

MATH 7321: TOPOLOGY 3 SPRING 2024

Instructor information.

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Course description. This is a course in classical algebraic topology and its applications. Here are some possible topics.

- Homotopy groups
- Fibrations, fiber bundles, covering spaces
- Loop spaces
- Whitehead, Hurewicz, and Freudenthal theorems
- Eilenberg–MacLane spaces
- Cohomology theories
- Spectral sequences
- Cohomology operations

Assignments and grading.

- Grades will be based primarily on a final expository project.
- Optional homework exercises will be provided for practice and feedback.
- Homework is to be typeset in Latex and submitted by email.

Resources. Lectures will draw from some of the following texts. Lecture notes and further materials will be posted to the course website.

- Munkres, *Topology*
- Bredon, *Topology and Geometry*
- Hatcher, *Algebraic Topology* (<https://pi.math.cornell.edu/~hatcher/AT/AT.pdf>)
- Husemoller, *Fibre Bundles*
- McCleary, *A User's Guide to Spectral Sequences*
- Milnor and Stasheff, *Characteristic Classes*
- May, *A Concise Course in Algebraic Topology*
- Mosher and Tangora, *Cohomology Operations and Applications in Homotopy Theory*
- Spanier, *Algebraic Topology*
- Strom, *Modern Classical Homotopy Theory*
- Whitehead, *Elements of Homotopy Theory*

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