MA 670-1C – Topology I
Spring 2025

Class meets: Monday, Wednesday, Friday 10:10–11:00, UH 4002
Instructor: Dr. Nándor Simányi
Office: UH 4014, phone: 205-934-2154, E-mail: simanyi@uab.edu
Office hours: Mondays and Wednesdays, 12:00–1:00.
Special web site dedicated to this course:
https://people.cas.uab.edu/∼simanyi/teaching/MA-670-2025/

Textbook.
James R. Munkres: Topology, 2nd Edition. Prentice Hall, 2000. (A copy of this book can be found on the website dedicated to this class.)
We will cover Chapters 2 and parts of Chapter 3 of the textbook. This includes the following topics:

1. Basics:
Topology: definition, basis, subbasis. Fundamental examples: order, $X \times Y$, subspace. Closure: closed sets, limit points, Hausdorff spaces. Continuity: equivalent definitions, constructing, homeomorphisms and embeddings.
Product topology: basis and subbasis, box and product to;pologies compared: R^n, R^ω.
Metric spaces: basics, comparison of metrics, uniform topology, sequence lemma, uniform limits.

2. Connectedness:
Connected spaces and sets: definition, continuity. Products: finite, arbitrary, R^n, R^ω.
Ordered spaces: linear continua, real line, first uncountable ordinal. Components and path components: $\sin(1/x)$ continuum. Local connectedness: $\sin(1/x)$ continuum, R^n.

3. Compactness:
Compact spaces: definition, finite products, finite intersection condition. Ordered spaces: greatest lower bound and least upper bound, real line, first uncountable ordinal. Limit point and sequential compactness: equivalence in metric spaces. Local compactness: one point compactification; $[0, \infty]$ and $[\infty, \infty]$. Totally bounded and compact metric spaces; the Arzela-Ascoli Theorem.

Class Attendance: Class attendance is mandatory. One can get a passing grade only if the number of their unexcused absences is not more than 20% of the number of classes.

Grading.
The course grade will comprise the following:
Regular weekly homework: 30%
Two midterm tests: 15% each
Final exam: 40%

Important Note. Please make sure that you are able to receive e-mail through your Blazer-ID account. Official course announcements will be sent to that address.