

University of Illinois
Department of Mathematics
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C O U R S E D E S C R I P T I O N

Spring 2018

MATH 595

L O C A L C O H O M O L O G Y

Prof. S. P. Dutta

11:00-12:20 Tu-Th

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 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.