

Math 5616 Spring '00 Syllabus January 7, 2000

INSTRUCTOR

Max Jodeit, Jr., Vincent Hall 258, 625-3855, jodeit@math.umn.edu

Office Hours: MWF, or by appointment.

TEXT

Principles of Mathematical Analysis, by Walter Rudin

MATERIAL COVERED

We'll begin by finishing Chapter 5, primarily on Taylor's Theorem (the Cauchy-Mean-Value-Theorem version).

We shall then move on to Chapter 6, on integration. Here, the notion of integral will be extended beyond what you may be used to. We'll study the *Riemann-Stieltjes integral*. I don't want to dawdle in Chapter 6!

Chapter 7 is *very* important. It extends the ideas from convergence of sequences and series of numbers to sequences and series of *functions*. When the functions involved are continuous or differentiable, we'll want to know whether the limit of a sequences of series of functions is continuous or differentiable. This will involve refinements of the notion of convergence so that we can interchange the order of the limits involved.

A very, very important convergence notion is *uniform convergence*, for we can use it for other things besides changing the order of taking limits. We will use uniform convergence to put topologies on certain sets of continuous (differentiable, etc.) by defining metrics on them.

Chapters 8 and 9 are main goals for the whole year! Chapter 10, if we can get to that material, is certainly important, but we probably will use a different approach – more concrete – to deal with the theorems of Green Gauss and Stokes...

We need to cover just over 5 pages, on average, for each “lecture” session (there will be some overlapping!). Our speed will depend on your need to ask extra questions, see more examples, or fewer. What you'll be asked to read “for next time” will be adjusted constantly. Tentative reading for the next week will be given each “Friday.” The reading for the first 4 lectures is pp 110 – 127. Be sure to read all the Exercises, and read at least 4 new pages before each lecture, whether they are to be covered or not. You will probably have to make *many* readings of each page!

GRADING

There will be homework, Special Problems, 2 Tests, and a Final Exam. Tentative **Test dates** are Feb 28 and Apr 17. Each Test may involve material covered in lecture up to the Test. Thus, you are responsible for material covered in the lectures!

Your grade in this course will reflect what you did in it, not your ability or potential. It is very important, then, for you to be able to put your work on paper, under time pressure. If you have problems taking tests, there are people on campus who might be able to help you overcome them. Ask about it at an office hour!

You'll have a GPA grade for each Test, your homework, the Special Problems and the Final. The weighting of the grades, though subject to change, is, at present: 10% for each Test, 25% for homework, 20% for Special Problems, and 35% for the Final. Grades will perhaps amount to 80-85% for A, 65-70% for B, 50-55% for C, 40-45% for D.

Each grading item will have “Gradelines” assigned to it. For example, if the *B* gradeline is 70, the *A* gradeline is 85, and your score is 80, then your GPA grade, *G*, for that item is $G := 3 + \frac{80-70}{85-70}$ “=” 3.67. Here, (*G* is rounded to 2 places after “.”). In other words, your GPA grade is a *B* plus 2/3 of the way between *B* and *A*. Your GPA grade, *G*, on *any* grading item is computed using your score on it, and numbers *g* (the grade corresponding to the highest gradeline smaller or equal to your score), *glb* (the highest gradeline smaller or equal to your score), *gla* (the lowest gradeline greater than your score):

$$G = g + \frac{\text{your score} - glb}{gla - glb},$$

where *glb* is the gradeline just below your score, *gla* is the next gradeline - above your score and *g* is the grade number: 5 for a 100% score, 4 for the *A* gradeline, 3 for *B*, etc. If your score falls on a gradeline, then $G = g$. If your score is 100% on a Test, your $G = 5$.

When the G 's are combined with their weights and added, the total is your GPA grade for the course. If that total is within 0.1 of an integer, your grade is "borderline." Case-by-case decisions are made, in borderline cases, whether to award the higher or the lower grade. An important factor then is the direction your grades have taken at course's end!

Be sure to talk to me in advance if you have to miss a Test! If you do and don't make arrangements in advance, your G for that Test is zero!

If, for documented reasons beyond your control, you're passing and you can't complete the course, the grade you have up to that point "stays with you" as part of an Incomplete; all I 's must be issued according to department guidelines.

Scholastic Conduct

Please read the (appropriate for you) notices in the IT Bulletin, the CLA Bulletin, and so on. You are encouraged to work with others in understanding what problems say, setting up solutions, and so on, but you must submit as YOUR work only what YOU have written up yourself. If you get ideas from a reference or from someone else, GIVE CREDIT! Do not simply copy another person's work. Graders will be asked to bring answers that look alike to my attention.