

Math 356: Undergrad Algebra I

MWF 9:00am - 9:50am, ABL 131. See Syllabus for details
 Instructor: Dr. Chelsea Walton. notlaw@rice.edu

[Final Version]

Lecture #	Date	Algebraic Structure/ Broad Topic	Sub-topic (Notes in Dropbox folder)	Section(s) of Judson Version: July 28, 2022	Homework Due Date or Exam Date
0	OFFLINE See Videos in Dropbox	Logic Review	Logical operations, quantifiers, methods of proof, and writing tips	§1.1, Part of §1.2 (read about sets, mappings) §2.1	
1	M 8/26/2024	Introduction to Algebraic Structures	Number systems	Part of §1.2 Instructor's Notes	
2	W 8/28/2024	Introduction to Algebraic Structures	Divisibility in the integers Modular arithmetic	Part of §1.2, §2.2 Part of §3.1	HW #0 Due
3	F 8/30/2024	Introduction to Algebraic Structures	Symmetries Operation tables	Part of §3.1 Instructor's Notes	
4	W 9/4/2024 (after Labor Day)	Groups	Intro to groups Examples of groups	§3.2	HW #1 Due
5	F 9/6/2024	Groups	First results about groups	§3.2	
6	M 9/9/2024	Groups	Subgroups Generation	§§3.3, 4.1, 4.2	
7	W 9/11/2024	Groups	Subgroups Cyclic groups Group Morphisms (briefly)	§§3.3, 4.1, 4.2 §9.1	HW #2 Due
8	F 9/13/2024	Groups	Cyclic groups	§4.1	
9	M 9/16/2024	Groups	Permutation groups Dihedral groups	§§5.1, 5.2	
10	W 9/18/2024	Groups	Group morphisms Cayley's Theorem (Normal) subgroups and morphisms	§9.1, §11.1 Part of §10.1	HW #3 Due
11	F 9/20/2024	Groups	(Normal) subgroups and morphisms Cosets Lagrange's Theorem	§11.1, Part of §10.1 §6.1 §6.2	
12	M 9/23/2024	Groups	Lagrange's Theorem Factor (quotient) groups	§6.2 Part of §10.1	
13	W 9/25/2024	Groups	Factor (quotient) groups Isomorphism theorems	Part of §10.1 §11.2	HW #4 Due
14	F 9/27/2024	Groups	Isomorphism theorems	§11.2	
15	M 9/30/2024	Groups	Q&A Day	Instructor's Notes based on questions sent in	
16	W 10/2/2024 (PRE-RECORDED, NO IN-PERSON LECT.)	Groups	Products of groups	§9.2	
17	F 10/4/2024 (IN-PERSON EXAM)	-----			MIDTERM #1 EXAM (material thru 9/30)
18	M 10/7/2024	Groups	Semidirect product of groups *Not on exams*	Instructor's Notes	
19	W 10/9/2024	Groups	Fundamental Theorem of Finite Abelian Groups	§13.1	HW #5 Due
20	F 10/11/2024	Groups	Fundamental Theorem of Finite(ly Generated) Abelian Groups	§13.1	
21	W 10/16/2024 (after Midterm Recess)	Groups	Group actions on sets	§14.1	HW #6 Due
22	F 10/18/2024	Groups	Orbit-Stabilizer Theorem The Class Equation	§14.1 §14.2	
23	M 10/21/2024	Groups	The Class Equation Cauchy's Theorem	§§14.2, 15.1	
24	W 10/23/2024	Groups	Sylow's Theorems	§§15.1, 15.2	HW #7 Due
25	F 10/25/2024	Groups	Sylow's Theorems	§§15.1, 15.2	
26	M 10/28/2024	Groups	Symmetries of regular polyhedra *Not on exams*	Instructor's Notes	
27	W 10/30/2024	Groups	Matrix groups	§12.1	HW #8 Due
28	F 11/1/2024	Rings	Intro to rings	§16.1	
29	M 11/4/2024	Groups Rings	Q&A Day	Instructor's Notes based on questions sent in	
30	W 11/6/2024 (PRE-RECORDED, NO IN-PERSON LECT.)	Rings	Subrings Integral domains and fields	§16.1 §16.2	
31	F 11/8/2024	-----	-----	-----	MIDTERM #2 EXAM (material thru 11/4, except 10/7 and 10/28)
32	M 11/11/2024	Rings	Ring morphisms	§16.3	
33	W 11/13/2024	Rings	Ideals	§16.3	HW #9 Due
34	F 11/15/2024	Rings	Ideal operations Factor (quotient) rings Isomorphism Theorems	§16.3	
35	M 11/18/2024	Rings	Maximal ideals and Prime Ideals Polynomial rings as Integral Domains	§16.4 §17.1	
36	W 11/20/2024	Rings	Poly'l rings having a Division Algorithm, Polynomial rings and Irreducibility	§§17.2, 17.3	HW #10 Due
37	F 11/22/2024	Rings	Ideals in polynomial rings Factorization in Integral Domains	§17.3 §18.2	
38	M 11/25/2024	Rings	Factorization in integral domains Principal ideal domains	§18.2	HW #11 Due (due on a Monday at 11:59pm)
39	M 12/2/2024 (after Thanksgiving)	Rings	Principal ideal domains Euclidean domains Recap	§18.2	
40	W 12/4/2024	Rings	Q&A Day	Instructor's Notes based on questions sent in	HW #12 Due (due at 11:59pm)
41	F 12/6/2024	Groups Rings	Q&A Day	Instructor's Notes based on questions sent in	
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Study Days	Sa 12/7/2023 - T 12/10/2023				
Final Exam	W 12/11/2024 7:00pm - 10:00pm				FINAL EXAM (material thru 12/6)