Math 307A Summer 2008

Professor Don Marshall
Office: C555 Padelford Hall
Office Hours: MW 1:00-2:00 or by appointment
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Class web page: http://www.math.washington.edu/~marshall/math307_au08.html

Grade:
Midterms: 50% (25% each)
Final (Comprehensive) 30%
Homework: 15%
Proficiency Test: 5%

There will be two midterms during the quarter. About half of the final exam will be like another midterm on the material since the second midterm. The remainder of the final exam will be comprehensive. The material for the proficiency test is on the web page under announcements. The purpose of the test is really to get you to review the material. So here’s how the grading will work: The proficiency test is worth 30 points, and I will be very picky with no partial credit (unlike the midterms and final). It will be graded on a scale of 0-10. If you get a score of at least an 9, then you will receive the full 30 points. If you get less than 9 you can retake the test up to two times. If you ever get at least 9, you will receive the full 30 points. Otherwise you will receive the sum of the three tries. The proficiency test will be given on Monday Sept. 29 in class. Retakes will be on Friday Oct. 3 and Friday Oct. 10 at 8 am Padelford C-36. You are strongly urged to work out all problems on the “Review problems” page. If you cannot do one or more of those problems, come to my office hours or make an appointment to see me at another time.

As you are probably aware, most learning in a math course takes place when you do your homework. Expect to spend 9 hours per week on this course (UW definition of one credit is three hours of work per week) The UW has limited funds for graders unfortunately, so not every problem will be graded. Homework will usually be due on Fridays. You must turn it in to me at the start of the hour. If you would like to look at what you’ve written while asking questions, just duplicate the appropriate pages before class. I realize that many of you will have one reason or another for turning in late homework. I will accept one late homework for the quarter. If you have valid reasons for missing two homeworks, please see me. I also recommend that you work together on the homework. If you explain a problem to another student, you will understand it better. You will also generate goodwill so that when you are stuck, someone will be willing to help you out. But don’t just split up the problems. You should attempt each problem yourself and I ask that you write up the solutions in your own words. It is also useful to have a friend look at your solutions to make sure that you have done the problems correctly and adequately explained your solution. I have no preset number of A’s, or F’s. If you learn the material well, you’ll get a good grade. The class is not competitive: helping a classmate learn the material will not adversely impact your grade.
The homework is listed according to the lecture material. You should do each homework before the next lecture. In particular, note that you are asked to read the next section before I lecture on the material. This will help you understand the lecture better. Be sure to ask questions in class about anything you did not understand when reading. The book expects you to fill in details. As the quarter progresses, the book will leave out details on how to obtain solutions using earlier material. Work out the steps yourself so that you understand what is being said.

Feel free to make an appointment with me if you are stuck. I am generally around 5 days per week for 10-11 hours per day though sometimes I have duties that require me to be away from my desk. You can also ask me questions by email. Any question which gets asked more than once will also have the answer posted on our web page. I encourage you to use the announced office hours if at all possible, or to make appointments as a group, but individual appointments are also fine.

Prerequisites: Math 125; Math 126 strongly recommended


We’ll cover: 2.1–2.5, 2.7 (6 lectures), 3.1, 3.4–3.9 (11 lectures), and 6.1–6.5 (7 lectures).

The goals in this class are to learn about differential equations and more importantly to learn to think, or exercise your brain. You won’t use all of the techniques encountered in this class. Indeed in some jobs you will use very few if any. We teach you these concepts as models, as a way to learn how to think critically. It’s sort of like weight lifting to build muscle. You can operate a machine to lift weights, but it won’t help you build muscle. Strong muscles are needed to play competitive athletics and strong mental muscles are needed to do any kind of scientific work. There are computer programs that will allow you to push a button to do any calculus problem or even solve any differential equation. Learning simply how to push that button accomplishes neither of the goals above. I think you’d agree that simply being able to type a differential equation into a computer doesn’t illustrate that you know the concepts. To force you to learn the concepts and to show me that you understand them, you will not be allowed to use a calculator on an exam that can solve equations either numerically or symbolically. It is important to learn what computers can do, and how to use them. You are welcome to use whatever means you want outside of class. You can use a graphing calculator to do precalculus level work or to draw a picture of your solutions. We will learn simple models that can be solved analytically because they make it easier to illustrate the concepts. You will learn more complicated models in your major field. Actually many of us in the math department would like to make this a 4 credit class with one hour per week devoted to learning how to program computers to solve differential equations, but the Engineering Departments need this class, and they cannot add any more credits to their prerequisite list because of university regulations. I might add that no engineer I know of would ever use a calculator to solve a differential equation. It is much easier to use a computer.