MATH 125 FALL 2014

Professor C. Lanski; Office: KAP 266D; Tel: 740-2417; e-mail: clanski@usc.edu (office only)
Office Hours: MW 2:00 – 3:15, Tu (+ usually Th): 1:15 – 3:30, and by appointment.

Class Meetings: 11:00 – 11:50 MWF in WPH B28 and TTh in GFS 218 at 2, 3, or 4 PM.

Text: *Essential Calculus* 2nd ed., by J. Stewart. We will cover most of Chapters 1 – 4 and half of Chapter 5.

Grading: Regular homework assignments, likely frequent and short quizzes in the discussion sections, and one or two computer assignments will count for 10% of the course grade. Each of two midterms (on Friday Oct. 3 and Friday Nov. 7) and the final exam (***Saturday Dec. 13*** from ***2:00 – 4:00 PM***) will count for 30% of the course grade. The letter grade on the final exam may replace half the grade on one midterm. *There will be no make-ups of quizzes. Late homework papers need a good reason and my approval to be graded.* NOTE: the final exam time is an "Exception" on the final exam schedule, and no student may take a final exam early. If you have any exam conflicts, let me know soon.

Prerequisite: Math 108. You should be familiar with and review: basic algebra (e.g. exponents, factoring); absolute value as distance; finding equations of straight lines and of circles; functions, compositions of functions, graphing functions (by hand!!), and the trigonometric functions. Review §1.1 and §1.2 of the text.

Material of the Course / Other Goals.

The notions of limits and continuity take about three weeks of the course; the derivative, its computation, and its applications take about five to six weeks to cover. The theory of the integral takes about three weeks and the last couple of weeks consider the logarithmic and exponential functions and their derivatives. There will likely be a bit of time to discuss some differential equations. Calculus is very useful for dealing with many problems modeled with continuous functions. The primary purpose of the course is to explicate this material so that you learn the concepts, their applications, and how to use the material in new situations. Other important goals are to develop the habit of thinking carefully and logically: to be aware of hypotheses and to expect justification of statements.

General Comments / Expectations

The approach here is likely to be a bit different from that in other math courses you have had. You have probably been taught mathematics as a collection of procedures for solving problems. Although a significant part of this course involves solving problems, it is important here to understand the noncomputational material of the course, that is the definitions of terms and the results presented in class. Understanding the mathematical content has benefits: new results and procedures are easier to remember, justify, and use; and unfamiliar problems are more likely to be solved. Ideas stay with us much longer than formulas, most of which can be reconstructed from the underlying ideas when needed. Thus, understanding the ideas requires *less* memorization of formulas, provides a more permanent recall of the material, and leads more easily to the correct approaches to problems.

There are important consequences of this difference. One is that *exam problems may not simply be textbook problems* with different numbers, since the purpose of an exam is to test understanding of what procedures to use and *why* they are appropriate, not merely to determine if you have practiced solving problems by certain techniques. Therefore, the actual answer to a problem is not as important as the approach and method you use. Because of this, *to get credit for solutions you **must** use the notation, results, and methods that have been presented in class—they are the primary content of the course—**regardless** of what you may have learned before, or what may be done differently in the textbook. Further, you may need to explain your solutions by citing definitions or results from class.*

It is also important to understand that the midterm exam problems are *based on how I have covered the material*. That is, you are responsible for what is covered in class (and the notation used in class), so it is *very* important to attend class. The textbook is a useful reference, should be read, presents different examples from those in class, and has many problems for you to practice to master the fairly direct computations and procedures you need to know. However, to see exactly what material I cover and how, and what examples I present, it is best to be in class, even if the early material is familiar to you. *It is extremely rare for a student who does not attend class regularly to do well in the course*.

Advice

It is very important to keep up with the material, and it difficult to catch up in any math course when behind. If you have already had some Calculus do not be overly confident about your mastery of the material—treat it as if you have not seen it before. If you are having any difficulties with the course then see me promptly about them. *I am available often throughout the week (other than "office hours") for whatever you may want to discuss, or just to chat. I will try to accommodate your schedule*.

The most important advice I can give you is to spend time *studying the lecture material* and *working on* the exercises. Most people cannot learn mathematics simply by seeing it done but must work on it themselves. Getting answers to homework problems from other sources—online, friends, the Math Center—may help you to complete an assignment, but *will not* help you to do problems yourself on the exams. That is, once again, the reason for working on problems is to understand the material and appropriate procedures, not to "get an answer" (but it is preferable to do so). The best way to approach problems is to ask yourself how the problem is related to the material or examples presented in class or in the textbook.

A four-unit course is supposed to require about seven or eight hours of your time, *out of class/discussion, every week*. Some students may not need this much study time, but if you spend appropriate time on the course then you will find the material more understandable, the course more enjoyable, and the exams easier.

Academic Integrity Statement

Your work on exams is to be your work alone. Calculators, books, or notes are not to be used for quizzes or midterms (and likely not for the final exam), and no communication with anyone other than the proctor is allowed. Electronic devices must be turned off during exams. For the graded homework problems you are not to copy solutions from anyone else or from any other source, especially the internet or the Math Center—"copy" includes changing notation or rearranging the steps in a solution. You may *discuss* with others, including me or the TA, the general approach to homework problems to be graded. I will be happy to offer help and hints. Violation of these policies is a serious academic offense.

Some Review Problems for Math 125

pp. 9 – 10 #20 – 28 (even only), 44, 45, 47 – 49.

pp. 22 – 24 #17, 24, 32, 42, 61.