1. Introduction

The rigorous study of mathematics is concerned with statements and the proofs of these statements. In order to build statements which are more complicated, there is a necessity to use results, statements, and concepts which have been previously encountered. Often times, understanding 'black-box' concepts in mathematics amounts to nothing more than adequately defining the pre-requisites, and studying these in detail. The idea of this course in 'Foundations' is to acquaint the interested reader with the concepts which allow for the construction of mathematical statements.

Aside from basic mathematical literacy, and a desire to understand these concepts, we make no assumption of the experience of the reader.

1.1 Format

This course hopes to cover the basics necessary to fully appreciate the content presented in other courses, and all of the content covered can be both stripped back and built further. We will provide references for those who wish to go further.