

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

NPTEL Video Course - Electronics and Communication Engineering - Error Correcting Codes

Subject Co-ordinator - Prof. P. Vijay Kumar

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Course Overview & Basics
- Lecture 2 - Example Codes and their Parameters
- Lecture 3 - Mathematical Preliminaries
- Lecture 4 - Subgroups and Equivalence Relations
- Lecture 5 - Cosets, Rings & Fields
- Lecture 6 - Vector Spaces, Linear Independence and Basis
- Lecture 7 - Linear Codes, & Linear independence
- Lecture 8 - Spanning & Basis
- Lecture 9 - The Dual Code
- Lecture 10 - Systematic Generator Matrix
- Lecture 11 - Minimum Distance of a Linear Code
- Lecture 12 - Bounds on the size of a Code
- Lecture 13 - Asymptotic Bounds
- Lecture 14 - Standard Array Decoding
- Lecture 15 - Performance Analysis of the SAD
- Lecture 16 - State and Trellis
- Lecture 17 - The Viterbi Decoder
- Lecture 18 - Catastrophic Error Propagation
- Lecture 19 - Path Enumeration
- Lecture 20 - Viterbi Decoder over the AWGN Channel
- Lecture 21 - Generalized Distributive Law
- Lecture 22 - The MPF Problem
- Lecture 23 - Further Examples of the MPF Problem
- Lecture 24 - Junction Trees
- Lecture 25 - Example of Junction Tree Construction
- Lecture 26 - Message passing on the Junction tree
- Lecture 27 - GDL Approach to Decoding Convolutional Codes
- Lecture 28 - ML Code-Symbol Decoding of the Convolutional Code
- Lecture 29 - LDPC Codes

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- Lecture 30 - LDPC Code Terminology
- Lecture 31 - Gallager Decoding Algorithm A
- Lecture 32 - BP Decoding of LDPC Codes
- Lecture 33 - BP Decoding (Continued)
- Lecture 34 - Density Evolution under BP decoding
- Lecture 35 - Convergence & Concentration Theorem - LDPC Codes
- Lecture 36 - A Construction for Finite Fields
- Lecture 37 - Finite Fields
- Lecture 38 - Deductive Approach to Finite Fields
- Lecture 39 - Subfields of a Finite field
- Lecture 40 - Transform Approach to Cyclic Codes
- Lecture 41 - Estimating the Parameters of a Cyclic Code
- Lecture 42 - Decoding Cyclic Codes