

## Course Announcement: MAT 494/598 Set Theory

**Title:** Topic: Set Theory, MAT 494 / MAT 598

**Time & Place:** Spring 2025: T, Th, 3:00 PM, WXMLR A113

**Instructor:** H. A. Kierstead; email: [hal.kierstead@me.com](mailto:hal.kierstead@me.com)

**Description:** This is an introduction to those areas of modern set theory that are 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.

**Note:** This course is unlikely to be offered again, at least for several years.

**Textbook:**

- (1) *Basic Set Theory*, Azriel Levy. Cost: Kindle \$15, paperback \$20, hardcover \$35.
- (2) If there is time I may draw some material from: *Combinatorial Set Theory With a Gentle Introduction to Forcing*, by Lorenz Halbeisen. Cost: Free .pdf on the author's homepage.

**Prerequisites:** Students should have some mathematical maturity, being familiar with some proofs, say from MAT 300, 371, 415, 416 or other proof base undergraduate classes. Knowledge of specific theorems or proofs is not required.

**Grading:** Grading will be based in equal parts on midterm, final, and class presentations and participation. Higher levels of achievement will be expected from students enrolled in the graduate version.