Math 590: Introduction to Topology – Winter 2021

Instructor: Jun Li   **Zoom meeting**: Link   **- MWF 12-1pm**:

Email:lijungeo@umich.edu   **Office Hours**: Link   - M,W 11:00 am - 12:00

Textbook: Topology / James R. Munkres.
For the applied part, we'll post more materials. A possible reference is Elementary applied topology. All HW, reading assignments, additional notes can be found at Canvas and at Course Webpage.

DISCLAIMER: : This syllabus is not necessarily what exactly is going to happen in this class. I feel that in this case the journey is equally (if not more!) important than the destination itself, and so some flexibility should be essential in targeting the material to YOUR taste, pace, and interests. I strongly encourage continuous feedback and input on the course; and I reserve the right of making the final decisions.

Course description: This course covers the fundamentals of general (point-set) topology and its applications. The first half of the course will cover metric spaces, topological spaces, continuous functions and homeomorphisms, separation axioms, quotient and product topology, compactness, and connectedness. Note that we'll skip most of chapter 1 and 4 of Munkres's book. In the last month, we will also cover some topics with potential applications. Possible topics include Morse theory (on surfaces) and Reeb graphs, ABC's of functional analysis, knot theory, configurations spaces (in robotics) and a light introduction to topological data analysis. Audience are strongly encouraged to suggest their favorite topics.

Course Website: We will make the all the material available on Canvas.

Homework: There are approximately 6-8 homework assignments. Problem sets and deadlines will be posted on Gradescope. Working on the problem sets with your classmates will be strongly encouraged. Indeed, we will use some **Wednesday** classes to do group works on those homeworks. However, anything you turn in with your name needs to be your own work and your own word. Homework will count 50% of the total grade.

    Grader : Thomas Cohn, **Email**:COHNT@umich.edu

Exams There will be no written exams. Instead, we have a final oral exam. A group of 3 will be work together, submitting a initial proposal, presenting in class, and uploading the slides in Gradescope.

 Oral exams dates: In class, last two weeks. We'll send out more details around March 10.

 Choice of topics: Anything related to topology. For example, your favorite theorem in topology, or anything you are interested that is related to topology.

Grading: Grading will based on Delivery 33 % + Organization 33 % + Content 33%. Group members will receive the same grade, unless there is a reported issue in credit distribution.

Participation (15%): In order to make the course more inclusive, we spend one meeting per week doing group works(=homework). We hope by March 10th everyone knows everyone, and this will facilitate the group peer seeking process. We will not take attendance. It is fairly easy (at least in my opinion) to obtain the full credit in this part: one just needs to give the class the impression that he or she shows up in $\geq 40\%$ meetings, and he/she has no problems finding a final group.

Grading Policy: 50% HW + 15% Participation + 35% Final oral exam = 100% total.

Academic Integrity: According to the *LSA Community Standards of Academic Integrity*, the College "prohibits all forms of academic dishonesty and misconduct. " You are encouraged to discuss homework problems, but **you must write up your solution independently**. Do NOT cheat in exams. If you cheat in this class, you risk failing the course. If you have any questions about what is, or is not, allowed in this course, please ask.

Accommodations: If you think you need an accommodation for any reason(athletic, extracurricular, religious, or personal reasons), please let me know as soon as possible.Proper documentation must be provided to me at least two weeks prior to the need for a exam accommodation.

Enjoy this class!