

MATH 451, ADVANCED CALCULUS I, Section 2

Fall Term, 2005

B.A. Taylor

Office: 4858 East Hall, **e-mail:** taylor@umich.edu , **Telephone:** 936-9992

Office Hours: M 1-2, W 2-3, and Th 2-3 in my office. Also by appointment. We can arrange this at class or by e-mail.

Text: Kenneth A. Ross, *Elementary Analysis: The Theory of Calculus*.

Class Time: MWF 11:10-12:00 in 3088 East Hall

Course Web Page: Course information (syllabus, assignments, this document) is also available on the web page for our section, <http://www.math.lsa.umich.edu/~taylor/index.html>

Reserve list.

Paul Halmos, *Naive Set Theory*, Springer-Verlag, New York, 1974

Edmund Landau, *Foundations of Analysis*, Chelsea, 1951

Rudin, Walter, *Principles of Mathematical Analysis*, 3rd Ed, New York, McGraw-Hill, 1976

Grading and Exam schedule:

There will be two in-class midterms and a final. The final exam will count for 25% of the course grade, the first midterm 15%, and the second midterm 15%. Homework/class work will count for the remaining 45% of your grade. The exam dates are:

Friday, September 30

Friday, November 4

The final exam is

Tuesday, December 20, from 4-6 pm, 3088 East Hall

Please do not make travel plans that conflict with the scheduled examinations. If you have any documented condition (from OSSD) that requires extra time to complete exams, please notify me during the first two weeks of class so that accommodation can be arranged.

About the class

The course is designed as an introduction to “theoretical analysis”. The goals are to gain a deep understanding of the properties of the real numbers and how these properties are at the basis of the fundamental theorems of “analysis”; i.e. calculus and its extensions. Hallmarks are learning how to write rigorous proofs of theorems in analysis and the careful use of quantifiers, along with learning proofs of the basic theorems of calculus.

Homework:

You are expected to attend every class. There will be daily reading and individual homework assignments to be done before class meets. The homework assigned through Wednesday of a given week will be due on Friday of that week. It will not be carefully graded (we don’t have the resources for this) but will be checked for completeness and to see if there are particular problems that gave you trouble. There will also be more demanding problems for you to work on yourself and to talk over in collaboration with up to three other students in the class. These team homework problems will be assigned with the daily assignments and are collected on Wednesdays. You are to hand in one copy, VERY neatly written (preferably on a word processor), by one member of your team, the “scribe”. Of course, the names of all the team members should be on the paper. The role of scribe must rotate through your team so that everyone gets practice in writing careful solutions of good problems. He/she should also be sure that everyone on your team gets a copy of the solutions. Be sure to include a careful statement of each problem along with your solution. You

are also requested to have another member of the group, the “reporter” write up a description of which problems gave you trouble, which were easy, any false proofs, and if there was consensus on a solution.

This daily work, together with work in class, will account for 45% of your course grade. The homework is help you improve your skills with this mathematical material. Many exam questions will reflect this homework material.

Syllabus and Assignments:

The course syllabus and assignments are available on the web page for the class.