

Math 4225 Topology

Course Outline 2023-2024 Spring

Course Instructor: Prof. M Yan

3 credits

Prerequisite

The course assumes the students have taken in Math2033/2043 Mathematical Analysis. Students not fulfilling the prerequisite need approval from the instructor.

Course Description

Topology is the theory of global aspects of spaces. The subject consists of two parts: point set topology, and algebraic topology. The course is an introduction to the most basic parts of the two aspects.

1. Point set topology: metric space, open and closed, continuity, topological space, comparing topologies, closure, subspace, product topology, quotient topology, Hausdorff space, connected space, compact space.
2. Combinatorial topology: graph, Euler's one trip criterion, Euler formula, simplicial complex, CW-complex, Euler number, classification of surface.

Intended Learning Outcome

1. Understand the deeper conceptual aspects of analysis through point set topology.
2. Understand the language for describing combinatorial objects, and the basic mathematical theory of such objects.
3. Establish a global mindset on mathematics, and beyond mathematics.
4. Practise on logical reasoning and critical thinking, through more advanced mathematics.

Lecture Note

Introduction to Topology: Theory and Applications, by Prof Min Yan

Homework

Please check the assignment section of canvas for homework. Homework is usually assigned on Friday and the deadline is the following Friday. The answer will be posted by the deadline. After the answer is posted, the homework is not accepted.

Grade

There will be one midterm and one final exam, accounting for 30% and 50% respectively of the final grade. The homework is counted as 20% of the final grade.