

Math 415 Honors Real Analysis: Course Policy

This course is meant to give a rigorous and highly theoretical introduction to real analysis. The goal is to cover roughly one half of the text (Chapters 1-11) with some exceptions. The major topics are likely to include:

- review of the construction of the real number system; countable and uncountable sets
- topological spaces (mostly metric spaces), normed vector spaces, open and closed sets, connectedness, completeness, sequences and limits
- bounded linear transformations, the derivative as a linear transformation
- properties of compact metric spaces, Heine Borel and Bolzano-Weierstrass theorems
- sequences and series of functions, uniform convergence, Arzela-Ascoli theorem, Weierstrass approximation theorem.

You are expected to come to class prepared; this means that you have understood or at least struggled with the required reading (mathematicians read with pencil and paper in hand) and formulated questions to be discussed in class and in section. The material is challenging and there is always too much in the time allotted so I suggest you work through it every week in a study group of three or four.

Homework will be assigned and posted on the course homepage every week and due in class Monday of the following week. *No late homework's will be accepted except in exceptional circumstances.*

You are encouraged to discuss it with your study group. *However you must write up your own problem sets. Copying, whether from another student a book or the internet, is not only dishonest but defeats the main purpose of the course.*

You are required to go to section and there will likely be a one question quiz based on the homework. Only the starred homework problems (a subset of those assigned) will be graded.

Grades will be based on:

Homework and quizzes 40%

one midterm 20%

Final exam 40%.