This course introduces Algebraic Geometry from both the algebraic and geometric viewpoints. Affine and projective varieties will be developed from both the classical viewpoint as well as using the language of schemes and sheaves.

This is the first semester of a one-year sequence in Algebraic Geometry, with Algebraic Geometry II expected to run in Spring 2015.

The course will focus on the first two chapters of the text: Varieties, and Schemes, primarily the second chapter on Schemes. The text will be frequently supplemented with additional materials designed to enhance geometric intuition.

The prerequisite is not intended as a filter rather than as an acknowledgment that familiarity with commutative algebra will be important in this course. We will be using the language of commutative algebra for the most part, including notions such as prime ideals, localization, and tensor product. This is not the only route to algebraic geometry but is a choice being made largely by the choice of textbook. Familiarity with Riemann Surfaces and Algebraic Curves (Math 510) is not necessary but will be helpful, as a smooth 1-dimensional projective variety over the complex numbers is equivalent to a compact Riemann surface.

Note: This course is a minor modification of a course that has run in the department annually for at least the past 19 years under a different course number. Algebraic Geometry II has also run for all but one of those years.