

The College of Arts & Sciences
Department of Mathematical Sciences
Colloquium

Professor Hiram Lopez Valdez
Virginia Tech
Monday, September 28, 2026
Campus Rec Center Room 3220
4:00-5:00pm

***From Ideals to Applications: Algebraic
Bridges in Coding Theory***

In this talk, we present many interconnections between commutative algebra, algebraic geometry, and combinatorics, and between these areas and coding theory and its applications, such as quantum computation, distributed storage, matrix multiplication, and cryptography. We will see how the properties of vanishing ideals, such as Gröbner bases, Hilbert functions, footprints, or being Gorenstein; the Frobenius number of certain numerical semigroups; the study of curves, including the Weierstrass semigroup and the Riemann-Roch space associated with special divisors; and the counting of lattice points, such as integer points inside certain polyhedra, play roles in these applications.

Refreshments will be served 3:15-3:45 pm in the Faculty Lounge
4118 French Hall West