Math 4225, Topology, Spring 2026

1. Instructor: Maosheng Xiong
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   Office: Rm 3455; Tel: 2358-7456;
   Office hours: Friday, 14:00—14:50am or by appointment.
   Course website: https://canvas.ust.hk/courses/69457
2. Teaching Assistant:
   Shujian LI, slidv@connect.ust.hk
3. Meeting Time and Venue:
   Lectures: Mon, 13:30—14:50pm; Fri, 9:00—10:20, Rm 4579
   Tutorial: Weni, 15:30—16:20pm, Rm 1409
4. Course Description:
   3 credit units. Prerequisite: Math 2031/Math 2033/Math 2043.

Topology is the theory of global aspects of spaces. The subject consists of two parts: point-set topology and algebraic topology. The main focus of this course is the point-set topology, we will cover basic topics such as metric space, open and closed, continuity, topological space, comparing topologies, closure, subspace, product topology, quotient topology, Hausdorff space, connected space, compact space. As for algebraic topology, if time permitting, we will also talk about the fundamental groups.

5. Intended Learning Outcomes
   Upon successful completion of this course, students should be able to:

No.	ILOs
1	Recognize and use appropriately important terms and definitions in topology.
2	Use topology notation to reformulate other seemingly unrelated problems.
3	Apply topology in familiar situations.
4	Solve real and hypothetical problems by identifying the underlying topological problem.

6. Assessment Scheme

Assessment	Assessing Course ILOs
20% by homework assignment	*1,2,3,4*
20% by online quiz	*1,2,3,4*
20% by midterm exam	*1,2,3,4*
400% by final exam	*1,2,3,4*

7. Grade Description

Grades	Short Description	Elaboration on subject grading description
A	Excellent	The student has mastered almost all concepts and techniques of topology taught in the course, has excellent understanding of the deepest content of the subject, and acquired workable knowledge for further studies.
B	Good	The student has mastered basic concepts and techniques taught in the course, yet the understanding of some challenging concepts and techniques may not be deep enough for further studies.

C	Satisfactory	The student meets the minimum expectation of the instructor, has acquired some basic concepts and techniques of the subject, yet some concepts were not clearly understood.
D	Marginal Pass	The student is only able to recall some fragments of topics and is able to understand some of the easiest concepts and techniques.
F	Fail	The student does not have sufficient understanding of even some fragments of topics, and is not even able to understand the easiest concepts and techniques.

8. Course AI Policy

Students are allowed to consult any person (including the instructor, TA, classmates, friends outside HKUST) in any homework for ideas and hints, but are required to write up the solutions by themselves.

The use of ChatGPT or other generative AI is allowed. However, please be warned that at the current stage of development of AI, the response to problems in advanced courses – especially those in pure mathematics – is not quite reliable. Students should be critical of the response generated by AI and do not blindly copy the generated responses to your homework.

9. Student Learning

Textbook:

1. James R. Munkres, “Topology”, 2nd edition, Pearson New International Edition.

10. Teaching and Learning Activities -
    a. Lectures: focus on course materials, 3 hours per week
    b. Tutorials: 1 hour per week

11. Academic Integrity

Students are expected to adhere to the university’s academic integrity policy. Students are expected to uphold HKUST’s Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct.