MATH B301: REAL ANALYSIS I
FALL 2020

Monday/Wednesday 11:40 a.m. – 1:00 p.m.
or
Tuesday/Thursday 8:25 – 9:45 a.m.

Prerequisite: MATH B201 (Multivariable Calculus)

Note: This is a WA (Writing Attentive) course for the math major.

Analysis is the branch of mathematics that deals with inequalities
and limiting processes. This is a first course in real analysis, providing
a rigorous development of single variable calculus, with a strong focus
on proof writing. In this course we shall study the theory of calculus,
material that you may have seen in Math B101 (Calculus I), Math
B102 (Calculus II), and Math B201. In those courses, the focus was
on how to do various types of problems. In this course, the focus will
be on understanding the underlying ideas of calculus using formal
mathematical reasoning. We will start from the completeness of the
real line, the distinguishing characteristic of analysis among other
mathematical disciplines, and then we will continue with sequences,
limits, topological properties of the real line (e.g. open sets, closed
sets, limit points, closures, complements), and continuity.

Goals of the course include:

• To learn to communicate mathematical reasoning in writing and
  verbally, both via informal arguments and via more formal proofs;

• To understand and be able to use the fundamental theorems of real
  analysis.