

MATH 429 Introduction to Topology Spring 2021 Schedule

Lec.	Date	Section	Topic
	1/18		<i>Martin Luther King Day - no classes</i>
1	1/20	1, 5	Introduction. Metric spaces. Metrics on \mathbb{R} and \mathbb{R}^n .
2	1/22	5	Metric spaces: more examples.
3	1/25	5	Product spaces. Continuous functions on \mathbb{R} and on metric spaces.
4	1/27	5	Continuous functions from a metric space to \mathbb{R} .
5	1/29	5	Continuous functions on metric spaces.
6	2/1	5	Bounded sets. Open balls in metric spaces.
7	2/3	5	Open sets in metric spaces.
8	2/5	5, 6	Continuity in terms of open sets. Closed sets.
9	2/8	6	The closure and limit points of a set.
10	2/10	6	The interior and the boundary of a set.
11	2/12	6	Convergence in metric spaces.
12	2/15	6	Equivalent metrics.
13	2/17	6, 7	Homeomorphisms and isometries. Topological spaces: motivation.
14	2/19	7	Topological spaces: definition and examples.
15	2/22		Review.
16	2/24		Exam 1 covering Chapters 5 and 6.
17	2/26	8	Continuous maps of topological spaces. Homeomorphisms.
18	3/1	8, 9	Bases of topology. Closed sets in topological spaces.
19	3/3	9	The closure of a set and dense sets a topological space.
20	3/5	9	The interior and the boundary of a set in a topological space.
21	3/8	10	Subspaces.
22	3/10	10	Products of topological spaces.
23	3/12	10	Topological products and continuity.
24	3/15	11+	Separation axioms.
25	3/17	11+, 12	Separation axioms. Connected spaces.
26	3/19	12	Connectedness.
27	3/22	12	Connectedness and path-connectedness.
28	3/24	12, 13	Path-connectedness. Compactness: motivation and definition.
29	3/26	13	Compact and noncompact sets.
30	3/29		Review.
31	3/31		Exam 2 covering Chapters 7-12.
32	4/2	13	Properties of compact sets.
33	4/5	13	Compactness of the product. Continuous maps on compact spaces.
	4/7		<i>Wellness day - no classes.</i>
34	4/9	14	Sequential compactness in metric spaces.
35	4/12	15	Quotient spaces: introduction and definitions.
36	4/14	15	Quotient spaces and quotient maps. The circle.
37	4/16	15	The torus, Klein bottle, and real projective plane.
38	4/19		The fundamental group: definition.
39	4/21		The fundamental group: discussion. Simply connected spaces.
40	4/23		The fundamental group: sphere, circle, and real projective plane.
41	4/26		More on the fundamental group.
42	4/28		Review.
43	4/30		Q & A

Final Exam: Sunday, 5/2, 2:00 - 5:00 p.m.