Math 29: Calculus and Applied Math for Science and Economics

Office Hours:

Erica Flapan
Millikan 2311   M, W, F 2:00-3:00
x 18711   and by appointment
eflapan@pomona.edu
http://pages.pomona.edu/~elf04747/Math%2029/Math29.html

Content of the Course:
Students in this course will learn calculus and problem solving techniques that are used in science and economics courses. In particular, we will cover not only the necessary mathematics, but also a little bit of each of the areas in which the mathematics is applied.

Philosophy of the course: One of the goals of this class is to develop your ability to solve hard problems that do not follow a set model. For this reason, my lectures will explain the material, but will not provide a model for doing all of the homework problems. The best way to learn to solve problems is to practice solving problems. So you will spend a lot of time solving problems both in class and out of class. The practice you get solving an assortment of problems is more important than the specific topics that will be covered in the class. While many of the problems that you solve will be related to my lectures or the textbook, others will be outside of the context of a specific mathematical technique or topic that we have learned. I know this can be frustrating, but developing the skill to solve such problems will help you in your science and economics classes.

Homework Assignments: I expect you to spend about **2 hours at home for every class period**. This includes reading the textbook, doing problems, and writing a very brief summary (1-3 sentences) of what we did in class the previous period. The schedule for the class lists what homework and worksheets are due each period, as well as the reading assignments that you should do prior to each period. Note that the reading assignments are generally a day ahead of the corresponding homework problems. The answers to the problems in the textbook are in the back of the book. However, your homework will be graded on your explanation of the steps you took to get your answer. Also some of the answers in the book are incorrect. In particular, you won't get credit for just writing down the answer that's in the back of the book. No homework will be accepted after the class period on the day that it is due.   In particular, I do not give extensions except under very unusual circumstances supported by a note from student health or from the dean of students' office.

Quizzes and Exams: We will have a quiz every Friday (except the first week). The quiz will consist of a single problem that is similar to either a homework problem or a problem that we did in class. I strongly urge you to study your homework and notes in preparation for the quizzes. The midterms will be on **September 30, October 28,** and

December 2. The final exam is **Friday, December 16, 9:00-12:00**. Make sure you don't buy plane tickets to go home prior to the final exam.

All exams will be based closely on problems we have done on the homework or in class. They will be closed book. In particular, you cannot use any source other than your brain and your calculator for quizzes and exams.

Worksheets: There will be weekly extra credit worksheets. The problems on the worksheets will be more complex than the homework problems and will be **unrelated to the lectures**. The worksheets are meant to force you to think outside of the box, as you will have to do when you apply mathematics outside of a math class. Often the most difficult part of a problem will be figuring out what the question is asking, and how you can translate the words into mathematics. Because of the difficulty of the worksheets, I will count each worksheet as up to **2 extra credit points** that will be added to your grade on the next exam. There will be 9 worksheets during the semester. These extra credit points can make a real difference in your grade in the course. I hope this will motivate you to do the worksheets even though they are very challenging and are not required. Because the worksheets are for extra credit, under no circumstances can you turn in a worksheet late.

Getting Help: If you are stuck on a problem, having trouble with the material, or want to talk about anything (even if it's not related to math) you can come to my office hours or make an appointment to meet with me at another time. You can also drop by my office any time (except before my MWF 10:00 class) and talk to me if I'm there. Note I am not available on Thursdays because those are my research days.

The **mentor sessions** are evening problem sessions that are led by an undergraduate teaching assistant. The mentor for this class is Beauttie Kuture. The mentor sessions are currently scheduled on Sundays 6:00 - 7:00 PM and on Tuesdays and Thursdays from 9:45 - 10:45 PM (though this may change according to the mentor's schedule). These sessions are a good place to meet your classmates, work on the homework and worksheets, and study for exams. I strongly urge you to attend as many of the mentor sessions as you can, since they will help you significantly with the class. To get the most out of the mentor sessions, you should work on the homework and worksheets before attending the session. In particular, don't expect to be able to complete the entire homework or worksheet during the single hour of a mentor session. Also, please do not put pressure on the mentor to stay beyond the hour that she is being paid.

If you would like one-on-one tutoring, the Quantitative Skills Center offers free tutors in math, science, and many other courses. To make an appointment click on the Quantitative Skills Center on the Academics site of the portal. Dr. Travis Brown, the director of the Quantitative Skills Center is also happy to meet with students one on one about the challenges of college, how to organize your time, and how to improve your grades.

If you have a documented disability and wish to discuss academic accommodations, please contact Dean Jan Collins-Eaglin as soon as possible.

Textbook and Calculator: The textbook for this class is: *Calculus and Mathematical Reasoning for Social and Life Sciences*, by Daryl Cooper. The book is written with students in mind and contains many helpful tips about how to do the problems and how to do well in science classes. You should definitely plan to read it. There is also a required book entitled *Math Study Skills* by Alan Bass. The first homework assignment is to read this book and list 10 things from the book that you think might be helpful to you in this class.

In addition to the text, you will need to have a calculator. Any calculator will do. It does not have to be a graphing calculator. A cheap calculator is fine. Note, you cannot use your phone in place of a calculator on quizzes or exams. You should bring your calculator to class every period in particular when we have quizzes and exams.

Numerical grades will be determined according to the following percentages:
Homework   15% (I will drop your 2 lowest homework grades)
Weekly quizzes   15% altogether (I will drop your 2 lowest quiz grades)
Three midterms   15% each
Final exam   25%

The meaning of letter grades in this course is as follows:

A means your performance in all areas is outstanding, demonstrating a thorough mastery of all of the concepts and techniques in the course.

B means your performance is consistently very good, demonstrating a good understanding of the concepts and techniques in the course.

C means your performance is either consistently fair to good or is inconsistent, demonstrating a good understanding of some but not all of the concepts and techniques in the course.

D means your performance is poor and does not demonstrate a good understanding of most of the concepts and techniques of the course.

F means you did not demonstrate a good understanding of almost any of the concepts and techniques of the course.

Technical details of the class: You are expected to attend every class and to participate actively in solving in-class problems and presenting problems on the board. Missing class will make it difficult to do the homework and understand the subsequent class.

Homework, worksheets, and lecture notes are posted on my website:
http://pages.pomona.edu/~elf04747/Math%2029/math29.html

In order to get credit for the homework, your solutions must show all of the steps of your reasoning, not just the answer. While I want you to get as much help as you need to solve the homework problems, you must write up the solutions to the homework problems by yourself. In particular, **homework should not be copied from another student, the mentor, a tutor, or from any other source**.

I do not accept late homework (except under very unusual circumstances). In particular, **do not tell me that you forgot your homework in your room, that you didn't know what the assignment was, or that you forgot to hand it in last period**. Also, do not put the homework in my mailbox or the grader's mailbox. If you have to miss class, give your homework to another student or a friend to hand in for you. I will drop two homework grades and two quiz grades at the end of the semester. As a result, I do not want to hear any excuses. I am very informal in the way I run the class, but very strict about things being handed in on time.

Your responsibilities:
1. **Come to class every period.** Always bring a pencil or pen and a calculator to class. If you miss class, it is your responsibility to get the notes on what you missed and read them over. I am happy to answer questions once you have read over the notes, but I will not go over the material if you don't have written notes.

2. **Figure out what problems and reading are assigned each day.** The assignments for the course and when they are due are posted on my website. If you do the wrong problems you will not get credit.

3. **Hand in every homework assignment the day it's due before you sit down in class.** If you miss class, it is your responsibility to give your homework to a friend to hand in, or bring it to me before 11:00 AM the day it is due. Do not put it in my mailbox or give it directly to the grader. Since I will drop two homework grades at the end of the semester, you should not ask permission to hand in the homework late. It is difficult for the grader to grade late homework, so I will only accept late papers in unusual situations.

4. **Show up on time for quizzes and exams.** There are no make up quizzes or exams. It is up to you to show up on time. I will drop two quizzes, so you do not need to worry if you are sick or have to miss class on a quiz day (every Friday). If you are too sick to take an exam, you (or a friend) must contact me by phone or e-mail **before the time of the exam** to make other arrangements.