

Instructor: Christy Hazel

Email: chazel@math.ucla.edu

Office: MS 6304

Office hours: Mondays Wednesdays 2–3pm in my office right after class and Wednesdays Mondays 5:30–6:30pm on Zoom (link is on CCLE). There will also be optional weekly problem sessions on Thursdays 2-3pm in MS 6221.

Class meetings: 1:00-1:50PM MWF in MS 5127. Lectures will also be live streamed via Zoom and recorded and posted on CCLE.

Course website: <https://ccle.ucla.edu/course/view/21F-MATH227A-1>

Textbooks: *Lecture Notes in Algebraic Topology* by James F. Davis and Paul Kirk

Algebraic Topology by Allen Hatcher (free pdf is available on the author's website [here](#))

Cohomology Operations and Applications in Homotopy Theory by Robert E. Mosher and Martin C. Tangora

Prerequisite: Math 225C or equivalent. A prepared student should be familiar with the main topics from Chapters 0–2 in Hatcher.

Course objectives: We will discuss cohomology and homotopy theory, roughly covering Chapters 3–4 in Hatcher. Topics will include the universal coefficient theorem, the cup product, orientations and Poincaré duality, higher homotopy groups, Whitehead's theorem, cellular approximations, CW approximations, the Hurewicz theorem, stable homotopy groups, spectral sequences, and Brown representability. We won't exactly follow one textbook, and we may take detours based on class interest and prerequisite knowledge.

Campuswire: A Campuswire is set up for the course (see the tab “Campuswire” on CCLE), and you should use this to ask any questions that come up outside of lecture. I will be monitoring the discussion and occasionally answering questions, but I encourage students to answer other student questions.

Grading: All registered students that actively engage in the course and complete at least two homework presentations (see “Homework presentations” below) will receive an A at the end of the term. Active engagement can be synchronous or asynchronous and can look like attending lectures and asking questions, coming to and participating in problem sessions, and/or engaging on the Campuswire. There will be no exams or collected assignments.

Homework: There will be suggested weekly homework assignments posted on CCLE. While these won't be collected, working through problems is essential for your learning. To encourage regular discussion of homework problems, each week we will have an optional problem session where students can present homework solutions (or partial solutions), ask questions about problems, or work together on problems.

Homework presentations: Each student will be required to present two homework problems. These can be done in one of the weekly problem sessions, or if you can't make the problem sessions, you can post your solution on Campuswire under “Homework solutions”.

Class culture: This will be a small class, and we will be spending a lot of time discussing mathematics together, both online and in person. *It is essential that we all treat each other with respect.* Different people will have different mathematical (and personal) backgrounds. For everyone's learning experience, it is important to create a space where people feel comfortable asking questions and discussing material.

For me this includes, but isn't limited to, coming to lecture prepared, creating space and time for questions, and following up on any questions we were unable to resolve in previous classes.

For you this includes, but isn't limited to, listening when others speak, keeping distractions (cell phones, other work) to a minimum, and asking questions in a respectful and appropriate manner.

For all of us this also includes not interrupting one another and treating each other's questions with respect.

Anonymous hotline: To help maintain a positive class culture, I made an [anonymous survey](#) where you can submit any comments, concerns, questions, or suggestions during the term. I will be checking this regularly and will not share these responses with anyone.

COVID-19 instructions: Ensuring a safer campus depends on each of us following the latest UCLA health and safety guidelines. While campus policies must be modified to address changing local, state, and national orders and guidance, the most current information is available at <https://covid-19.ucla.edu/>. At present, each of us:

- Is responsible for wearing an [approved mask](#) that fully covers our nose and mouth for the duration of class, office hours, or any other course activity.
- Must be fully vaccinated or have submitted an exception request.
- Is required to complete [daily symptom checks](#) prior to coming to campus, regardless of vaccination status, and must stay home if you are not cleared by the symptom survey and/or are advised by the Exposure Management Team to quarantine or isolate. Note lectures will be recorded and posted, so there is no pressure from this class to appear in person. Please do not come to campus if you are sick!
- Will refrain from eating or drinking during class unless medically necessary. In necessary situations, please do so quickly and then put your mask back on.

University Resources

Title IX: Title IX prohibits gender discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking. If you have experienced sexual harassment or sexual violence, you can receive confidential support and advocacy at the CARE Advocacy Office for Sexual and Gender-Based Violence, 1st Floor Wooden Center West, CAREadvocate@careprogram.ucla.edu, (310) 206-2465. In addition, Counseling and Psychological Services (CAPS) provides confidential counseling to all students and can be reached 24/7 at (310) 825-0768. You can also report sexual violence or sexual harassment directly to the University's Title IX Coordinator, 2241 Murphy Hall, titleix@conet.ucla.edu, (310) 206-3417. Reports to law enforcement can be made to UCPD at (310) 825-1491.

Accessibility: If there are accommodations that can be made to better facilitate your learning, please feel free to reach out to the instructor or to the [Center for Accessible Education](#).