V63.0348 Honors Algebra I, Fall 15

Time	Tuesday, Thursday 11:00-12:15
Location	TBA
Instructor	Prof. Joel Spencer, wwh 829
Phone	x8-3219
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Office Hours	TBA
Text	Topics in Algebra
	i.n. herstein
`Website:`	http://www.cs.nyu.edu/cs/faculty/spencer/algebra15f/index.html
T.A.	TBA
TA Session Time	TBA
TA Session Place	TBA
Midterm	TBA
Final Exam	TBA
Final Exam	place TBA

Over the year we will basically cover three kinds of structures, Groups (chapter 2), Rings (chapter 3), and Fields (chapter 5). Spring 2016 ends with Galois Theory, with special notes. Our emphasis is more on groups in this (Fall) course, the other topics will be covered in more detail in the second term. (Students are NOT required to take the second term V63.0349 and, indeed, many do not.) Throughout, number theory provides a wealth of examples and applications. On the next page is a *rough* outline of the course. We expect to cover these topics but not necessarily on the precise days indicated. In addition there may be several topics that will only be covered through lecture. Students are responsible for all such material.

Submission of assignments (unless clearly marked otherwise) is *mandatory*.

`Special note:` Collaboration on the assignments is *encouraged*. Each student must submit the assignment separately and must note on the assignment the names of other students with which he/she has collaborated.

The final grade will be based 60% on the Final Exam, 30% on the Midterm, and 10% on the Homework. But grades are not determined by an algorithm, subjective factors such as class participation are a "fudge factor" that can carry great weight.

CLASS	TOPIC	CHAPTER
Sept 3	Symmetries of Square	
8	GROUPS, a start	2.1,2.2
10	Subgroups, Cosets	2.3,2.4
15	Some Counting	2.5
17	Normal Subgroups	2.6
22	Homomorphisms	2.7
24	Homomorphisms	2.7
29	Automorphisms	2.8
Oct 1	Cayley's Theorem	–
6	Permuation Groups	2.10
8	More Counting	2.11
13	Monday Schedule	No Class
15	More Counting	2.11
20	MIDTERM	–
22	Direct Products	2.13
27	Finite Abelian Groups	2.14
29	RINGS, a start	3.1
Nov 3	More Rings	3.2
5	Homomorphisms, Ideals	3.3,4
10	More Ideals	3.5
12	Integers to Rationals	3.6
14	Euclidean Rings	3.7
17	The Gaussian Integers	3.8
19	The Gaussian Integers	3.8
24	Polynomial Rings	3.9
26	Turkey & Yams	No Class
Dec 1	Polynomials over Rationals	3.10
3	Finite Fields	7.4
8	Magic Squares	–
10	Slack	–
15	Slack	–