MA.411: ABSTRACT ALGEBRA SCHEDULE and ASSIGNMENT SHEET – For 10th Edition (and 9th Edition)

The following schedule is approximate. Discussions may get slightly ahead or behind. Any changes to Quizzes/Regular Problem Set due dates will be announced in class but will be no more than one class day delayed from schedule.   Tests, Special Problem Set due dates, and the Theory Project due dates are solid (barring catastrophic circumstances).

Week	Date	Discussion and Assessments	Assignments to do ahead of class
1	8/28 W 8/30 F	Chapter 0: Preliminaries Modular Arithmetic and *C*	• Read Chapter 0 by Friday Week 1. • Write out the Greek alphabet (upper and lower case with their names). Start practicing writing the lower-case Greek alphabet. • Make notes of preliminary definitions and important concepts. • RP (regular problems) Ch 0: 3, 4, 14(12)*, 31, 33, 51 *exercise 14 in 10th edition was exercise 12 in the 9th edition For course consistency, use the 10th edition numbering system. • SP (special problems) Ch 0: none
2	~~9/2 M~~ 9/4 W 9/6 F	***Labor Day – No Classes Monday*** Math Induction Equiv Relations and Mappings	• Prep for Chapter 0 Quiz for Monday Week 3 • Read Chapter 1 by Monday Week 3 • RP Ch 1: 1-11 all, 13, 14 • SP Ch 1: none • Prep for Chapter 1 Quiz for Friday Week 3
3	9/9 M 9/11 W 9/13 F	**Chapter 0 Quiz** **Chapter 0 Problem Set due** Chapter 1: Intro to Groups Chapter 2: Groups **Chapter 1 Quiz + RPS** Group Properties	• Read Chapter 2 for Wednesday Week 3 • RP Ch 2: 1-6 all, 13(9), 17(13),28(26) also 9-7. Give two reasons why the set of odd integers is not a group. and 9-32. Construct a Cayley table for U(12). • SP Ch 2: 15(16), 21(19), 22(20), 24(22), 26(24), 30(28), 34(30), 33(31), 35(46), 36(34), 49(33) also 9-38. Give an example of a group with elements *a, b, c, d,* and *x* such that *axb=cxd* but *ab≠cd*. (Hence "middle cancellation" is not valid in groups.
4	9/16 M 9/18 W 9/20 F	Order of an element and Subgroups **Chapter 2 Quiz + RPS** Chapter 3: Finite Groups	• Prep for Chapter 2 Quiz for Friday Week 4 • Read Chapter 3 for Monday Week 5 • RP Ch 3: 1, 2, 9(5), 8(6), 9(7), 15(11), 27(23), 28(24), 34(30), 46(42) also 8-12. If *a* and *b* are group elements and *ab≠ba*, prove *aba≠e*. and 8-16. Suppose that *H* is a nonempty subset of a group *G* with the property that if *a* and *b* belong to *H* then $a^{-1}b^{-1}$ belongs to *H*. Prove or disprove that this is enough to guarantee that *H* is a subgroup of *G*. • SP Ch 3: 4, 18(22), 28(32), 33(37), 34(38), 40(44), 44(48), 45(49), 50(54), 60(64) also 8-20. Let *x* belong to a group. If $x^2≠e$ and $x^6=e$, prove that $x^4≠e$ and $x^5≠e$. What can we say about the order of *x*? and 8-58. *U*(15) has six cyclic subgroups. List them. and 8-60. Suppose *G* is a group that has exactly eight elements of order 3. How many subgroups of order 3 does *G* have?
5	9/23 M ~~9/25 W~~ 9/27 F	More Finite Groups ***REACH – No Classes Wednesday*** **Chapter 3 Quiz + RPS** Chapter 4: Cyclic Groups	• Prep Chapter 3 Quiz for Friday Week 5 • Read Chapter 4 for Friday Week 5 • RP Ch 4: 1, 2, 4, 7, 8, 10, 12, 16, 17, 25 • SP Ch 4: 14, 20, 22, 24, 30, 38, 58, 60, 63, 64, 66, 72, 74
6	9/30 M 10/2 W 10/4 F	More Cyclic Groups FT of Cyclic Groups **Chapter 4 Quiz + RPS**	• Prep Chapter 4 Quiz for Friday Week 6 • Prep Chapters 1-4 Test for Wednesday Week 7

Week	Date	Discussion and Assessments	Assignments to do ahead of class
7	10/7 M 10/9 W 10/11 F	(Maybe start Chapter 5?) **Chapters 1 – 4 Test** Chapter 5: Permutations	• Read Chapter 5 for Friday Week 7 • RP Ch 5: 1, 2, 3, 7, 10, 11, 14, 16, 19, 21, 22 • SP Ch 5: 12, 13, 26, 32, 35, 36, 38, 40, 42, 52, 62, 70, 72, 76, 82
8	10/14 M 10/16 W 10/18 F	Cycle Notation/Properties **Chapter 5 Quiz + RPS** Chapter 6: Isomorphisms	• Prep Chapter 5 Quiz for Wednesday Week 8 • Read Chapter 6 for Friday Week 8 • RP Ch 6: 1, 2, 3, 5, 20, 23, 31, 32, 30, 44, 54 • SP Ch 6: 6, 10, 15, 16, 26, 28, 34, 38, 42, 48, 52, 55
9	~~10/21 M~~ 10/23 W 10/25 F	*Fall Break – No Classes Monday* Cayley's Theorem Automorphisms	• Prep Chapter 6 Quiz for Monday Week 10 • Finalize Special Problems Chapters 2- 6 for Monday Week 10
10	10/28 M 10/30 W 11/1 F	**Chapter 6 Quiz + RPS** **SP Chaps 2 – 6 due** Chapter 7: Cosets Lagrange's Theorem	• Read Chapter 7 for Wednesday Week 10 • RP Ch 7: 1, 2, 3, 4, 6, 9, 10, 15, 17, 23, 27, 29, 34, 45 • SP Ch 7: 8, 11, 12, 14, 16, 18, 22, 26, 28, 33, 37, 43, 46, 60 • Prep Chapter 7 Quiz for Monday Week 11
11	11/4 M 11/6 W 11/8 F	**Chapter 7 Quiz + RPS** Chapter 8: Ex Dir Products (Maybe start Chapter 9?)	• Read Chapter 8 for Wednesday Week 11 • RP Ch 8: Choose at least eight that do not appear on the SP list. • SP Ch 8: 4, 8, 14, 16, 18, 20, 2, 26, 28, 30, 34, 38, 42, 64, 66, 68, 70, 74, 76 • Prep Chapter 8 Quiz for Monday Week 12 • Read Chapter 9 for Monday Week 12
12	11/11 M 11/13 W 11/15 F	**Chapter 8 Quiz + RPS** Chapter 9: Normal Subgroups More Normal Subgroups **Chapters 5 – 8 Test**	• RP Ch 9: 1, 2, 4, 7, 9, 11, 13, 18, 20, and others as you like. • SP Ch 9: 6, 8, 12, 14, 16, 22, 30, 32, 38, 44, 48, 54, 64, 68 • Prep Chapters 5-8 Test for Friday Week 12 • Prep Chapter 9 Quiz for Monday Week 13 • Read Chapter 10 for Monday Week 13
13	11/18 M 11/20 W 11/22 F	**Chapter 9 Quiz + RPS** Chapter 10: Homomorphism Kernals and Properties Isomorphisms	• RP Ch 10: Choose at least eight that do not appear on the SP list. • SP Ch 10: 6, 8, 16,18, 20, 22, 23, 24, 25, 26, 28, 30, 32, 34, 36, 37, 39, 40, 44, 48, 52, 56
		Thanksgiving Break – No Classes	• Prep Chapter 10 Quiz for Monday Week 14
14	12/2 M 12/4 W 12/6 F	**Chapter 10 Quiz + RPS** Chapter 11 FToFAG Proof of FToFAG	• Read Chapter 11 for Wednesday Week 14 • RP Ch 11: 1, 3, 10, 13, 16 abc, 21, 27 • SP Ch 11: 4, 5, 6, 12, 14, 22, 26, 30 • Finalize Theory Project for Monday Week 15
15	12/9 M 12/11 W 12/13 F	**Theory Project due** More Finite Abelian Groups **Chapter 11 RPS due** **Chapters 9 – 11 Test** **SP Ch 7-11 Due**	• Prep Chapter 11 Problem Set for Wednesday Week 15 • Prep Chapters 9 – 11 Test for Friday Week 15 • Finalize Chapters 7 – 11 Special Problems Set for Friday Week 15 • Prep for Fundamental Theorems Quiz on Final Exam Day (includes Chapter 11 Quiz, both FTs, Cayley's Thm, LaGrange's Thm)
16	12/19 T	**Final**	BJU exam schedule: Thursday 8:00-9:10am