Abstract: Algebraic geometry is, loosely speaking, the study of the geometry of algebraic sets, that is, sets that can be defined by one or more polynomial equations in several (for our purposes, 2 or 3) variables. In this talk, I will give an introduction to the basic ideas and framework of this subject, specifically the notions of degree and intersection, and give examples of algebraic curves and surfaces that should be familiar to anyone who has taken a first course in multivariable calculus (e.g., our MATH 224). The sort of questions that I will ultimately discuss include and follow from that answered by the classical Noether-Lefschetz theorem, which is roughly “Given an algebraic surface in 3-dimensional space, what kind of curves can we expect to find on it?”

My aim is to make at least the big ideas accessible to any student who has succeeded in MATH 224, especially those who thought that the stuff about lines, planes, and quadric surfaces was kind of cool. Those having taken a course in abstract algebra and/or having some small familiarity with the complex numbers will be in a position to understand more details.