

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

Exam 1	100	Sections 1.1 → 2.4
Exam 2	100	Sections 3.1, 3.2, 3.3, 4.4, 4.5