

Instructor: Michael Rosbotham (michael.rosbotham@maine.edu)

Credits: 3

Meeting times: Monday, Wednesday, Friday 8-8:50am

## Course Description

A study of functions of a real variable and the related topology of the real line. Concepts of limit, convergence, continuity and differentiability are studied.

## Prerequisites

A grade of C or better in MAT 228 and MAT 261

## More Information

Our first goal is to carefully construct the real numbers. This allows us to contextualize notions and results that arise in Calculus. For example, in this context, a function is *continuous* if it respects the topology of the real line.

By precisely defining concepts such as limit and convergence, we can give mathematically rigorous proofs of theorems that in a calculus course might only be partially explained. Perhaps more importantly, the nuances in these definitions (and our careful approach) lead to new avenues and results.

In addition to the above, MAT425 lays the ground work for MAT426 which explores integrals and other concepts related to the topology of the real line. Many ideas discussed in MAT425 & MAT426 can also be extended to more general settings, allowing for in-depth investigation and analysis of various important spaces.

If you wish to discuss this course, please email me at the address above.