

**Course Syllabus**  
**Mathematics 5510, Fall 2021**  
**Intro to Topology I**

**Professor Priyam Patel**

**E-mail:** patelp@math.utah.edu

**Office:** JWB 205

**Class Hours:** MWF, 10:45-11:35AM

**Class Location:** LCB 121

**Course Page:** Online via Canvas. Official announcements and homework assignments will be posted there. Check in on Canvas at least twice per week for announcements and updates.

**Office Hours:** Tuesdays 10-11AM & 4:30-5:30PM

Office hours will be conducted via Zoom. If you intend to come to office hours, please send me an e-mail beforehand so that I can know to expect you. If many people intend to come, I may assign blocks of meeting times.

**Contacting me:** The easiest way to contact me is via email. If you are struggling with anything throughout the semester, mathematical or personal, it is best to alert me as soon as possible.

**Format:** This class will be held in person. However, we need to be ready to switch to Zoom at any point in the semester. If you don't have Zoom you can download it for free from [zoom.us/download](https://zoom.us/download). I will post the Zoom link to our virtual classroom on Canvas in case we ever need it.

I believe that students learn best in an active classroom. This means that participation and questions are encouraged at all times. Exercises on a given day's material will be integrated into each class. It is your choice whether you would like to work on these individually or in groups. Not everyone will feel comfortable working in groups due to the evolving situation around COVID, but working in groups can be very helpful in solidifying your understanding of a topic. If you would like to work together via Zoom outside of class time, my Zoom office hours room is always open as a meeting spot. Collaborating on mathematics is supposed to be a fun and enriching experience. In that vein, you will be expected to treat all of your classmates with respect. If there are any issues, please alert me as soon as possible.

**Our Class Culture:** We will model our class based on the axioms proposed by Federico Ardila:

[Axiom 1] Mathematical talent is distributed equally among different groups, irrespective of geographic, demographic, and economic boundaries.

[Axiom 2] Everyone can have joyful, meaningful, and empowering mathematical experiences.

[Axiom 3] Mathematics is a powerful, malleable tool that can be shaped and used differently by various communities to serve their needs.

[Axiom 4] Every student deserves to be treated with dignity and respect.

**Textbook:** Topology (Second Edition) by James R. Munkres. If you feel that you cannot afford the textbook due to financial hardship, please let me know immediately.

**Course description:** This course serves as an introduction to topology, in particular, to point-set topology. We will cover the following topics: topological spaces, continuous mappings, compact spaces, connected spaces, metric spaces, surfaces as metric spaces, and if time permits we will discuss some of the basics of curves on surfaces. The main text for the course is the textbook by Munkres listed above, which is considered a standard text for the subject. I will provide any additional notes that will be needed throughout the course. The class will be rigorous and students will be expected to give write proofs as a part of their homework problems.

**Course objectives:**

- To explore the foundations of mathematics (logic and set theory) thorough topology at a level and depth appropriate for someone aspiring to study higher-level mathematics and/or to become a professional mathematician.
- To present an introduction to the field of topology, with emphasis on those aspects of the subject that are basic to higher mathematics.
- To introduce the student to what it means to do mathematics, as opposed to learning about mathematics or to learning to do computational exercises.
- To help the student learn how to write mathematical proofs according to the standards of the profession.

### **Homework:**

Homework will be due every two weeks and will generally be due on Wednesdays. Doing homework is essential to learning the material. The grader will grade some, but not all, of the problems. The problem sets will comprise 25% of your overall grade. If you know LATEX or want to learn it, you are welcome to type your solutions. Handwriting is equally acceptable, but since you will be submitting your assignments electronically, you will have to either take pictures of it or scan it. I will generally not accept late assignments, but I will drop the homework with the lowest score. If you need an extension or exception for a homework assignment, please notify me as soon as possible and at least 24 hours in advance of the due date.

### **Exams:**

Both the midterm and final exam will be in the form of a video project.

The midterm video project is due on Monday, October 18<sup>th</sup>.

The final video project is due on Monday, December 13<sup>th</sup>.

Instructions for each project will be given to you closer to their due dates.

### **Grades:**

Your grade will be calculated as follows: 25% homework, 30% midterm exam, 45% final exam.

**Technical Requirements:** You will also need to access Canvas regularly to receive class announcements and obtain homework. You will also submit your homework online via Gradescope.

**Please only upload one file per homework assignment. All files should be converted into pdf format so that we can mark them up online for you to receive comments.**

### **Student Responsibilities:**

All students are expected to maintain professional behavior in the classroom setting, according to the Student Code, spelled out in the Student Handbook. You have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, collusion, fraud, theft, etc. Students should read the Code carefully and know you are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, beginning with verbal warnings and progressing to dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee.

<http://regulations.utah.edu/academics/6-400.php>

**Disclaimer:** If I modify this syllabus, I will let you know in class and update the webpage.

## **University Policies**

1. **The Americans with Disabilities Act.** The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union

Building, (801) 581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services.

2. **University Safety Statement.** The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit [safeu.utah.edu](http://safeu.utah.edu).
3. **Addressing Sexual Misconduct.** Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).
4. **COVID-19 Fall 2021 Statement**  
University leadership has urged all faculty, students, and staff to **model the vaccination, testing, and masking behaviors** we want to see in our campus community.

These include:

- Vaccination
- Masking indoors
- If unvaccinated, getting weekly asymptomatic coronavirus testing

#### **Vaccination**

- **Get a COVID-19 vaccination** if you have not already done so. Vaccination is proving highly effective in preventing severe COVID-19 symptoms, hospitalization and death from coronavirus. Vaccination is the single best way to stop this COVID resurgence in its tracks.
- Many in the campus community already have gotten vaccinated:
  - More than 80% of U. employees
  - Over 70% of U. students
- Visit <http://mychart.med.utah.edu/>, <http://alert.utah.edu/covid/vaccine>, or <http://vaccines.gov/> to schedule your vaccination.

#### **Masking**

- While masks are no longer required outside of Health Sciences facilities, UTA buses and campus shuttles, **CDC guidelines now call for everyone to wear face masks indoors.**
  - Check the CDC website periodically for masking updates—  
<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/fully-vaccinated-guidance.html>
  - Treat masks like seasonal clothing (i.e. during community surges in COVID transmission, masks are strongly encouraged indoors and in close groups outside).

#### **Testing**

- **If you are not yet vaccinated, get weekly asymptomatic coronavirus tests.** This is a helpful way to protect yourself and those around you because asymptomatic individuals can unknowingly spread the coronavirus to others.

- Asymptomatic testing centers are open and convenient:
  - Online scheduling
  - Saliva test (no nasal swabs)
  - Free to all students returning to campus (required for students in University housing)
  - Results often within 24 hours
  - Visit [alert.utah.edu/covid/testing](https://alert.utah.edu/covid/testing)
- **Remember: Students must self-report if they test positive for COVID-19** via this website: <https://coronavirus.utah.edu/>.

- 5. Undocumented Student Support Statement.** Immigration is a complex phenomenon with broad impact—those who are directly affected by it, as well as those who are indirectly affected by their relationships with family members, friends, and loved ones. If your immigration status presents obstacles to engaging in specific activities or fulfilling specific course criteria, confidential arrangements may be requested from the Dream Center. Arrangements with the Dream Center will not jeopardize your student status, your financial aid, or any other part of your residence. The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families. To learn more, please contact the Dream Center at 801.213.3697 or visit [dream.utah.edu](https://dream.utah.edu).
- 6. Drop/Withdrawal Policies.** Students may drop a course within the first two weeks of a given semester without any penalties. Students may officially withdraw (W) from a class or all classes after the drop deadline through the midpoint of a course. A “W” grade is recorded on the transcript and appropriate tuition/fees are assessed. The grade “W” is not used in calculating the student’s GPA. For deadlines to withdraw from full-term, first, and second session classes, see the U’s Academic Calendar.