

Math 579: Combinatorics
Fall 2020
Lecture Schedule

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Below is a list of the topics we intend to cover, along with a rough schedule. Actual schedule is subject to change without notice. Last updated September 19, 2020.

Week	Topic	Chapters
8/24 – 8/28	Overview of Syllabus and Technology	
	Introduction to Combinatorics	
	Review Mathematical Induction	2.1–2.2
8/31 – 9/4	Elementary Counting Methods	3.1–3.3
	Permutations and Binomial Coefficients	
9/7	<i>Labor Day: No Classes</i>	
9/8 – 9/11	The Pigeon-Hole Principle	1.1–1.2
	Inclusion-Exclusion and the Sieve Formula	7.1
9/14 – 9/18	The Binomial Theorem	4.1
	Combinatorial Proofs	4.2
9/21 – 9/25	The Binomial Theorem (Deep Cuts)	
	Catalan Numbers	
9/28 – 10/2	Compositions	5.1
	Integer Partitions	5.3
10/5 – 10/9	Set Partitions	5.2
10/12 – 10/16	Recurrence Relations	
	Introduction to Generating Functions	
10/19 – 10/23	Generating Functions for Enumeration	
	Ordinary Generating Functions	8.1
10/26 – 10/30	Generating Functions for Enumeration (Week 2)	
	Exponential Generating Functions	8.2
11/2 – 11/6	Directed and Undirected Graphs	9.1–9.3
	Hamiltonian Cycles	9.2
	Graph Isomorphisms	9.4
11/11	<i>Veteran's Day: No Classes</i>	
11/9 – 11/13	Trees	10.1
	Adjacency and Incidence Matrices	10.3
	Counting Spanning Trees	10.4
11/16 – 11/20	Bipartite Graphs	11.1–11.2
	Coloring and Matching	11.3–11.4
11/23 – 11/25	The Sensitivity Conjecture	
11/26 – 11/27	<i>Thanksgiving Break: No Classes</i>	
11/30 – 12/4	Planar Graphs	12.1
	Dual Graphs	12.2
12/7 – 12/10	Bonus Topics	
	Review for Final Exam	
12/11 – 12/17	Final Exam	