Course Guide Math 495: Topology: Summer 2026:

Date	Topic from Gamelin and Greene or Research Project	Reading	Homework
5-20	Metric Spaces: open and closed sets: 1.1		# 1, 2, 3, 4, 8, 10, 14
5-21	Metric Spaces: completeness: 1.2		# 3, 7, 8
5-22	Metric Spaces: the real line: 1.3		# 1, 9
5-25	Research Project: Supernumbers		
5-26	Metric Spaces: products of metric spaces: 1.4		# 4, 5
5-27	Metric Spaces: compactness: 1.5		# 1, 2, 3, 5
5-28	Metric Spaces: continuous functions: 1.6		# 1, 2, 4, 5, 6, 7, 8, 10
5-29	Metric Spaces: normed linear spaces: 1.7		# 3, 4, 5, 6, 9, 11, 12, 15, 16
6-1	Research Project: Invertible supernumbers, Preston's Theorem		
6-2	Metric Spaces: the contraction principle: 1.8		# 1, 5*
6-3	Metric Spaces: the Frechet derivative: 1.9		# 3, 4
6-4	Topological Spaces: topological spaces: 2.1		# 2, 3, 4, 5, 6, 7, 8, 9
6-5	Topological Spaces: subspaces: 2.2		# 1, 2, 3, 4, 5, 6
6-8	Research Project: Super Linear Algebra		
6-9	Topological Spaces: continuous functions: 2.3		# 1, 2, 3, 4, 5, 6, 7, 9, 12, 13, 14
6-10	Topological Spaces: basis for topology: 2.4		# 1, 2, 3
6-11	Topological Spaces: separation axioms: 2.5		# 1, 2
6-12	Topological Spaces: compactness: 2.6		# 1, 3, 4, 5, 9
6-15	Research Project: Calculus of super variables		
6-16	Topological Spaces: locally compact spaces: 2.7		# 1, 2, 7, 8
6-17	Topological Spaces: connectedness: 2.8		# 1, 3, 4, 5, 6, 9, 11
6-18	Topological Spaces: path connectedness: 2.9		# 2, 3, 4, 6
6-19	Topological Spaces: finite product spaces: 2.10		# 1, 4
6-22	Research Project: Super manifolds		
6-23	Topological Spaces: set theory and Zorn's lemma: 2.11		# 3
6-24	Topological Spaces: infinite product spaces: 2.12		# 2, 3, 4
6-25	Topological Spaces: quotient spaces: 2.13		# 1, 2, 3, 4, 5, 6, 8, 9
6-26	Homotopy Theory: groups: 3.1		# 4
6-29	Research Project: Super Lie groups		
6-30	Homotopy Theory: homotopic paths: 3.2		# 1, 2
7-1	Homotopy Theory: the fundamental group: 3.3		# 1, 2, 3, 4, 5, 6, 7, 8
7-2	Homotopy Theory: induced homomorphisms: 3.4		# 1, 2, 3
7-3	Homotopy Theory: covering spaces: 3.5		# 1, 2, 3, 4
7-6	Research Project: Super Lie groups		
7-7	Homotopy Theory: some applications of the index: 3.6		# 3, 4, 5, 6, 8
7-8	Homotopy Theory: homotopic maps: 3.7		# 2, 3, 5
7-9	Homotopy Theory: maps into the punctured plane: 3.8		# 1
7-10	Homotopy Theory: vector fields: 3.9		# 1, 2, 3

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7-13	Research Project: Heisenberg Super group and the discrete quotient		
7-14	Homotopy Theory: the Jordan curve Theorem: 3.10		# 1
7-15	Higher Dimensional Homotopy: higher homotopy groups: 4.1		# 1, 2, 6
7-16	Higher Dimensional Homotopy: noncontractability of Sn: 4.2		# 1, 6
7-17	Zariski Topology (possibly from Manetti)		
7-20	Research Project: The fermionic topology problem, possible examples		
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Grading:

Homework: each problem worth 3pts, there are at least 400pts to earn here.

Term Paper on Supermath: write 20 page paper on supercalculus based on Monday research meetings, 200pts to earn here.

Midterm and Final Exam: 400 pts to earn.