo ID to the final exam.

Other Comments

This will be significantly different than any math class you have ever taken. In basic algebra and calculus courses, you are given a theorem and asked to apply it on several exercise problems. In this course, you are given a statement and asked to prove why it will always be true in all circumstances (or give a situation where it is false). Your proof must be an infallible argument that is justified in each step by axioms or other known results. You will be graded on the accuracy and clarity of your proofs.

Struggling with a problem is perfectly normal; in fact, it's actually helpful, because it can force you to come to grips with the underlying mathematical concepts. Being able to follow someone else's reasoning on a problem is not at all the same as solving it yourself: you learn a lot more by solving it yourself. Therefore I recommend this approach: first try to do a problem on your own, and then discuss it with your classmates.