Math 620: Groups, Rings, and Fields
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 October 7, 2021.

Week	Topic	Chapters (H/DF)
	Group Theory	
8/23 – 8/27	Groups	7.1, 7.2 / 1.1-1.4
	Subgroups	7.3 / 2.1
	Direct Products	9.1 / 5.1
8/30 – 9/3	Permutation Groups	7.5 / 1.2, 1.3
9/6	*Labor Day: No Classes*	
9/7 – 9/10	Cosets and Quotient Groups	8.1-8.3 / 3.1, 3.2, 6.3
9/13 – 9/17	Homomorphisms and Isomorphisms	7.4 / 3.1
	The Isomorphism Theorems	8.4 / 3.3
9/20 – 9/24	Generators and Relations	
	Automorphism Groups	
	Ring Theory	
*9/27 – 10/1	Basic Ring Definitions and Properties	3.1-3.3 / 7.1-7.3
*10/4 – 10/8	Ideals, Homomorphisms, and Quotient Rings	6.1, 6.2 / 7.4
	Isomorphism Theorems for Rings	
	Maximal and Prime Ideals	6.3 / 7.4
10/11 – 10/15	Rings of Fractions and Localization	10.4 / 7.5
10/18 – 10/22	Polynomial Rings	4.1-4.3 / 9.1-9.3
	Unique Factorization	10.1, 10.2 / 8.3
	PIDs and Euclidean Domains	10.2 / 8.1, 8.2
	Field Theory	
*10/25 – 10/29	Irreducible Polynomials	4.4 / 9.4
	Finite Fields	11.6 / 14.3
*11/1 – 11/5	Field Extensions	11.1-11.3 / 13.1-13.3
	Splitting Fields	11.4 / 13.4
	Algebraic Closures	11.3 / 13.4
	Modules and Category Theory	
11/8 – 11/10	Modules	10.1 (DF only)
	Isomorphism Theorems for Modules	10.2 (DF only)
11/11	*Veteran's Day: No Classes*	
11/15 – 11/19	Direct Sums of Modules	10.3 (DF only)
	Module Homomorphisms and Matrices	10.3 (DF only)
11/22 – 11/24	Preview of Math 621	
	(Combinatorial Commutative Algebra)	
11/25 – 11/26	*Thanksgiving Break: No Classes*	
*11/29 – 12/3	Category Theory	
	Universal Properties	
*12/6 – 12/9	Review for Final Exam	
12/14	**Final Exam: Tuesday, December 14**	