

# MA 651: Topology II

Spring 2024  
CB 347, MWF 10-10:50

Kate Ponto

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**Course Website:** [www.ms.uky.edu/~kate/teaching/s24\\_651.html](http://www.ms.uky.edu/~kate/teaching/s24_651.html)

Many fundamental questions in topology are very difficult to answer. For example, it can be difficult to determine if two topological spaces are homeomorphic. The idea of algebraic topology is to transform these questions to questions in algebra that may be easier to answer.

There are many ways to convert questions in topology to questions in algebra. This semester we will focus on the fundamental group and its applications. The main topics for this semester are:

- the fundamental group,
- covering spaces,
- the van Kampen theorem.

I expect to also start discussing homology.

**Text:** *Introduction to Topological Manifolds* by Lee, second edition.

An electronic copy of this book is available through the library website.

**Alternative Texts:** If you are interested in additional references the following texts may be helpful:

- *Topology* by Munkres, second edition.
- *Algebraic Topology* by Allen Hatcher. This book is available for **free** on the author's website.
- *Algebraic topology* by Edwin Spanier.
- *Algebraic topology* by Tammo tom Dieck.

**Exams and Assignments:** All exams and assignments should be neat, legible, and written in complete sentences.

*Exams:* There will be two exams during the semester. They are tentatively scheduled for:

Wednesday, February 21,  
Wednesday, April 3.

If these dates change, an announcement will be made in class at least a week in advance.

*Final Exam:* The final exam for this course will be

Monday, April 29 at 10:30 AM.

It will be cumulative.

*Homework:* Homework will usually be assigned each class and will be due weekly. Assignments and due dates will be posted on the course website.

Homework due dates are firm.

I will grade selected problems from each assignment and I will give partial credit. The lowest homework score will be dropped at the end of the semester.

I **strongly** encourage you to discuss assignments with other students, but your solutions must be written up independently. *Copying a written solution from another student and submitting it as*

*your own will be considered cheating.* Please see the UK office of Academic Ombud Services website ([www.uky.edu/Ombud](http://www.uky.edu/Ombud)) for information about plagiarism.

I am delighted to discuss homework. However, if you have questions don't wait until the day before the homework is due to come talk to me.

**Grades:** Final grades will be determined using the following distribution:

	Percentage of course grade
Final exam	30
Exam 1	20
Exam 2	20
Homework	30

The scale for assigning final grades will be no more strict than the standard scale.

**Classroom Demeanor:** Turn off all cell phones or other electronic devices prior to entering the classroom. An attitude of respect for and civility towards other students in the class and the instructor is expected at all times.

**Academic Policy:** For policy regarding attendance, accommodation due to disability, and nondiscrimination statement please see <https://www.uky.edu/universitysenate/acadpolicy>.

**Attendance.** Regular attendance is expected and is vital to success in this course. Make up work will be accepted only in the event of an excused absence as outlined by UK Senate Rule 5.2.4.2.

If you are anticipating an absence for a major religious holiday you must notifying me in writing of anticipated absences no later than the last day in the semester to add a class. For other scheduled absences you must notify me at least a week before. For unscheduled absences, not later than a week after. I require appropriate verification for absences.

You are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused) per University policy.

You are responsible for announcements made in class as well as any emails sent to your UK email account

**Academic Integrity:** Please see <https://www.uky.edu/universitysenate/ao> for expectations for academic integrity.

Because a major focus of this course is on developing your skills and fostering creativity, you must not consult outside resources on assignments for this course. You may not copy from any online sites (e.g. Course Hero or Chegg) or utilize composition technologies (e.g. ChatGPT or other GenAI software). Work submitted by student – all process work, drafts, low stakes writing, final versions, and all other submission – will be generated by the students themselves. For the purpose of this course, any use of these sites or tools will be considered academic misconduct and consequences will follow University policies. If you have any questions or concerns about this policy, contact me before submitting any assignments.

**Accommodations due to disability:** If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (DRC). The DRC coordinates campus disability services available to students with disabilities. It is located on the corner of Rose Street and Huguelet Drive in the Multidisciplinary Science Building, Suite 407. You can reach them via phone at (859) 257-2754 and via

email at [drc@uky.edu](mailto:drc@uky.edu). Their web address is <https://www.uky.edu/DisabilityResourceCenter/>.

**Diversity, Equity, and Inclusion** The University of Kentucky is committed to our core values of diversity and inclusion, mutual respect and human dignity, and a sense of community (Governing Regulations XIV <https://www.uky.edu/regs/gr14>). We acknowledge and respect the seen and unseen diverse identities and experiences of all members of the university community (<https://www.uky.edu/regs/gr14>). These identities include but are not limited to those based on race, ethnicity, gender identity and expressions, ideas and perspectives, religious and cultural beliefs, sexual orientation, national origin, age, ability, and socioeconomic status. We are committed to equity and justice and providing a learning and engaging community in which every member is engaged, heard, and valued.

We strive to rectify and change behavior that is inconsistent with our principles and commitment to creating a safe, equitable, and anti-racist environment. If students encounter such behavior in a course, they are encouraged to speak with the instructor of record or the colleges diversity officer (<https://www.uky.edu/inclusiveexcellence/college-diversity-inclusion-officers/>), who is charged with addressing concerns about diversity, equity, and inclusiveness. Students may also contact a faculty member within the department, program director, the director of undergraduate or graduate studies, the department chair, or the dean. To submit an official report of bias, hatred, racism, or identity-based violence, visit the Bias Incident Support Services website (<https://www.uky.edu/biss/report-bias-incident>).