

**SYLLABUS – MATH 629 Homological Algebra  
Spring 2015**

Dr. J. Shapiro

**Office:** Exploratory Hall, Room 4413

**Hours:** MW 10:30-11:30 and by appointment

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**Text:** “An Introduction to Homological Algebra”, by J. Rotman

**Web:** [math.gmu.edu/~jshapiro/629/index.html](http://math.gmu.edu/~jshapiro/629/index.html)

**Prerequisite:** The prerequisite for this course is one semester of graduate algebra. It is assumed that you have some familiarity with rings, modules, and quotient objects (such as factor groups or rings). For a more detailed list of topics to know, see the link on the course web site.

**Material to be covered:** We will cover the basic tools of homological algebra, such as the Hom and Tensor functors, projective and injective modules, homology. We will also cover applications to commutative rings as time permits. From the text we will cover Chapters 1, 2, 3, 4.1 - 4.4, 5.1, 5.2, 6.1, 6.2, 7.1, 7.2, and 8.

**Grading:** Your grade will be based on homework, of which there will be approximately four assignments.

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.