We will cover the material in Chapters I–X of the text, "Foundations of Mathematical Analysis" by R. Johnsonbaugh and W. Pfaffenberger, with the following provisos:

(a): Most of the material in Sections 1–8, 10–16, 18-20, 22–26, 30-33 will be familiar to you already, and will be quickly covered in the first 1\(\frac{1}{2}\) weeks of lectures.

(b): Sections 55, 59, 65 will be omitted entirely; no familiarity with these sections will be assumed.

(c): In place of (or in addition to) the material on the Riemann-Stieltjes integral in Chapter IX of the text, we will instead use some supplementary material.

Course Outline

Mon. April 3– Properties of \(\mathbb{R}\). Convergent and Cauchy sequences.
Fri. April 7 Bolzano-Weierstrass theorem for \(\mathbb{R}\).

Mon. April 10– Infinite series. Lim sup, lim inf.
Fri. April 14 Metric spaces. Definitions and examples.

Mon. April 17– Sequences, accumulation and limit points.
Fri. April 21 Open sets. Closed sets.

Fri. Apr 28 Bolzano-Weierstrass theorem.

Mon. May 1– Connected and complete metric spaces.
Fri. May 5 Continuous functions. Pre-images of open, closed sets.

Mon. May 8– Uniform continuity. Images of compact, connected sets.
Fri. May 12 Spaces of functions. Uniform convergence.

Mon. May 15 – Compactness and completeness.
Fri. May 19 Equi-continuity. Writing assignment.

Fri. May 26 Countability. Sets of measure zero.

Fri. June 2 Completions.

Mon. Dec. 5– Completion of continuous functions wrt the \(L^1\) norm.
Wed. Dec. 7 Intro to Lebesgue integration

Wed. June 14 Final Exam: 3:30-6:30 p.m.