

Math 442: Introduction to Algebraic Topology

Instructor: Kristen Hendricks

E-mail: kristen.hendricks@rutgers.edu

Office Hours: M 2-3 and F 9-10 over Zoom via Canvas Integration. I also plan to eat lunch in the Livingston Dining Hall Mondays right after class and you are welcome to discuss math with me there.

Non-Canvas Website: www.math.rutgers.edu/~kh754/Math442.html . Course content can be found both here and on Canvas.

Location and Time: Lecture MTh 10:20-11:40 AM in TIL-252.

Content: This course is a first look at algebraic topology. We will discuss CW complexes, the fundamental group, covering spaces, plane curves, and basic homology and cohomology. Near the end of term we may discuss some special topics according to student interest (with knot theory and vector bundles as the two most likely options).

Textbook: A. Hatcher, [*Algebraic Topology*](#). Available free of charge online. It may also be helpful to read Munkres' discussion of the same topics.

Notes: Lecture notes will be made available online by the evening before each lecture, and amended shortly after lecture with any typo corrections or other changes. You are strongly encouraged to take a look at the notes in advance.

Homework: Homework will be assigned weekly and due on Mondays at 5 pm. Homework will be collected via a mirror site on Canvas; the relevant Assignment will remain open for submission until 6 pm, to account for the possibility of technical difficulties, and will then close. The first homework is due January 29. There will be twelve homeworks in total. No late homework will be accepted, but your lowest two homework scores will be dropped in computing your grade.

You are encouraged to work together on your homework. However, you must write up all solutions in your own words, and credit all your collaborators. You are also welcome to use any resources on the Internet that you want – in particular, you are welcome to read the Math Stack Exchange and/or Math Overflow discussions of problems in Hatcher. A good rule of thumb is that you should try to solve every problem yourself for at least half an hour, then ask a classmate or me for thoughts, then try looking online for discussion of the problem.

A subset of the homework will be graded carefully, and some points will be given for completeness of the rest of the assignment. There will be one point of extra credit on each homework possible for quality of presentation -- typesetting your work is always enough to earn this, but the grader may also choose to award it for handwritten work that is tidy and has well-drawn figures. Homework solutions will be posted online promptly.

Quizzes and Exams: There will be an eighty-minute midterm exam in class on **Thursday, March 21**. There will also be a final exam scheduled **Monday, May 6 8-11 am**. Exams will be taken closed book and closed notes. If you miss the midterm exam for a documented good reason, such as serious illness or other comparable emergency, your grade will be based on your final and homework scores. Make-up

finals will only be given in extreme cases. In exam circumstances and otherwise, students are expected to be familiar with and abide by the [academic integrity policy](#).

Disability Accommodations: If you need accommodations for the course, please bring me a Letter of Accommodations as early in the term as possible. There are detailed instructions on how to do this in the “University Resources” section of this syllabus.

Grading: Grades will be computed as follows:

- Homework: 30%
- Midterm: 35%
- Final: 35%

A reasonable curve will be applied to the composite numerical scores. The bar for an A will not be set higher than an overall 90% in the course, and may at my discretion be lower.

Schedule: We will cover most of Chapters 0-2 of Hatcher, and part of Chapter 3, followed by some special topics. Precise reading will be posted as we go along.

University-Level Resources:

Student-Wellness Services:

Counseling, ADAP & Psychiatric Services (CAPS)

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/ <http://health.rutgers.edu/medical-counseling-services/counseling/>

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

Violence Prevention & Victim Assistance (VPVA)

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901/ www.vpva.rutgers.edu/

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling, and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

Disability Services

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/>

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

Scarlet Listeners

(732) 214-9069 / <https://rutgers.campuslabs.com/engage/organization/scarletlisteners>

Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.