V63.0349 Undergraduate Honors Algebra II
Spring 19

Time	Monday, Wednesday 11:00-12:15
Location	TBA
Instructor	Prof. Joel Spencer, wwh 829
Phone	x8-3219
email	lowercaselastname@cims.nyu.edu
Office Hours	Tuesday 2:30-4
Text	Algebra
	Michael Artin
`Website:`	http://www.cs.nyu.edu/cs/faculty/spencer/algebra/index.html
T.A.	Kevin Yin
TA Session Time	F 2:00-3:15 (starts SECOND week!)
TA Session Place	TBA
Midterm	TBA (in Class)
Final Exam	May 11, 10:00 a.m. - Noon, ciww317

This is basically a course in Ring Theory Field Theory with Galois Theory a highlight. (Note: Group Theory was covered in Undergraduate Honors Algebra I. The few students who haven't taken that course – e.g., visiting students – must be sure they have a good background in Group Theory.) We begin with elements of Rings and of Linear Algebra over arbitrary fields. We consider field extensions of the rationals by irrationals such as $\sqrt{2}$. We also study Finite Fields. Throughout, number theory provides a wealth of examples and applications. Very roughly, we shall cover chapters 11-16 in Artin's book. However, for the Galois Theory, notes specially prepared by Prof. Spencer will be made available.

Submission of assignments (unless clearly marked otherwise) will be *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.

A *tentative* schedule. Check website for changes.
L= Lecture, N=Notes, GN= Special Galois Theory Notes

CLASS	TOPIC	CHAPTER
Jan 28	Rings	11.1-2
Jan 30	Ideals	11.3
Feb 4	Quotient Rings	11.4,5
6	Fractions, Maximal Ideals	11.7,8
11	Factoring, UFD	12.1-2
13	$Z[x]$	12.3-4
18	NOCLASS!!	(Thanks George!)
20	Gauss Primes	12.5
25	Algebraic Integers	13.1
27	Quadratic Integers	13.2
Mar 4	Fields	15.1-2
6	Fields	15.2-3
11	Compass-Straightedge	15.5, L
13	Adjoing Roots	15.6
18	Spring	Break
20	Spring	Break
25	Finite Fields	15.7
27	MIDTERM	(Tentative!)
Apr 1	Magic Squares	L
3	Galois	GN
8	Galois	GN
10	Galois	GN
15	Galois	GN
17	Galois	GN
22	Galois	GN
24	Galois	GN
29	Galois	GN
May 1	Representation by Radicals I	L, N
6	Representation by Radicals II	L, N
8	Fibonacci	L, N
13	Slack, Review	L