MA-414: INTRODUCTION TO-ALGEBRAIC GEOMETRY

Algebraic varieties: Affine algebraic varieities, Hibert basis Theorem, Decomposition of variety into irreducible components, Hibert's Nulttstellensatz, The Sectrum of a Ring, Projective variety and the homogeneous Spectrum.

Functions and Morphisms: Some properties of Zariski topology, Rings and modules of franctions and their properties, Coordinate ring and polynomial functions, Polynomial maps, Regular and rational functions, Morphisms, Rational maps.

Dimension: The Krull dimension of Topological Spaces and Rings, Prime Ideal Chain and Integral Extensions, The Dimension of Affine Algebras and Affine Algebraic Varieties, The Dimension of Projective Varieties.

Applications: The product of varieties, On dimension, Tangent space and smoothness, Completeness.

RECOMMENDED BOOKS:

1. O. Zariski and P. Samual, Commutative Algebra, Vol. 1, Van Nostrand, Princeton, N. J., 1958.
2. M.F. Atiyah and I. G. Macdonald, Introduction to Commutative Algebra, Addison Wesley Pub. Co., 1969.
3. I.R. Shafarevich, Basic Algebraic Geometry, Springer Verlag, 1974.
4. R. Hartshorne, Algebraic Geometry, Springer Verlag, 1977.
5. E, Kunz, Introduction to Commutative Algebra and Algebraic Geometry, Boston; Basel; Stuttgrat: Birkhauser, 1985.