

MATH 965: Algebraic Stacks  
Fall 2026

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**Course Website:** All material will be posted on Learn.

**Course Outline / Objectives:** Within the past few decades, stacks have become a vital tool in the study of moduli problems in Algebraic Geometry. As geometric objects (e.g. genus  $g$  curves) frequently have automorphisms, their moduli spaces are not schemes, but rather stacks. This course will introduce algebraic spaces, Deligne–Mumford stacks, and Artin stacks, connecting them to geometric problems along the way, such as the construction of the moduli stack of genus  $g$  curves. We will also discuss equivariant geometry of schemes and the relationship between cohomology on stacks and group cohomology. Time permitting, we will additionally discuss applications in motivic integration.