

# MATH 374: General Topology, Fall 2018

**Class Meetings:** MWF at 10:00-10:50 in **Clark Hall 205**

**Instructor:** Andrew Bydlon

**Email:** andrew.bydlon@williams.edu

(usually, I won't respond  $\geq 8$  pm)

**Office Hours:** Tuesday 3-4, Wednesday 2-3, Friday 2-3 in **Bascom 303**.

**Text:** We will use **Topology**, by **James R. Munkres**. In addition, I will try to keep up with latexed notes to complement the book.

**Prerequisite Information:** One should have completed a basic course on *Analysis*, with particular focus on metric spaces.

**Course Description:** We will focus on properties of Topological spaces, a wide class of objects that is the fundamental building block for geometry. We will also focus on when a topological spaces is in fact a metric space.

Here is a broad list of topics which we will cover:

1. **Topological Spaces:** Definition, examples, bases, products, subspaces, and quotients
2. **Continuous Functions:** Comparison with metric spaces, limits, product and quotient maps
3. **Connectedness & Compactness:** Definitions, in  $\mathbb{R}$ , local variants, comparative examples, limit-point compactness
4. **Separability:** T0-T4 conditions, normal spaces, Urysohn's Lemma, Tietze Extension Theorem
5. **Compactness:** Definition, Compactifications, Tychanoff Theorem, Stone-Cech Theorem
6. **Metrizability:** Local-finiteness, Nagata-Smirnov Metrization Theorem, paracompactness, Smirnov's Metrization Theorem
7. **Completeness:** Definition, Space filling curves, Convergence, Ascoli's Theorem

**Glow:** I will use GLOW as a method of communication as well as a gradebook. All Notes will be posted here.

**Grading:** The following are the grade components and the percentage each contributes to a student's final grade:

- **Homework Assignments (40%)-** Once a week (with a few exam related exceptions), on Fridays, we will have homework due. This totals about 10 homeworks, for which the lowest score will be dropped. Solutions will be posted on GLOW on Friday afternoons (after office hours), upon which the homework can no longer be accepted.
- **Midterms 1 & 2 (30%)-** There will be 2 exams administered in class. The dates for these exams will be **October 10<sup>th</sup>** and **November 7<sup>th</sup>**.
- **Final Exam (30%)-** There will be 2 parts; a self-scheduled take-home portion and a written final. The date will be appended once the final exam schedule is finalized. The value is equally distributed between the 2 portions.

**Note:** The instructor retains the right to modify this grading scheme during the course of the semester; students will, of course, be well notified of any adjustments.