COURSE DESCRIPTION

Spring 2019

MATH 595

LOCAL COHOMOLOGY

Prof. S. P. Dutta

This course will be a study of Local Cohomology, introduced by Grothendieck, with various applications. The main topics will include: Cohen-Macaulay Rings and Modules, Injective Modules over noetherian rings, Gorenstein rings, local cohomology - connection with dimension and depth, local duality theorem of Grothendieck, Cohomology of quasi-coherent and coherent sheaves, Serre’s Theorem on coherent sheaves on projective spaces, classification of Line-bundles on \( \mathbb{P}^n \), Hartshorne - Lichtenbaum Theorem and Faltings Connectedness Theorem.

Prerequisite: Math 502

Recommended Text: 1. Local Cohomology by R. Hartshorne; 2. Local Cohomology by Brodmann and Sharp, Cambridge University Press.