

Proposal for Special Topics Courses for Spring 2027 – Yi Hu

Title: Lectures on Universal Equations for Varieties

Prerequisites: Algebraic Geometry I

Outcome: By the end of this course, AG students may pursue research projects by combining the materials covered in this course with a Groebner basis.

Number theory student may investigate applications to Diophantine problems using the models covered in this course.

Week 1	Atomic equations for affine varieties over integers
Week 2	Molecular equations for singularities
Week 3 -8	Universal Equations of standard birational models for singularities
Week 9-12	Universal Resolution of Singularities
Week 13-15	Further applications