

SYLLABUS – MATH 724
Fall 2014

Dr. J. Shapiro

Office: Exploratory Hall, Room 4413

Hours: MW 2:00-3:00 and by appointment

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Text: “Commutative Rings”, by I. Kaplansky

Web: math.gmu.edu/~jshapiro/724/index.html

Prerequisite: The prerequisite for this course is one semester of graduate algebra. It is assumed that you have some familiarity with rings, fields, and quotient objects (such as quotient groups or rings).

Material to be covered: We will cover prime ideals, integral extensions and Noetherian rings. Within these topics we will cover Hilbert’s Nullstellensatz, the Hilbert basis Theorem, primary decomposition in Noetherian rings, valuation rings and Krull’s Principal Ideal Theorem. From the text we will cover Chapters 1, 2 and section 3.2. Work on primary decomposition will also be added just after 2.2 (our text does not do this topic). This will be taken primarily (pun intended) from the book “Introduction to Commutative Algebra” by Atiyah and MacDonaldd”. Other topics will be included as time permits.

Grading: Your grade will be based on homework, of which there will be approximately five or six assignments, and a take home final.

Homework assignments and other announcements will be on the course web page. Your homework assignments will in general consist of two parts; hand-in and additional work.