Math 451: Advanced Calculus I
Instructor: Professor Sijue Wu
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Office hours: Tuesdays 1:30-3pm, Thursdays 2:30-4pm

TextBook: Elementary Analysis, The Theory of Calculus, 2nd ed. by Kenneth A. Ross

Prerequisites: A thorough understanding of calculus and one of 217, 312, 412,
or permission of instructor

This course has two complementary goals: (1) a rigorous development of the fundamental
ideas of calculus, and (2) a further development of the studentÕs ability to deal with abstract
mathematics and mathematical proofs. The key words here are ÒrigorÓ and Òproof;Ó almost all
of the material of the course is geared toward understanding and constructing definitions,
theorems (propositions, lemmas, etc.), and proofs. This is considered one of the more difficult
among the undergraduate mathematics courses, and students should be prepared to make
a strong commitment to the course.

Content: Topics covered include: sequences, limits, continuity, differentiation and integration,
the fundamental theorem of calculus, infinite series; sequences and series of functions.

Course Policies:

Homework will be assigned each week and due the following Thursday. You may discuss with
your classmates on the assignments, but you need to write up your solutions independently.
There will be two midterms and one final. Make-up exams will not be given, unless you have
been seriously ill, have a family emergency, or participated in a university activity at the request
of university authorities. You are expected to attend class.

Grading policy:
exam 1: 15%
exam 2: 15%
final: 30%
Homework: 40%