MATH 122 (Section 12) Calculus Spring, 2004

Instructor. Mr. Matt Miller, office LeConte 300I, hours: TuTh 11:00-12:30 and by appointment, phone: 777-3690, e-mail: miller@math.sc.edu, web: http://www.math.sc.edu/~miller/122 (this is where to find assignments if you miss a class).

Prerequisite. Admission to this course is by placement exam, successful completion of MATH 111, or by special placement. If you do not have this prerequisite, your chances of success will be very small, and I will ask you to drop the course. PLEASE do not waste this precious semester, trying out this course if you have not been placed into it, because you will find it very difficult, or even impossible, to switch to MATH 111 later.

Additional help. Individual help is available in the Math Lab, see http://www.math.sc.edu/mathlab.html for locations and hours of operation.

Text and Calculator. Applied Calculus by Hughes-Hallet, Gleason, et.al, second edition (cover design is nautilus shell in blue and orange). I will show you how to use the TI-83 graphing calculator, and the TI-82 will also be OK. If you are using any other calculator you will be on your own-it may have the same capabilities, but I may not be able to help you with it. Part of this course will involve writing in the form of group projects, so a book on the mechanics of a good writing style, such as the one you use in your English class, will be helpful.

Overview. You will find that this course is very different from other math courses that you have taken. We will be less concerned with the mechanical aspects of computation (that's what machines or specialists are for!), and much more concerned with why we want to do these calculations. Most of you will not be called upon to do technical calculations yourself, but as a business manager, let's say, or a research biologist, you will hire or work with technical staff. It is crucial that you learn how to communicate with them, in outlining a problem, and in understanding, and questioning, their proposed solution. In other words, the most important thing for you to take away from this course is an ability to speak and write in a technical language.

In terms of course material, we will form a mathematical model of a changing "real world" situation, use calculus to analyze it, and then interpret our calculated results in the context of the original problem. A blend of numerical (number crunching, often with the help of a calculator), graphical (again, also often with the help of a calculator), and analytic methods (manipulation of formulas) will help us solve problems and understand concepts. Finally, in the real world, problems and solutions must be communicated effectively, both in writing and orally. You will also have the opportunity to work in groups, and you may discover that math can be a social activity! The text preface gives the authors' perspective and is well worth reading.

You will need your text and your calculator in class every day, except on test days when you will only need to bring your calculator. **Course content.** The course covers chapters 1–8 of the text, though we will omit certain sections. You will be expected to become proficient in the use of your calculator, and to recognize for yourself when the use of technology is appropriate, and when hand computation is called for. This course is a prerequisite for MATH 172, which can be used to replace MATH 142 if you are a Biology major.

Grades. Three major tests will be given, each worth 100 points. These will be on Wednesday, February 11, Monday, March 22, and Friday, April 23. They may not exactly coincide with chapter breaks, but will simply cover material up to the day before the class before the exam. At least eight ten-point quizzes will be given; the six highest scores will be counted. No make-ups will be given on quizzes or exams, but your percent score on the final will replace your lowest exam score (only if this helps). The final exam is on Saturday, May 1 at 9 am. The final is cumulative and no exemptions will be granted. There will be two group projects during the course, the first worth 25 points, and is due on Friday, February 20. The second, in which I will expect more from you, is worth 45 points and is due on Friday, April 16. Both the quality of the math and the exposition will be weighed. A total of 580 points may be earned:

Exams	300	
Final	150	
Quizzes	60	(best 6)
Group projects	70	

Letter grades will be announced separately for each exam, for the final, and for the overall project and quiz totals. They will generally fall close to the scale 85–100 A, 75–84 B, 65–74 C, 55–64 D, below 55 F, but will vary up or down depending on specific circumstances. Note that the deadline to drop this course without a grade of WF is Thursday, October 4; you should have a pretty good idea before then how you are doing.

Collaboration. One of the goals of this course is to learn how to communicate mathematical ideas. You will be expected to work with one another in class and on projects; the grading of joint work will depend in part on evidence of genuine collaboration. However, you will have to take the exams individually, so don't get too dependent upon one another. According to the USC Student Handbook code of student academic responsibility, "**the first law of academic life is intellectual honesty.**" I expect this of all of you. If you are ever in the least bit uncertain about the ground rules, ask for clarification! Cross-collaboration between groups on the projects is NOT allowed.

Attendance. Regular attendance is crucial for success in this course. Ten bonus points will be awarded for perfect attendance, and five bonus points for only one absence. No excuses will be considered in this regard. Note that there is no Easter Monday holiday this year.