

NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mathematics - NOC:Commutative Algebra

Subject Co-ordinator - Prof. Dilip P. Patil

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Zariski Topology and K-Spectrum

Lecture 2 - Algebraic Varieties and Classical Nullstellensatz

Lecture 3 - Motivation for Krull's Dimension

Lecture 4 - Chevalley's dimension

Lecture 5 - Associated Prime Ideals of a Module

Lecture 6 - Support of a Module

Lecture 7 - Primary Decomposition

Lecture 8 - Primary Decomposition (Continued...)

Lecture 9 - Uniqueness of Primary Decomposition

Lecture 10 - Modules of Finite Length

Lecture 11 - Modules of Finite Length (Continued...)

Lecture 12 - Introduction to Krull's Dimension

Lecture 13 - Noether Normalization Lemma (Classical Version)

Lecture 14 - Consequences of Noether Normalization Lemma

Lecture 15 - Nil Radical and Jacobson Radical of Finite type Algebras over a Field and digression of Integral

Lecture 16 - Nagata's version of NNL

Lecture 17 - Dimensions of Polynomial ring over Noetherian rings

Lecture 18 - Dimension of Polynomial Algebra over arbitrary Rings

Lecture 19 - Dimension Inequalities

Lecture 20 - Hilbert's Nullstellensatz

Lecture 21 - Computational rules for Poincaré Series

Lecture 22 - Graded Rings, Modules and Poincaré Series

Lecture 23 - Hilbert-Samuel Polynomials

Lecture 24 - Hilbert-Samuel Polynomials (Continued...)

Lecture 25 - Numerical Function of polynomial type

Lecture 26 - Hilbert-Samuel Polynomial of a Local ring

Lecture 27 - Filtration on a Module

Lecture 28 - Artin-Rees Lemma

Lecture 29 - Dimension Theorem

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- Lecture 30 - Dimension Theorem (Continued...)
- Lecture 31 - Consequences of Dimension Theorem
- Lecture 32 - Generalized Krull's Principal Ideal Theorem
- Lecture 33 - Second proof of Krull's Principal Ideal Theorem
- Lecture 34 - The Spec Functor
- Lecture 35 - Prime ideals in Polynomial rings
- Lecture 36 - Characterization of Equidimensional Affine Algebra
- Lecture 37 - Connection between Regular local rings and associated graded rings
- Lecture 38 - Statement of the Jacobian Criterion for Regularity
- Lecture 39 - Hilbert function for Affine Algebra
- Lecture 40 - Hilbert Serre Theorem
- Lecture 41 - Jacobian Matrix and its Rank
- Lecture 42 - Jacobian Matrix and its Rank (Continued...)
- Lecture 43 - Proof of Jacobian Criterion
- Lecture 44 - Proof of Jacobian Criterion (Continued...)
- Lecture 45 - Preparation for Homological Dimension
- Lecture 46 - Complexes of Modules and Homology
- Lecture 47 - Projective Modules
- Lecture 48 - Homological Dimension and Projective module
- Lecture 49 - Global Dimension
- Lecture 50 - Homological characterization of Regular Local Rings (RLR)
- Lecture 51 - Homological characterization of Regular Local Rings (Continued...)
- Lecture 52 - Homological Characterization of Regular Local Rings (Continued...)
- Lecture 53 - Regular Local Rings are UFD
- Lecture 54 - RLR-Prime ideals of height 1
- Lecture 55 - Discrete Valuation Ring
- Lecture 56 - Discrete Valuation Ring (Continued...)
- Lecture 57 - Dedekind Domains
- Lecture 58 - Fractionary Ideals and Dedekind Domains
- Lecture 59 - Characterization of Dedekind Domain
- Lecture 60 - Dedekind Domains and prime factorization of ideals