Metric Spaces and Topology

Math 431/531, Fall 2025

Lecture: MWF 1:00–1:50, 103 Peterson Hall

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Web Page: pages.uoregon.edu/adding/courses/431

Text: My notes, available on Canvas and on my web page.

You can also consult Gamelin and Green's
Introduction to topology, second edition.
An online version is available through the library's web site.

Grading.   Your grade will be based on the following:

- **Reading (5%).** Due Sunday evenings on Canvas. Give a *short* summary of what you read, and one or more questions that you would like me to answer. These will just be graded on completion. Students enrolled in 531 will have an extra reading on the history of topology.

- **Homework (15%).** Due Fridays at the beginning of class, either on paper or on Canvas. Student enrolled in 531 should do all the optional problems.

  I encourage you to work with other students, but you must do the writing yourself, in your own words. If you write by hand, use pencil; if you type, use TeX, not Microsoft Word. I will drop the lowest score.

- **First Midterm (25%).** Friday, October 24, in class.

- **Second midterm (25%).** Friday, November 21, in class.

- **Final Exam (30%).** Wednesday, December 10, 2:45-4:45, in the usual room.

Learning outcomes.   The successful student will come away understanding continuity and convergence via δ and ϵ and via open sets, completeness, and especially compactness, both formally (how to use the axioms) and in examples. The student will both acquire and demonstrate this understanding by *writing proofs*. Especially important will be writing in paragraphs, rather than in strings of symbols; recognizing when you've written something that doesn't make sense; keeping in mind the audience for your writing, which is your peers; and "making the easy parts look easy," that is, avoiding belaboring the routine parts of the proof so that the real content can shine through.