

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

NPTEL Video Course - Mathematics - NOC:Algebra-II

Subject Co-ordinator - Prof. Amritanshu Prasad, Prof. S. Viswanath

Co-ordinating Institute - Institute of Mathematical Sciences

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

Lecture 1 - Algebraic and Transcendental Numbers  
Lecture 2 - Extensions Generated by Elements  
Lecture 3 - Isomorphic Extensions  
Lecture 4 - Degree of an Extension  
Lecture 5 - Constructible Numbers  
Lecture 6 - The Field of Constructible Numbers  
Lecture 7 - Characterization of Constructible Numbers  
Lecture 8 - Solved Problems (Week 1)  
Lecture 9 - Some Things can't be Constructed  
Lecture 10 - Symbolic Adjunction  
Lecture 11 - Repeated Roots  
Lecture 12 - Gauss Lemma  
Lecture 13 - Eisenstein's criterion  
Lecture 14 - Existence Theorem for Finite Fields  
Lecture 15 - Subfields of a Finite Field  
Lecture 16 - Multiplicative Group of a Finite Field  
Lecture 17 - Uniqueness Theorem for Finite Fields  
Lecture 18 - Solved Problems (Week 2)  
Lecture 19 - Algebraic Extensions and Algebraic Closures  
Lecture 20 - Existence of Algebraic Closures  
Lecture 21 - Uniqueness of Algebraic Closure  
Lecture 22 - Solved Problems - Part 1 (Week 3)  
Lecture 23 - Existence of splitting fields, bound on degree  
Lecture 24 - Uniqueness of splitting fields  
Lecture 25 - Solved problems - Part 2 (Week 3)  
Lecture 26 - Normal Extensions  
Lecture 27 - Separable polynomials  
Lecture 28 - Perfect fields, separable extensions  
Lecture 29 - Definition and examples, fixed fields

---

Get DIGIMAT For High-Speed Video Streaming of NPTEL and Educational Video Courses in LAN

<http://www.digimat.in>

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

---

- Lecture 30 - Characterization of Galois extensions
- Lecture 31 - Linear Independence of Characters
- Lecture 32 - Solved problems (Week 4)
- Lecture 33 - Artin's Theorem - Part 1
- Lecture 34 - Artin's Theorem - Part 2
- Lecture 35 - Finite Galois Extensions
- Lecture 36 - The fundamental theorem of Galois Theory - 1
- Lecture 37 - The fundamental theorem of Galois Theory - 2
- Lecture 38 - Solved problems (Week 5)
- Lecture 39 - Cyclotomic extensions
- Lecture 40 - Irreducibility of the cyclotomic polynomial
- Lecture 41 - Application: Constructibility of regular n-gons.
- Lecture 42 - Insolvability of the general quintic - Part 1
- Lecture 43 - Insolvability of the general quintic - Part 2
- Lecture 44 - Insolvability of the general quintic - Part 3
- Lecture 45 - What is category theory (and why is it important)?
- Lecture 46 - Definition of a category
- Lecture 47 - Monomorphisms, epimorphisms, and isomorphisms
- Lecture 48 - Categories: First Problem Session
- Lecture 49 - Initial and Terminal Objects
- Lecture 50 - Products and Coproducts
- Lecture 51 - Categories: Second Problem Session
- Lecture 52 - Functors
- Lecture 53 - The Category of Categories
- Lecture 54 - Natural Transformations
- Lecture 55 - Functor Categories
- Lecture 56 - Categories: Third Problem Session
- Lecture 57 - Adjunction
- Lecture 58 - Categories: Fourth Problem Session
- Lecture 59 - Tensor products of  $\mathbb{Z}$ -modules
- Lecture 60 - Free abelian groups and quotient groups
- Lecture 61 - Construction of the tensor product
- Lecture 62 - Problem session
- Lecture 63 - Tensor product of  $R$ -modules
- Lecture 64 - Functoriality of the tensor product
- Lecture 65 - Bimodules
- Lecture 66 - Tensor products of bimodules
- Lecture 67 - Tensor products of modules over commutative rings
- Lecture 68 - Extension of scalars

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

---

- Lecture 69 - Problem session - tensor products of vector spaces
- Lecture 70 - Some Properties of the tensor product
- Lecture 71 - F-algebras
- Lecture 72 - Composition Series
- Lecture 73 - Schreier's Theorem
- Lecture 74 - Ascending and Descending Chain Conditions
- Lecture 75 - Existence of Jordan-Holder Series
- Lecture 76 - The Jordan-Holder Theorem
- Lecture 77 - Examples related to the Jordan-Holder Theorem
- Lecture 78 - The Jordan-Holder Theorem for Groups
- Lecture 79 - Indecomposable Modules
- Lecture 80 - Direct Sum Decompositions
- Lecture 81 - Decomposition as a sum of Indecomposables
- Lecture 82 - The Endomorphism Ring of an Indecomposable Module
- Lecture 83 - Krull-Schmidt Theorem
- Lecture 84 - Krull-Schmidt Examples