Course Syllabus
Mathematics 6520, Spring 2021
Intro to Algebraic Topology

Professor Priyam Patel
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Office: JWB 205
Class Hours: MWF, 10:45-11:35AM
Class Location: Zoom

Course Page: Online via Canvas. Official announcements and homework assignments will be posted there.

Office Hours: Office hours will be conducted via Zoom. If you intend to come to office hours please do try to 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.


Course description: This will be a standard course in algebraic topology, covering chapter 0-3 of the textbook (omitting some topics for the sake of time). See the graduate bulletin for more details.

Course objectives:
• To explore the foundations of mathematics through topology at a level and depth appropriate for someone aspiring to complete a masters or PhD in mathematics.
• To present an introduction to the field of topology, with emphasis on those aspects of the subject that are basic and foundational to higher mathematics.
• To prepare you for a qualifying exam in algebraic topology.
• To help you sharpen your skills on “how to learn” high level mathematics.

Quals course: An A in this class corresponds to a “high pass” for the qualifying exam, and a B+ or A- corresponds to a “pass” for the exam. You will have another chance to pass the qualifying exam about 4 weeks after the conclusion of this course.

Homework: Homework will be due every two weeks and will generally be due on Fridays. Doing homework is essential to learning the material and preparing you for the exams. The grader will grade some, but not all, of the problems. Once you receive feedback for your homework, you will have one chance to resubmit the problems that were graded to be regraded. I will average the two homework scores. If you need extensions on homework, please let me know as early as possible. Keep in mind that getting an extension might mean that you have less time to resubmit problems for regrading. Your homework will be submitted through Gradescope.

Exams:
There will be one closed book midterm exam that will take place on Friday March 12, during class time.
The closed book final exam will take place on Wednesday May 5, 10:30 AM-12:30 PM.

Grades: Your grade will be calculated as follows: 30% homework, 20% midterm exam, 50% final exam.

The homework and midterm are meant to help you practice for the final exam. If you earn a “high pass” or “pass” on the final, I will not count your homework and midterm scores against you to lower your grade.

Metacognition (Learning how to learn): One of the goals of this class is to help you sharpen your skills on “how to learn” high level mathematics. Metacognitive practices help students become aware of their strengths and weaknesses as learners, writers, readers, test-takers, etc. This information is then used in figuring out how
to expand one’s knowledge and abilities in these areas. You will be asked to answer metacognitive questions like “Where did you get stuck?” or “What would you do differently next time?” on homework assignments and the midterm exam to aid in this reflection and help you improve your skills before the final exam.

**Format:** This class is listed as an IVC course in the university catalog, which stands for Interactive Video Conferencing. This means that the class will be delivered “synchronously”, i.e. live and at the time listed but entirely online. I will post the Zoom link to our virtual classroom on Canvas.

Classes will be recorded and made available on Canvas so, if you need to miss a lecture, you can always watch it later. Please note that Zoom breakout rooms are not recorded. Class recordings will not be made available to the general public and will be deleted at the end of the semester, but be aware that a recording will exist for a few months. Because of this, please refrain from giving out any sensitive personal information during class time, such as grade information, ID numbers, housing details, etc.

**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.

Apart from the material covered, this course also aims to offer a meaningful and inclusive experience to every participant of this class. My hope is that throughout the course you feel challenged by the material while simultaneously feeling supported by your peers, including myself. Throughout this course please prepare to take on the role of both an active participant as well as an active listener and be patient with not only your own learning but your fellow classmates. I will integrate group exercises into the material whenever I can, and we will be using Zoom breakout rooms for the group exercises. It may feel awkward at first, but working in groups can be very helpful in solidifying your understanding of a topic and it is important to build collaboration skills for the future. Collaborating on mathematics is supposed to be a fun and enriching experience. In that vein, if at any point you feel that any of the above goals are not being fulfilled in our learning environment, please do not hesitate to contact me (anonymously if that is more comfortable—see Canvas for anonymous feedback form) and we can work together to remedy the problems.

**Technical Requirements:** To attend the live version of the class you need a computer with the Zoom software and a relatively strong internet connection. A microphone and camera are recommended for class attendance but not at all required. In fact, attendance in general is recommended but not required.

You will, however, need to enter the Zoom room during the two exams, **at the regular class time and the announced final exam time.** If you can turn on your camera for the exam, that would be great, but it is not required.

If you have a tablet or a similar computerized writing surface, the simplest method for taking the exam is to download the exam, write directly on that, and then reupload it to Gradescope. Otherwise, if you have a printer you can print out the exam, write on that, and then scan and upload the writeup. If you do not have a printer you can simply write your solutions on a blank piece of paper, clearly indicating which problem you are solving. If you do not have a scanner there are many apps that convert your smartphone into a scanner. **Please make sure you have an app that can convert the files into pdf format.**

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

**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.

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. 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.

**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](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.