

# MA551: INTRODUCTION TO TOPOLOGY

Fall 2017

**Instructor:** Tye Lidman

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**Course Location:** SAS 1220

**Course Time:** TuTh 11:45-1PM

**Office:** SAS 3246

**Office Hours:** WTh 10:30-11:30AM

**Course Website:** [www4.ncsu.edu/~tlidman](http://www4.ncsu.edu/~tlidman)

**Course description:** Set theory, topological spaces, metric spaces, continuous functions, separation, cardinality properties, product and quotient topologies, compactness, connectedness. Function spaces, fundamental group, covering spaces, manifolds, classification of surfaces, if time.

## Major course objectives:

- Develop topological/spatial intuition for approaching problems and convert this into rigorous mathematics
- Use topology as a framework to solve problems in other fields of mathematics
- Construct tools for comparing and contrasting different spaces

**Prerequisites:** MA 426. Strong mathematical maturity and comfort with proofs. It will be helpful to have some familiarity with vector spaces and groups.

**Textbook:** *Topology*, Munkres. *Algebraic Topology*, Hatcher. (The latter is free online.)

**Grading:** Homework Assignments: 30%

Midterm Exam: 30%

Final Exam: 30%

Miscellaneous: 10%

## Exams:

*Midterm Exam:* Thursday, October 12, in class.

*Final Exam:* Tuesday, December 12, 8AM, 1220 SAS Hall.

**Assignments:** Homework assignments will be due Thursdays at the end of class. Late homework will in general not be accepted. The lowest two scores will be dropped to compensate for the strict policy.

Homework must be legible, clearly organized, and coherent or you will not receive credit. There will be a high standard for rigor and mathematical exposition in this class, exceeding that of standard undergraduate courses. Homework may be handwritten, but LaTeX is preferred. Typesetting things in LaTeX is an important skill to develop early in your career and is much faster than handwriting.

You are welcome to work in groups, exchange ideas and help each other understand how to approach problems, but the work you turn in must be your own! You must cite in your work any sources other than the course materials that you have used (this includes the names of other students you have worked with on an assignment, Wikipedia, etc).

**Academic integrity:** All students are required to comply with the university policies on academic integrity in the code of student conduct policy (NCSSU POL 11.35.1). While I strongly recommend

forming study groups and checking your answers with your classmates on homework or worksheets, all work submitted must be your own. This includes copying others' work or answers on homework and exams. The purpose of the homework is to learn the material. Any violation of this will be considered cheating.

**Non-discrimination policy:** NC State affirms its commitment to maintain an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, gender identity, or sexual orientation is a violation of state and/or federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, gender identity, or sexual orientation also is a violation of state and/or federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at <http://policies.ncsu.edu/policy/pol-04-25-05> or [http://www.ncsu.edu/equal\\_op](http://www.ncsu.edu/equal_op). Any person who feels they have been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.

**Electronic privacy:** Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web-postings, where relevant to the course.

**Students with disabilities:** Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with the Disability Services Office at Suite 2221, Student Health Center, Campus Box 7509, 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (REG 02.20.01).

**Mental Health:** The Counseling Center at NC State is an important resource. They have a diverse staff trained to address academic, emotional and social concerns. They are available 24/7 at (919) 515-2423.

**Disclaimer:** This document, and consequently the terms of the course, may be modified as needed throughout the course. Any changes will be announced with reasonable notice.