

Syllabus: Math 11 Spring 2009 #47036
Farris, O'Connor 207, MWF 10:30–11:35

Overview: Calculus is the study of growth and change. In Math 11, we begin the calculus sequence with an emphasis on the *derivative* as a rate of change, a concept central to every branch of science and engineering.

Text: *Calculus and Analytic Geometry*, by Thomas and Finney, SCU Edition. We will study sections 1.4 through 4.4 (with one or two exceptions).

Prerequisites: Everyone who hopes to succeed in Math 11 needs a good foundation in high school mathematics, including algebra and trigonometry. On our second class meeting, a quick diagnostic test will ask you to demonstrate your readiness. There are many ways to prepare for this; if in doubt, please see me.

The goals and objectives of our course arise from our departmental goals in conjunction with the mathematics requirement of the new SCU Core Curriculum:

Goals and Objectives:

- To choose and develop appropriate methods to solve problems, as well as to communicate mathematical ideas effectively. Our course emphasizes the derivative as an important problem-solving tool.
- To use mathematical reasoning and deduction to draw valid conclusions from given information. For example, we will learn to predict properties of curves from knowledge of their derivatives.
- To use and understand mathematical ideas from multiple and interconnected perspectives, including algebraic, geometric, analytical, and numerical points of view. Differential calculus combines geometric ideas of slope, real-world concepts of rates, and analytical concepts of derivatives to give a unified perspective of calculus.
- To understand significant mathematical ideas and results, while also mastering efficient computational techniques. Beyond computational proficiency, students must strive to understand the meaning of our results, which are some of the central theorems of mathematics.

In addition to providing you with a good foundation of knowledge about this fundamental area of mathematics, our course will also contribute to your general quantitative skills and logical perspective, which are applicable to many other courses requiring mathematical methods and careful reasoning.

How we work toward the goals: Attendance is required at every class meeting. At each class meeting, you will know in advance which section of our text we will work through; reading that section in advance can be a great advantage. During class, we use a variety of methods to introduce new concepts and help you practice using them. If you must miss a class, you must let me know in advance and explain your plan to get class notes from a colleague.

What you learn in class is only the beginning of your understanding. Daily homework assignments challenge you to test your knowledge and apply it in new ways. Please plan to spend *some time every day* working on calculus, because regular learning is far more productive than one marathon session the day before the exam. Your brain needs time to adapt to the new language and routines of calculus. *Surprise quizzes*, often taken from homework problems, are meant to help you stay up to date in our course. Please make your best effort to stay on track and come to see me right away if you start to fall behind.

Office hours (specifics below) are meant to offer individualized help. In addition to my office hours, our peer educator Victor Garcia will be holding hours. To make the most of these opportunities, come to

hours with work in progress. It's most productive when we help someone who is in the middle of a process and has a specific question to ask.

Assessing the objectives: Two midterm exams will be Wednesday, April 22, and Friday, May 22, during class time. According to departmental policy, exams can only be taken at the scheduled time. These exams will assess the skills you practiced in homework, but also will challenge you to combine your knowledge in new ways. A sheet of practice problems due at the class meeting before the exam will give you more information about my specific examination strategies.

Our final exam is scheduled for Wednesday, June 10 from 1:30 to 4:30 in our regular classroom. Again, departmental policy requires that the exam be taken only during this time. The final exam will be comprehensive and will include questions that challenge you to assemble in a coherent way all you have learned in our course.

Your grade in our course will be determined by a score computed from your homework score, including surprise quiz scores (20%), exam scores (40%), and final exam (40%). However, I will also take note of improvement, so a high score on the final can cause me to discount a lower score on the first exam. My grading policies are meant to recognize *achievement*, not effort. When I judge a student's performance as rating an A, that means that I can say to their future employer, "Yes, this student can really do calculus for you, and will hardly ever make mistakes." The grade of C, to me, means, "Yes, this student can do calculus at a basic level; though some back-up might be needed, the student does know the fundamentals."

Exam details: For midterm exams, please bring a small-size blue book (available at the bookstore) *without your name or any writing on it*. For the final, please bring a large-size blue book. Calculators are not allowed on any exam. If you feel totally dependent on your calculator, I can help you get comfortable without it. All that I ask is that you be able to do arithmetic at the level of $60 \times 70 = 4200$, and that's not so hard, is it?

More about homework: Each assignment consists of **R**, **G**, and, possibly, **E** problems. **R** problems are required, but are not turned in; **G** problems are turned in to be graded; **E** problems are for extra practice. Homework is due *at the start of class*, before we discuss it. Therefore, you must keep a note of the specifics of any problem that you would like me to discuss at the start of class. If you wish to bring your text to class for this purpose, you may, but that is probably the only reason to have the text on hand. Departmental policy: Late homework cannot be accepted for any reason. *Staple homework and fold vertically with your name clearly printed on the outside*. First two assignments:
Due 4/1: **R** 1.4/ 1, 5, 13, 15, 17, 23, 31, 33, 37 **G** 1.4/ 6, 8, 14, 16, 20, 32, 36
Due 4/3: **R** 1.4/ 9, 11, 25, 29 **G** 1.4/ 10, 12, 26, 30, 34

Office details: Farris office hours, in O'Connor 314: MWF 12:30–1:30 and Tues 1:15–2:15. (*Note the following carefully:* Unless you have classes at 11:45 and 1:00 MWF and 11:50 and 1:45 TTh, which is practically impossible, you *will* be able to attend part of these hours. Please arrange your work schedule so that you are free to come to office hours.) Victor Garcia office hours will be Tuesday/Thursday 7–8 pm in Kennedy Commons. Don't hesitate to ask questions by email: ffarris@scu.edu. Phone: x4430.

DISABILITY ACCOMMODATION POLICY: To request academic accommodations for a disability, students must contact the Disability Resources Office located in Benson room 216, (408) 554-4111; TTY (408) 554-5445. Students must provide documentation of a disability to Disability Resources prior to receiving accommodations.

To view an electronic copy of this syllabus and to find news about assignments, visit our course website, <http://math.scu.edu/~ffarris/Math11.html>, which is also linked from my homepage.