MTG 4302/5316: Elements of/Introduction to Topology 1

University of Florida, Department of Mathematics
Course Syllabus, Fall 2024

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Lectures: MWF Period 6, 12:50–1:40pm, Little Hall Room 219
Textbook: *Topology*, second edition, by James R. Munkres.

Course overview: This course is an introduction to topology. Topology studies shapes and surfaces, sometimes in higher dimensions, along with the continuity properties of functions between two such shapes. We begin with set theory and foundations, and then proceed to topological spaces, metric spaces, connectedness, compactness, countability and separation axioms, completeness, and function spaces.

The catalog course description is available at https://gradcatalog.ufl.edu/graduate/courses-az/mathematics and we also refer students, especially graduate students, to the first year graduate exam topics at https://math.ufl.edu/first-year-exam-syllabi/mtg-5316-introduction-to-topology-1.

Schedule:

Weeks 1–2	Set theory and foundations
Weeks 3–6	Topological spaces, continuity, products, bases, metrics, quotients
Weeks 7–9	Connectedness and compactness
Weeks 9–12	Countability and separation axioms
Weeks 13–15	Completeness, function spaces, contraction mapping theorem

Goals: Students will become fluent with the main ideas and the language of topology, and will be able to communicate these ideas to others. Students will learn how to write rigorous mathematical proofs and how to construct counterexamples. A goal of the class is to teach the foundations of rigorous argument through proving claims built on axioms.

Prerequisites: MAS 4105 (Linear Algebra 1) with a minimum grade of C, or permission from instructor depending on mathematical experience.

Requirements: The grading for the course will be based on homework 25%, and two tests, 20% each, and a final exam, 35%.

Grading scheme: A: 90% – 100%, A-: 85% – 89%, B+: 80% – 84%, B: 75% – 79%, B-: 70% – 74%, C+: 65% – 69%, C: 60% – 64%, D+: 57% – 59%, D: 54% – 56%, D-: 50% – 53%, E: 0% – 49%.

Homework: The clarity of your solutions is as important as their correctness. Working in groups on homework and to study is encouraged! However, your submitted homework should be written up individually, in your own words, and without consulting anyone else's written solutions of any form.

Exams: The dates for the exams (all in-class) are:

- Test 1, Wednesday October 2, during class.
- Test 2, Wednesday November 6, during class.
- The final exam is set by UF for Friday December 13, during Group A (7:30-9:30am).

Additional resources: Wikipedia has good articles on many of the topics covered in this course.

Academic policies and resources This course complies with all UF academic policies. For information on those polices and for resources for students, please see https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/.