Course web site: Assignments and other information will be posted to Sakai, [https://sakai.duke.edu/](https://sakai.duke.edu/). There is also a rudimentary course web page at [https://services.math.duke.edu/~ng/math411/](https://services.math.duke.edu/~ng/math411/) where you can find a link to lecture notes from a previous iteration of Math 411.


Munkres’ book is very detailed and on the dry side. For those who prefer a more informal treatment that emphasizes geometric intuition, I recommend *Basic Topology* by M. A. Armstrong as a supplementary text. I’ll be teaching somewhere in between the two books, roughly speaking. Both books should be on reserve at Perkins.

Office hours:

- Mondays 2:00–3:00 pm
- Thursdays 9:45–11:00 am

and by appointment (set up in person or by email). If you want to set up an appointment via email outside of scheduled office hours, please keep in mind that I can’t usually answer email immediately; on occasion it may take a day for me to respond.

Course synopsis: This course is a broad introduction to point set topology, differential topology, and algebraic topology. Topics that I hope to cover include:

- Topological spaces, connectedness, compactness, product and quotient topologies.
- Homotopy, the fundamental group, covering spaces.
- Triangulations, classification of surfaces, Euler characteristic.
- Jordan curve theorem, Brouwer fixed point theorem, Borsuk–Ulam theorem.
Assignments: There will be homework sets due most weeks on Tuesdays, as well as exams (two midterms and a final). You are allowed and encouraged to work with fellow students on the homework; if you do collaborate, please indicate the name(s) of your collaborator(s) on your problem set. Each student must write up their problem sets on their own.

Your grade will be based on a weighted average of your grades in these components: homework 15%, each midterm 25%, final 35%.

Special note for Math 711 students: You will also be required to write a short essay (under 1 page) explaining the relevance or potential relevance of this course to your particular course of study. This will be due at the time of the final exam.

Prerequisites: Officially, the only prerequisite for this course is Mathematics 221, and I expect to provide any necessary mathematical background beyond this level. However, you may find the course to be more fulfilling and pleasant if you have a reasonable familiarity with proofs (on the level of Math 401, 431, or essentially any course > 400). It may also help to be acquainted with the notion of a group (Math 401 again) and some basic real analysis (Math 431 again). In particular, some concepts in this course will seem vastly more motivated if you’ve already taken a real analysis course.

Please consult with me if you have questions about whether this course is appropriate for you.