

Math 131
Principles of Real Analysis

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<http://pages.pomona.edu/~elf04747/teaching.html>

Office Hours:
M, W, F, 1:30-2:30
and by appointment

Goals of the course: To understand the topology of metric spaces. In particular, when you complete this course you should have mastered the concepts of completeness, compactness, connectedness, continuity, and convergence in metric spaces.

Prerequisites of the course: A proof based course numbered above 100. If you have not taken such a course, then you are taking this course at your own risk. In particular, you should note that the proofs you will do in this course are expected to be rigorous and complete.

Philosophy of the course: I believe that students learn mathematics better by actively participating in proof construction rather than by passively listening to a lecture. Thus during class, I will go around the classroom asking each subsequent student how the next step of a proof should go. Of course, I will help you if you are stuck. But you should come to class expecting to participate.

Warm-ups: In preparation for every period, you will be assigned a warm-up problem. The warm-up problems are designed to make sure you understand the definitions and theorems that we are working on. The warm-up problems are due at the beginning of each period, and should be written on **unlined white paper**. If you wish, you can write them on the question sheet. Your scores on the warm-up problems are extra credit points that will be added to your exam grades. Each warm-up problem is worth .5 of an extra credit test point. Since your warm-up grade will be part of your exam score, you should do these problems individually, without any help from the mentor, your classmates, the internet, a book, or any other source. We will go over each warm-up problem in class the day it is due. The warm-ups must be handed in **when you arrive in class on the period that they are due**. If you arrive late, just hand in the warm-up when you walk in. Warm-ups cannot be handed in after the class period in which they're due.

Homework: There will be weekly homework assignments containing 5-7 problems. The homework is posted on my webpage, which is at:
<http://pages.pomona.edu/~elf04747/teaching.html>

Some of the homework problems are quite difficult, so do not be surprised if you cannot do every problem the first time you think about it. You should plan to start working on the homework problems as soon as possible so that you will have enough time to think about them and dream about them before you have to hand them in. I encourage you to work together on the homework problems, to go to the mentor sessions, and to come to my office hours. However, **your final write-up of the solutions must be done when you are by yourself**, with every written word coming directly from your own brain, not copied from a book, the internet, the solution sheet, another student's paper, or any other source. In particular, two students should not be handing in homework papers that appear to be identical. No homework papers will be accepted after the class period on the day that they are 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.

Your solutions should be written up rigorously, with all necessary details supplied. **You are forbidden from ever using the words “clearly”, “obviously”, or anything similar in this course.** Your work will be graded not only based on the correctness of your solutions, but on the clarity, completeness, and rigor of your exposition. If you feel that you don't have enough prior experience writing rigorous proofs, then you might consider taking Math 101 instead of this class.

Exams: There will be two 2-hour in-class exams and a 3-hour in-class final. Each exam, including the final, will consist of four problems. The exams are closed book and closed notes. The midterms will take two hours during 8:00-12:00 in the morning of October 27 and November 29. If you do not have a 2-hour block available in this time frame, let me know. The final exam will be on Tuesday December 12 from 9:00 AM until noon.

Textbook: Maxwell Rosenlicht, *Introduction to Analysis*. You should plan to read the textbook, since my lectures will not completely duplicate what is in the book.

Getting Help: If you have any questions about the material, the homework, or the course you should come to my office and/or the mentor sessions. If you cannot make my office hours, I am happy to make an appointment with you at some other time, or you can just drop by and see if I'm there. However, you should not come to my office MWF morning, as that is when I am teaching and preparing to teach. Also, note that I do not come into Claremont on Thursdays, as that is my research day. Feel free to contact me by phone or e-mail to set up a time to meet. However, I will not answer math questions over e-mail.

The homework is weekly, but varies between being due on Mondays and being due on Wednesdays. The mentor for this class is Yu Xuan Hong, who is a senior math major. Currently mentor sessions are scheduled for Sundays from 7:00-9:00 PM and Tuesdays from 9:00-11:00 PM. But this could change depending on Yu Xuan's schedule. The mentor sessions should help you collaborate with your peers, get help on the homework, and study for the exams. Since the mentor sessions are only twice a week, you will get the most out of them if you have already worked on the problems before you go to the sessions.

If you would like one-on-one tutoring, the Quantitative Skills Center offers free tutors in math, science, and many other courses. If you have a documented disability and wish to discuss academic accommodations, please contact Dean Jan Collins-Eaglin as soon as possible.

Grades will be determined according to the following percentages:

Written homework	15%
Class participation	5%
Midterm 1	25%
Midterm 2	25%
Final exam	30%

I hate assigning grades. But since I have to do so, I take it very seriously and don't believe in grade inflation. Keep in mind that what I think of you and your abilities, is independent of the grade you are getting.

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 of the course.

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

C means your performance is either consistently fair to good or is inconsistent, demonstrating a good understanding of some of the concepts and techniques of the course.

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

F means you have not demonstrated an understanding of either the concepts or the techniques of the course.