

MAT 215B: (Graduate) Topology Syllabus

Melissa Zhang

Winter Quarter 2026

1 Course information

Instructor: Zhang, Melissa

Instructor Email: mlzhang@ucdavis.edu

Sec: 001

CRN: 41160

Course Description (280 series) Fundamental group and covering space theory. Homology and cohomology. Manifolds and duality. CW complexes. Fixed point theorems.

Course Prerequisites: Graduate standing or consent of instructor.

Lectures: MWF 1:10–2:00 PM, Hart 1116

Office hours: Tuesdays 1–2 pm and Thursdays 10–11 am, MSB 2142

Textbook: *Algebraic Topology* by Allen Hatcher

Course websites: Lecture materials and homework will be posted on [my personal website](#). Problem sets will be submitted and graded on Canvas/Gradescope.

Class calendar I will keep an updated version of my personal lecture planning calendar on the class website. This includes information like exam dates, homework due dates, and any variations in class or structure (e.g. if I have to travel).

I will update the calendar as needed. Please note that the calendar is very much subject to change. In particular, planned lecture topics are only a rough reference, as the pacing of the course will be modified as needed.

Course content In 215B, we will focus on Homology (Hatcher Chapter 2), relying on material covered in 215A. See the department syllabus [here](#). There may be some deviations from the department syllabus; for example, we will need to spend some time covering the homological algebra underpinning homology for spaces.

2 Assignments and Grading

Grades Grades will be determined using the following criteria:

Problem Sets	20%
Midterm Exam	40%
Take-Home Final Exam	40%

Attendance is not mandatory. However, it is the student's responsibility to keep up with announcements, which will be communicated via Canvas Announcements.

Problem Sets Problem sets will be posted on Saturdays and will be due **Friday nights at 9pm on Gradescope**. Submissions must be typeset, but you may insert handdrawn figures as needed.

There will be 6 problem sets total. No extensions will be given. At the end of the quarter, I will drop your one (1) lowest problem set grade. Keep in mind that the main purpose of these sets is to help you make sure you understand the course content. I would prefer that you turn in half of a set than nothing at all.

Problem sets will be mostly graded for completion, with one problem each week selected for more careful grading.

Exams There will be exams:

- Pen-and-paper Midterm Exam: **Friday, February 20, 2026** during usual time in usual lecture room
- Take-home Final Exam: due **Wednesday, March 18, 2026** at 9 PM on Gradescope.

There will be **no makeup exams**.

Letter grades: At the end of the quarter, letter grades will be assigned based on the distribution of numerical grades.

Disclaimer: The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary. It is the responsibility of the student to seek clarification of the grading policy and/or course requirements and procedures from the instructor.

3 Course policies and procedures

Diversity and inclusion statement: In this classroom, you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class. (Source: modified from https://docs.asee.org/public/LGBTQ/Diversity_Statement.pdf)

Classroom expectations: We will discuss mathematics together on a daily basis. These discussions are important because they provide for a richer classroom discussion, and they ensure that we all encounter different ways – correct and/or incorrect – of thinking about the material. It will be important for you to listen attentively to your peers' thinking, even if you think you already have a full solution to the discussion problem. I expect you to respond respectfully and carefully to your peers' comments. When you are working in groups, I expect you to help your group members to all work at the same pace; it will be important for you to keep your peers informed about the choices you are making, and for you to check in with them to make sure they follow your thinking and are ready to move on.

Academic honesty: See the UC Davis Code of Academic Conduct at

<https://ossja.ucdavis.edu/code-academic-conduct>

You are encouraged to discuss homework with others, but any solution that you hand in must be thought through and worked through on your own and written down in your own words.

Accessibility For accommodations for disabilities, go to

<https://sdc.ucdavis.edu>

and begin the process as soon as possible. I will need to approve a letter from the Student Disability Center before making any accommodating changes to the policies stated on this syllabus for you. It is the student's responsibility to make sure all accommodations are set up through the SDC ahead of exams or class meetings where accommodations are needed.