Mathematics 532. Algebraic Geometry I, Term 1, 2018.

Instructor: Zinovy Reichstein
Office: 1105 Math Annex
Phone: 822-3929
E-mail: reichst@math.ubc.ca

Time and Place: The lectures are scheduled for TTh 2-3:30 in room MATH 126. Note that MATH 126 is located inside the Mathematics Department Lounge. Math graduate students should have a key card giving them access to MATH 126. Anyone else (e.g., undergraduates or graduate students from other departments) who are interested in taking this course should talk to me about getting a key card.

Course description: Algebraic geometry studies the geometric structure of solution sets to systems of polynomial equations. While this sounds like a very special problem, over the course of the 20th century, algebraic geometry has gradually moved to a central position in modern mathematics. Algebro-geometry techniques have had profound impact in many other areas, from combinatorics and number theory to topology and theoretical physics. Modern algebraic geometry is a vast network of ideas, techniques, results and "philosophies", extending far beyond the scope of a single course. The goal of Math 532 is give the students a taste of this subject and equip them for further study (in Math 533 and beyond) or applications. We will start from the beginning, focusing on the basic theory of algebraic varieties in affine and projective space.

Prerequisites: The main prerequisite is a course in commutative algebra (Math 423/502 or equivalent). Some familiarity with point set topology (the first half of Math 426 or equivalent) will also be helpful.

Textbook: I plan to follow Lecture notes by Andreas Gathmann (2014)

`http://www.mathematik.uni-kl.de/~gathmann/alggeom.php`,

occasionally filling in material from other sources, such Lecture notes by I. Dolgachev

`http://www.math.lsa.umich.edu/~idolga/631.pdf`

or the classic book *Basic Algebraic Geometry* by I. Shafarevich. Note that the electronic edition of Shafarevich's book is available to UBC students free of charge through the UBC library.

Homework and Evaluation: I plan to assign problem sets on a roughly biweekly basis. There will be no exams.

Course page: For detailed up to date information, please see
`http://www.math.ubc.ca/~reichst/532F18syll.html`