Mathematics 327B   Autumn 2010

<u>Instructor</u>: John Palmieri, Padelford C-538, 543-1785, `palmieri@math.washington.edu`

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

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

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

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

<u>Class structure</u>. There will be a mix of lectures and group work. Some days I will lecture for the whole class, and other days you will work in groups on assigned problems while I try to help when you get stuck. Some days will be a combination of these.

<u>Homework</u>. I will assign homework regularly; see the course web page for the assignments. I will assign two types of problems: practice problems and problems to turn in. The second type 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. At the end of the quarter, I'll drop your lowest homework grade, so in case you get sick or have to miss an assignment for some other reason, you get one free pass. The practice problems are there to help you learn the material; to encourage you to work on them, I will use them as models for at least some of the problems on the midterm and final.

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 each problem on your own, at least at the start.)

<u>Portfolio</u>. On **December 6**, you will turn in a portfolio of solutions for the exercises from this course. This will consist of solutions for five homework problems, which you choose: choose any of the assigned problems, as long as you choose at least two from Chapters 1–2 (and associated handouts), at least two from Chapters 16, 19, and 20.

On October 22, you will turn in a first draft for two of these solutions, and on October 25 we will have a "workshop day," in which we discuss these. Another two drafts will be due on November 19, and we will have a workshop day on November 22. 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 December 6, you will need to include a cover sheet (which I will describe later in the quarter), plus all drafts of your portfolio problems. I will grade your solutions on both the mathematics and the exposition; your total portfolio grade will be computed from this, combined with your participation grade for the workshop days.

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 **Wednesday, November 3**. 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 when I return the graded exams. The final exam is on **Wednesday, December 15, 2:30–4:20pm**.

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 (limits of sequences), and Chapters 2, 16, 19, and 20 of the textbook.