Name: Charles Daly and Aidan Hennessey   Math 1710 Fall 2025

When & Where: TuTh 1:00 PM (EST) - 2:20 PM (EST)   Smith-Buonanno Hall G12

Canvas Site: https://canvas.brown.edu/courses/1098339

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Office Hours: For now Tu/Th 2:30 PM - 3:30 PM at 309 Kassar House (also online)

              Aidan Office Hours - TBD

Course Description: This course is an introduction to basic topology. We will follow Armstrong's *Basic Topology* throughout the semester. The first several weeks we will introduce basic topological concepts such as open/closed sets, continuity, homeomorphisms, compactness, connectedness, the product and quotient topology. The remaining portion of the class will be dedicated to triangulations, the fundamental group, and covering spaces focused largely on examples with surfaces. Another (not-required) reference to the course is Munkres' *Topology*.

Grading: Your grade will be determined by homework, and two exams: the midterm and final. The homework, midterm, and final are worth 35%, 30%, and 35% of your grade respectively.

Homework: There will be about ten homework assignments that will be assigned every week and a half or so, and will consist of problems assigned from the text. Specific problems will be posted on our Canvas site. Late assignments are allowed, up to five days from the due date, but will be deducted points depending on how late the assignment is submitted. You are allowed to form study groups and discuss the homework together, in fact I encourage this, but only after you attempt the homework yourself. You should engage with the problems on your own before discussing them with others.

Exams: The midterm is yet to be determined, but will ideally take place around Week 8, Mar 10th - Mar 14th. We will likely hold the midterm in the evening, in-class, to allow a generous amount of time. The exam itself will not be lengthier. The extended time period will be provided to remove the stress surrounding the time constraint. The final will be an in-class three hour cumulative exam on **May 7th at 9:00 AM (EST)**. If you need to miss either the midterm or final due to a university recognized excuse, with documentation, we will figure out a suitable make-up assignment.

Textbook: The textbook is Armstrong's *Basic Topology* which is available through Springer via your Brown login. You are encouraged to check out other texts if you like. As recommended previously, Munkres' *Topology* is another celebrated introductory text to topology. Hatcher's *Algebraic Topology* Chapters One and Two are relevant, but perhaps a bit advanced.

Recordings and Covid-19 Policies: Given the Covid-19 pandemic, I am going to try and ensure all lectures are recorded. I have been told our classroom is equipped with a camera and speaker to adequately record lectures. This is done to ensure people who need to isolate, or miss class for another reason, may still access our content. More information can be found here.

Accommodations: If you have an exam accommodation approved by the Student Accessibility Accommodations, you must let me know at least **two weeks** before the exam. Please contact me directly through email or Canvas.

Academic Integrity: The instructors of this course take Brown's Academic Code, and academic integrity in general, very seriously. Submitting dishonest work, whether on homework or exams, makes it more difficult to effectively help you and your fellow students learn, and it dilutes the meaning of a Brown degree.

It is your responsibility to understand what actions are allowed in this course, and what actions are violations of the Academic Code. Further information is available here. Any incidents that appear to violate course rules will be presented to, and adjudicated by, the university's Academic Code committee.

Use of Artificial Intelligence: The use of artificial intelligence is not strictly prohibited in this class, but it is strongly discouraged. As no electronic devices will be allowed on the exams, relying heavily on the use of supplementary resources seems disadvantageous for exam performance. Moreover, I have found that these programs frequently provide incorrect solutions to problems in our course.

Inclusivity and Equity: This course strives to be accessible and inclusive to all students, regardless of age, race, nationality, gender identity, sexual orientation, religion, economic background, or any other difference that contributes to the vibrant and diverse Brown community. We are committed to conducting all interactions with students with a sense of respect and equity. We ask that students interact with other students and instructors in this same spirit. If something happens to make you feel unwelcome or discriminated against, please bring it to our attention so that we can try to make the situation right.

In addition, Brown is committed to providing support for students with learning differences, physical impairments, and other disabilities. If you think you may need accommodations due to one of these conditions, contact Student Accessibility Services for more information.

Tentative Schedule:

Week 1 - Jan 23: 1.1 - 1.6   Some Examples of Topological Thinking

Week 2 - Jan 27 & Jan 31: 2.1   Examples of Topologies

Week 3 - Feb 3 & Feb 7: 2.2   Continuity

Week 4 - Feb 10 & Feb 14: 3.1 - 3.2 & 3.5   Compactness and Connectedness

Week 5 - Feb 17 & Feb 21: 3.4   Products, Disjoint Unions

Week 6 - Feb 24 & Feb 28: 4.1 - 4.2   Quotient Spaces

Week 7 - Mar 3 & Mar 7: 4.3 - 4.4   Group Actions on Spaces

Week 8 - Mar 10 & Mar 14: 5.1 - 5.2   Fundamental Group

Week 9 - Mar 17 & Mar 21: 5.3   Consequences of $\pi_1(S^1) \simeq \mathbb{Z}$

Week 10 - Mar 24 & Mar 28   Spring Recess :)

Week 11 - Mar 31 & Apr 4: My own notes   Covering Spaces

Week 12 - Apr 7 & Apr 11: 6.1   Simplicial Complexes

Week 13 - Apr 14 & Apr 18: 6.2 - 6.3   Simplicial Approximation Theorem

Week 14 - Apr 21 & Apr 25: My own notes   First Homology Group

Final Exam - May 7th 9:00 AM (EST)