

Set Theory

Title: MAT 598 (91562) / MAT 494 (92722): Set Theory

Time: Fall 2019; T, Th 4:30–5:45 PM

Instructor: Hal Kierstead, hal.kierstead@me.com

Description: This is an introduction to those areas of modern set theory that are directly relevant to other areas of pure mathematics. This includes Zermelo-Fraenkel Axioms; ordinal and cardinal numbers; the Axiom of Choice, the Well-Ordering Principle, Zorn's Lemma, etc.; closed unbounded & stationary sets and regressive functions; the Axiom of Constructibility; the Continuum Hypothesis and consistency results. MAT 494 is intended for advanced-level mathematics undergraduates; MAT 598 is intended for mathematics graduate students. MAT 598 students will be required to do more work and meet higher standards.

Text: [The Joy of Sets by Keith Devlin](#), ISBN-13: 978-03879409464

Prerequisite: Students should be familiar with basic proof techniques, and should have done well in MAT 300 (not just passed) or taken advanced pure mathematics courses or serious theory courses in computer science. Detailed knowledge of specific theorems and proofs is not required.

Method: I will lecture on the text, but will ask students to take turns filling in details by presenting exercises from the text. There will also be homework, an in class midterm and a take-home final.

Note: A course on this topic is unlikely to be offered again any time soon.