

Syllabus for Math 94

*Weeks 1-10**UCSB 2015*

Basic Course Information

- Professor: Padraic Bartlett.
- Class time/location: Thursday, Girvetz 2129, 5-6:15pm.
- Office hours/location: 12-1:30pm TTh, South Hall 6516.
- Email: padraic@math.ucsb.edu.

Course Description

This is a preparation course for the **GRE Mathematics Subject Test**, a standardized exam that almost all graduate-level programs in mathematics ask students to take as part of their applications. (This is distinct from the quantitative portion of the standard GRE exam, which we will not discuss in this class.) About 50% of the exam's questions come from calculus and its subfields, 25% of its questions come from algebra, and the remaining 25% come from other areas of mathematics.

In this class, we will study subjects from these areas and take five practice GRE examinations; by the end of the class, you (in theory) will be prepared to do your best on the GRE Mathematics Subject Test.

Course Evaluation

Math 94 is a one-unit mathematics-GRE preparation class that meets once weekly for a little less than 90 minutes. Accordingly, one would expect to spend about **three hours per week** on this course, which is a way of noting that a decent amount of your time commitment to this course is tied up in simply being at class!

With this in mind, this is how your grade will be determined in Math 7H:

- **Attendance** (50%.) There are 10 classes; attendance will be taken at the start of each class. Show up to each class to get a point for that class.
- **GRE tests** (50%). I will post actual GRE tests from past exams to the website, once every two weeks. You will take these tests as though they were the actual GRE (i.e. three hours, single sitting, etc.) and turn them in to me.

The scores that you get on these tests are not at all relevant to your grade here! Instead, all you have to do is take the test and try¹ your best. Each test you complete will give you two points.

- **Registering for the April Mathematics GRE exam.** (+10%). You can get two bonus points if you register for the April Mathematics GRE exam, and provide me some sort of proof that you have done this. The test takes place on April 18th, and has a registration deadline of March 13th. (The GRE exam has three dates each year on which it is offered: mid-April, late-September, and late-October. Registration deadlines always fall at least a month ahead of the exam, and there is no way to register for the tests after these deadlines pass. Every year, we have students that miss these deadlines! Do not be one of those students.)

There are 20 points in total. Get 16 points overall to get a pass. Lower performances in the class will receive proportionally lower marks, but seriously, just do the work! It'll be fun, and it's not that crazy.

Course Timeline

Over the next ten weeks of this course, we will try to cover the following mathematics GRE test subjects. As these concepts are in theory a summation of what you've spent the past year studying, we will assume that everyone has seen these concepts/ideas before, and focus on solving GRE-style problems from each area.

- Limits, sequences, and series.
- Derivatives and integrals.
- Working in \mathbb{R}^n .
- Differential equations.
- Linear algebra.
- Number theory.
- Abstract algebra.
- Probability and combinatorics.
- Complex analysis.
- Miscellaneous (logic, set theory, graph theory, topology, real analysis.)

¹If I notice that your test score is at the same average that blind guessing would yield, that is not your best.