ABOUT THE COURSE:

Commutative Algebra is essentially the study of the ring of all rational numbers. Algebraic geometry is the study of commutative rings in the context of polynomial rings and algebraic varieties. The main purpose of this course is to discuss important properties of commutative rings and rings of algebraic geometry. (A general ring is a ring that has addition and multiplication defined in terms of operations that satisfy certain axioms, e.g., commutative ring; an algebraic geometry is a geometric object defined by polynomial equations.) In this course, we will focus on the algebraic aspects of commutative rings and ring theory.

INTENDED AUDIENCE:

UGC / M.Tech / PhD

COURSE LEARNING OUTCOMES:

At the end of the course, students should be able to:

- Understand the basic concepts of commutative algebra.
- Be able to work with ideals and modules.
- Understand the concept of Noetherian rings and modules.
- Be able to work with local rings and their properties.
- Understand the concept of integral extensions and their applications.
- Be able to work with affine and projective varieties.
- Be able to work with the concepts of dimension and depth.

PRE-REQUISITES:

Linear Algebra, Basic Mathematics, and Abstract Algebra.

COORDINATOR:

Dr. Shreedhar Bhat

TEXTBOOKS:


REFERENCES: