MATH 250: TOPOLOGY I

FALL 2025 SYLLABUS

Content: Topologies, bases, continuity, open maps and closed maps, product spaces, connectedness, compactness, separation axioms, metrizable spaces, covering spaces, homotopy, fundamental groups.

Instructor	Minh-Tâm Trinh (*initial period:* Dennis Davenport)
Time	MW 12:40–2:00 PM
Place	DGH-217
Webpage	https://mqtrinh.github.io/math/teaching/howard/math-250/

I plan to follow the textbook by Munkres, *Topology*, 2nd Edition, which can be found online. If you cannot acquire this copy, please let me know. The topics that we will cover can be grouped as follows:

(1) Topological Spaces and Continuous Maps
(2) Connectedness and Compactness
(3) Separability and Metrizability
(4) Covering Spaces and Fundamental Groups

Logistics

I will maintain a copy of the syllabus on the course webpage. If we need to make changes to the tentative schedule on the next page, or any other aspect of the course, then I will update the syllabus online and announce the update(s) over email.

I do not plan to have an attendance grade. If you get sick, please stay at home and take care of yourself—it will be ok.

Emails. If you need to email me about the course (*e.g.*, to schedule a time for an office hour), please put "MATH 250" in the email subject. That helps me to keep things organized. Please feel free to address me as "Minh-Tam" or "Dr. Trinh" or "Professor Trinh".

Grades. There will be an initial reading assignment, six problem sets (each 6% of the total grade), a midterm exam (24%), and a final exam (40%). The midterm will be held in class on **Wednesday, October 8**.

Problem sets will be due by 11:59 PM on their due dates. I plan to use the following submission policy: You can always submit homework **up to two days late** for 50% credit. You also get **two chances** to waive the late penalty. Finally, I may grant a further extension or waiver if you are seriously ill, or facing a grave personal situation.

Please keep in mind the academic regulations of the Graduate School, especially the zero-tolerance policy for cheating and plagiarism. For instance, on problem sets, please cite any collaborators or sources used, including any large language models (LLMs) or AI-based tools. Please also keep in mind the policy on generative AI from the Office of the Provost.

At present, I would strongly discourage the use of LLMs to find mathematical information, as the risk of hallucinations and other errors is extremely high. Such tools may remain useful for non-mathematical tasks, like converting handwritten text to LaTeX. In any event, please cite any use of these tools.

Please write in complete sentences, in simple language. Here are some thoughts by J. S. Milne about mathematical writing that I like, and try to follow: (1) "Mathlish" (2) "Tips for Authors" (*note:* satirical!).

Schedule

Week	Munkres §	
8/18		
8/25	12–13, 18	
9/1 (*)	16, 20	PS1 due Wed, 9/3
9/8	15, 19, 22	
9/15	17, 21, 23	PS2 due Wed, 9/17
9/22	24–26	
9/29	27–28, 30	PS3 due Wed, 10/1
10/6	31	Midterm (**Wed, 10/8**)
10/13 (**)	51–52	
10/20 (◇)	54, 59	
10/27	58, 68–69	PS4 due Wed, 10/29
11/3	70, 72–73	
11/10	53	PS5 due Wed, 11/12
11/17	79, *bonus topics*	
11/24 (***)		PS6 due Mon, 11/24
12/1		*Reading Period*
12/8		*Final Examinations*

(*) No class on Mon (9/1): Labor Day.
(**) No class on Mon (10/13): Mental Health Day.
(◇) Anticipated substitute on Mon and/or Wed, due to work-related travel.
(***) No class on Wed (11/26): Beginning of Thanksgiving Recess.