

## MATH 653 ADVANCED TOPICS IN COMMUTATIVE ALGEBRA

### 1. BOOK

I. Kaplansky, Commutative Rings, University of Chicago Press, Chicago, 1974.

### 2. Description & SYLLABUS

Weeks	Material
1	Prime ideals. Integral elements (I) G-ideals, Hilbert rings, and Nullstellensatz.
2	Localization, Prime ideals in polynomial rings Integral elements (II)
3	Integral elements (II) Zero-divisors
4	Zero-divisors
5	Integral elements (III)
6	Intersections of quasi-local domains
7	Macaulay rings
8	Macaulay rings
9	Macaulay rings
10	The principal ideal theorem
11	Regular rings
12	Regular rings
13	Homological aspects. Change of rings for injective dimension
14	Gorenstein rings
15	Gorenstein rings

### 3. GRADING POLICY

Written Exam 1 (6 hours)	100	Sections 1.1 → 2.4
Written Exam 2 (6 hours)	100	Sections 3.1, 3.2, 3.3, 4.4, 4.5
Oral Exam	50	-