Mathematics 327A — Spring 2009

Instructor: John Palmieri, Padelford C-538, 543-1785, palmieri@math.washington.edu

Class time and place: MWF 10:30, SWS B014

Office hours: Wednesdays 1:00–2:20, drop in, and by appointment. (I usually have some time every week day except Thursdays, roughly 10:00–3:30, except when I'm teaching or meeting with other students. I'm not available on Thursdays.)

Web page: http://www.math.washington.edu/~palmieri/Math327/ or
http://faculty.washington.edu/jpalmier/Math327/

Text book: *Advanced Calculus*, 3rd edition, by Angus E. Taylor and W. Robert Mann.

Goals. Lay the groundwork for a theoretical understanding of calculus, and improve your skills at problem-solving and writing proofs.

Class structure. There will be a mix of lectures, group work, and presentations by students. In a typical class, I might discuss a topic briefly, and then you will work in groups on assigned problems while I try to help when you get stuck. At various times, I may change from small group discussions to discussing problems as an entire class, and at this point I will ask you to present work at the board.

Homework. I will assign homework weekly; see the course web page for the assignments. Homework will be due **each Wednesday** at 3:30pm in my office, Padelford C-538. You may turn it in early, for example in class on Wednesday.

The best way to learn mathematics (for example, the material in this course) is to use it to solve problems. Therefore we will spend a lot of time working on problems, both in class and out of class. Struggling with a problem is perfectly normal; in fact, it's actually helpful, because it will force you to come to grips with the underlying mathematics. 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.

Having said this, the homework policy for this class is: you may work with other people on your homework, but you must write your solutions yourself. If you find a solution in a book or some other source, please provide a reference. (But you will learn more if you don't rely too much on your classmates or outside references. I strongly encourage you to try the problems on your own.)

Portfolio. On **June 1**, you will turn in a portfolio of solutions for the exercises from this course. This will include three types of problems: exercises we discuss in class, weekly homework problems, and your designated portfolio problems. For the first two types, you will get credit for having a legible attempted solution. For the portfolio problems: you will choose 5 problems from the in-class and homework problems to focus on, choosing at least two from Chapters 1–2, at least two from Chapters 16, 19, and 20.

On April 24, you will turn in a first draft for two of these solutions, and on April 27 we will have a "workshop day," in which we discuss these. Another two drafts will be due on May 22, and we will have a workshop day on May 27. For these workshop days, you will get credit for turning in your drafts on time and for participating in the workshop days.

When you turn in the portfolio on June 1, you will need to include a cover sheet (which I will describe later in the quarter), plus all drafts of your portfolio problems, as well as your work on in-class exercises and your graded homework problems. You will get credit for completeness (do you have reasonable attempts for all of the assigned problems), and for the designated portfolio problems, you will be graded on the quality, both mathematical and expository, of your solutions.

One model for maintaining the portfolio: before class, attempt all assigned problems. During class, ask questions if you need help or clarification, and take notes. After class, rewrite your solutions taking the in-class discussion into account. Add your homework problems when you get them back from the TA. In a perfect world, your portfolio would be a solutions manual for the course. Short of this, you should strive to produce a document which will help you to review for the midterm and the final.

When choosing your portfolio problems, you can choose ones that you understand well mathematically, so you can focus on the writing, or you can choose ones that you don't understand as well, to force yourself to grapple with some difficult mathematical concepts. Probably a mix of these is a good idea.

Exams. We will have a midterm in class on **May 8**. After I've graded the midterm, you will have a few days to correct some of your mistakes for some extra credit. I'll give you more details as the time approaches. The final exam is on **Monday, June 8, 8:30–10:20am**.

Grading. The various components of the course are weighted as follows:

midterm	25%
final	30%
homework	25%
group work and participation	10%
portfolio	10%

The course is not graded on a curve, except for this: if your score on the final is less than 50% of the class median, I reserve the right to assign you a grade below 2.0, regardless of the rest of your scores for the quarter.

The mathematics. The purpose of this course is to lay the groundwork for a theoretical approach to calculus; so we will study limits of sequences, properties of the real numbers, basic topology, and infinite series. Math 328 contains the second part of this foundation, and then in Math 424/5/6, all of calculus is studied in great detail.

This quarter, we will discuss Section 1.62 (sequences), then Chapters 2, 16, 19, and 20 of the textbook.