

Math 431 - Advanced Calculus- Spring 2014

Instructor Mauro Maggioni
Office Gross Chem 319
Office hours: Mondays 1:30-2:30pm.
Web page: www.math.duke.edu/~mauro/teaching.html

This course will develop a rigorous theory of elementary mathematical analysis including differentiation, integration, and convergence of sequences and series. Students will learn how to write mathematical proofs, how to construct counterexamples, and how to think clearly and logically.

These topics are part of the foundation of all of mathematical analysis and applied mathematics, geometry, ordinary and partial differential equations, probability, and stochastic analysis.

Textbook: Fundamental Ideas of Analysis, by Michael Reed. The course will cover most, but not all, of the material in Chapters 1-6.

There will be two midterm exams, a final exam and weekly homework.

Evaluation & Policies: There will also be at least one lengthy assignment which challenges you to write carefully constructed proofs. Your final letter grade will be based on these components weighted as follows: long assignment(s) 15%, regular homework 20%, midterm exams 25%, final exam 40%. Homework is due at the beginning of class, with name written at the top of the first page, stapled, written legibly, on one side of each page only. Otherwise, it will be returned ungraded. The logic of any proof must be completely clear and all steps justified. The clarity and completeness of your arguments will count as much as their correctness. Some problems from the homework will reappear on exams. I will go over in detail the solution to any homework problem during office hours. You may use a computational aid for the homework but I do not recommend it. Calculators and computers will not be allowed on the quizzes and exams. The lowest homework score will be dropped. No late homework will be accepted. Duke policies apply with no exceptions to cases of [incapacitating short-term illness](#), or for [officially recognized religious holiday](#).

You may, and are encouraged to, discuss issues raised by the class or the homework problems with your fellow students and both offer and receive advice. However all submitted homework must be written up individually without consulting anyone else's written solution.