Topics: The class is an introduction to point-set topology and algebraic topology. Topics in point-set topology will include: topological spaces, continuous functions, connectedness, and compactness. In algebraic topology, we will focus on the theory of the fundamental group, including homotopy, the Mayer-Vietoris theorem, and covering spaces.

Prerequisites: You should be comfortable with mathematical proofs and the basic operations of set theory (unions, intersections, products, power sets). By the halfway point of the semester, when we begin talking about the fundamental group, you should be familiar with basic group theory. Some experience with metric spaces and/or topology in R^n (e.g. open, closed, compact sets) would be helpful, but is not required.

Textbook: Munkres, *Topology* (2nd edition).

Instructor: Andrew Senger (senger@math.harvard.edu).

Course Assistants (preliminary):

- Adelina Andrei.
- Amy Feng.
- Alex Karbowski.
- Maia Walzer.

Time & Place: Tuesdays and Thursdays at 12:00-1:15pm in Science Center 309A.

Assessments: There will be (near-)weekly homeworks, a take-home midterm (October 17-22) and a take-home final exam (December 11-16). The homeworks will account for 50% of your final grade, the midterm exam 20% and the final exam 30%. Your lowest homework score will be dropped.

All assignments will appear in the "Assignments" tab on Canvas, and should be submitted as a pdf file there. Handwritten work is welcomed, but please double check that your pdf is legible before you upload!

Academic integrity policy:

- You are encouraged to work together on the homework assignments, and may consult outside sources. However, you must understand how to work through the problems yourself. Moreover, you must write up your answers in your own words, using your own understanding, and credit any sources that you used. This is an important part of the learning process!
- On the exams, you may only consult official course resources, including the textbook and course staff. Collaboration and the use of outside resources is strictly forbidden.

Late work policy: Late work will not be accepted (unless there are genuinely mitigating circumstances). However, your lowest homework score will be dropped.

Lecture Topics

Here, I will post the topics we cover in each lecture, as well as where you can read about these topics (usually sections of the textbook).

- **Lecture 1** (Tues Sept 3): Introduction; metric spaces as motivation for topological spaces. Notes by Joe Harris and Denis Auroux: MetricSpaces.pdf