

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

NPTEL Video Course - Computer Science and Engineering - Natural Language Processing

Subject Co-ordinator - Prof. Pushpak Bhattacharya

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Introduction
- Lecture 2 - Stages of NLP
- Lecture 3 - Stages of NLP Continue...
- Lecture 4 - Two approaches to NLP
- Lecture 5 - Sequence Labelling and Noisy Channel
- Lecture 6 - Noisy Channel
- Lecture 7 - Argmax Based Computation
- Lecture 8 - Noisy Channel Application to NLP
- Lecture 9 - Brief on Probabilistic Parsing & Start of Part of Speech Tagging
- Lecture 10 - Part of Speech Tagging
- Lecture 11 - Part of Speech Tagging counted ...
- Lecture 12 - Part of Speech Tagging counted ... and Indian Language in Focus; Morphology Analysis
- Lecture 13 - PoS Tagging contd... , Indian Language Consideration; Accuracy Measure
- Lecture 14 - PoS Tagging; Fundamental Principle; Why Challenging; accuracy
- Lecture 15 - PoS Tagging; Accuracy Measurement; Word categories
- Lecture 16 - AI and Probability; HMM
- Lecture 17 - HMM
- Lecture 18 - HMM, Viterbi, Forward Backward Algorithm
- Lecture 19 - HMM, Viterbi, Forward Backward Algorithm (Continued...)
- Lecture 20 - HMM, Forward Backward Algorithms, Baum Welch Algorithm
- Lecture 21 - HMM, Forward Backward Algorithms, Baum Welch Algorithm (Continued...)
- Lecture 22 - Natural Language Processing and Informational Retrieval
- Lecture 23 - CLIA; IR Basics
- Lecture 24 - IR Models
- Lecture 25 - IR Models
- Lecture 26 - NLP and IR
- Lecture 27 - Least Square Method; Recap of PCA; Towards Latent Semantic Indexing (LSI)
- Lecture 28 - PCA; SVD; Towards Latent Semantic Indexing (LSI)
- Lecture 29 - Wordnet and Word Sense Disambiguation

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- Lecture 30 - Wordnet and Word Sense Disambiguation (Continued...)
- Lecture 31 - Wordnet; Metonymy and Word Sense Disambiguation
- Lecture 32 - Word Sense Disambiguation
- Lecture 33 - Word Sense Disambiguation; Overlap Based Method; Supervised Method
- Lecture 34 - Word Sense Disambiguation
- Lecture 35 - Word Sense Disambiguation
- Lecture 36 - Resource Constrained WSD; Parsing
- Lecture 37 - Parsing
- Lecture 38 - Parsing Algorithm
- Lecture 39 - Parsing Ambiguous Sentences; Probabilistic Parsing
- Lecture 40 - Probabilistic Parsing Algorithms

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

NPTEL Video Course - Computer Science and Engineering - Design and Analysis of Algorithms

Subject Co-ordinator - Prof. Sundar Viswanathan, Prof. Ajit A Diwan, Prof. Abhiram G Ranade

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Overview of the course
- Lecture 2 - Framework for Algorithms Analysis
- Lecture 3 - Algorithms Analysis Framework - II
- Lecture 4 - Asymptotic Notations
- Lecture 5 - Algorithm Design Techniques
- Lecture 6 - Divide And Conquer - I
- Lecture 7 - Divide And Conquer - II Median Finding
- Lecture 8 - Divide And Conquer - III Surfing Lower Bounds
- Lecture 9 - Divide And Conquer - IV Closest Pair
- Lecture 10 - Greedy Algorithms - I
- Lecture 11 - Greedy Algorithms - II
- Lecture 12 - Greedy Algorithms - III
- Lecture 13 - Greedy Algorithms - IV
- Lecture 14 - Pattern Matching - I
- Lecture 15 - Pattern Matching - II
- Lecture 16 - Combinational Search and Optimization - I
- Lecture 17 - Combinational Search and Optimization - II
- Lecture 18 - Dynamic Programming
- Lecture 19 - Longest Common Subsequences
- Lecture 20 - Matrix Chain Multiplication
- Lecture 21 - Scheduling with Startup and Holding Costs
- Lecture 22 - Average case Analysis of Quicksort
- Lecture 23 - Bipartite Maximum Matching
- Lecture 24 - Lower Bounds for Sorting
- Lecture 25 - Element Distinctness Lower Bounds
- Lecture 26 - NP-Completeness - I - Motivation
- Lecture 27 - NP-Completeness - II
- Lecture 28 - NP-Completeness - III
- Lecture 29 - NP-Completeness - IV

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- Lecture 30 - NP-Completeness - V
- Lecture 31 - NP-Completeness - VI
- Lecture 32 - Approximation Algorithms
- Lecture 33 - Approximation Algorithms
- Lecture 34 - Approximation Algorithms for NP

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

NPTEL Video Course - Computer Science and Engineering - Software Engineering

Subject Co-ordinator - Prof. N.L. Sarda, Prof. Umesh Bellur, Prof. Rushikesh K Joshi

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Introduction to Software Engineering - Challenges
- Lecture 2 - Introduction to Software Engineering
- Lecture 3 - Overview of Phases
- Lecture 4 - Overview of Phases
- Lecture 5 - Requirements Engineering / Specification
- Lecture 6 - Formal Specification
- Lecture 7 - Algebraic Specification Methods
- Lecture 8 - Systems Modeling Overview
- Lecture 9 - Process Modeling - DFD , Function Decomp
- Lecture 10 - Process Modeling - DFD, Function Decomp
- Lecture 11 - Data Modeling - ER Diagrams, Mapping
- Lecture 12 - Data Modeling - ER Diagrams, Mapping
- Lecture 13 - Production Quality Software - Introduction
- Lecture 14 - Software Design - Primary Consideration
- Lecture 15 - Design Patterns
- Lecture 16 - Class and Component Level Design
- Lecture 17 - Architectural Design
- Lecture 18 - Software Testing - I
- Lecture 19 - Software Testing - II
- Lecture 20 - Structural Programming and Some implementation
- Lecture 21 - Software Metrics and Quality
- Lecture 22 - Verification and Validation
- Lecture 23 - Case Study
- Lecture 24 - Case Study
- Lecture 25 - Software Evolution
- Lecture 26 - Agile Development
- Lecture 27 - Software Reuse CBSE
- Lecture 28 - Reuse Continued
- Lecture 29 - Introduction to Project Management

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- Lecture 30 - Project Scope Management
- Lecture 31 - Project Time Management
- Lecture 32 - Estimation - I
- Lecture 33 - Estimation - II
- Lecture 34 - Project Quality Management
- Lecture 35 - Quality Management Systems - I
- Lecture 36 - Quality Management Systems
- Lecture 37 - Project Configuration Management
- Lecture 38 - Project Risk Management
- Lecture 39 - Other PM Processes

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

NPTEL Video Course - Computer Science and Engineering - Computational Geometry

Subject Co-ordinator - Prof. Sandeep Sen

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Introduction
- Lecture 2 - Visibility Problems
- Lecture 3 - 2D Maxima
- Lecture 4 - Line Sweep Method
- Lecture 5 - Segment Intersection Problem
- Lecture 6 - Line Sweep
- Lecture 7 - Convex Hull
- Lecture 8 - Convex Hull Contd
- Lecture 9 - Quick Hull
- Lecture 10 - More Convex Hull Algorithms
- Lecture 11 - Intersection of Half Planes and Duality
- Lecture 12 - Intersection of Half Planes and Duality Contd
- Lecture 13 - Lower Bounds
- Lecture 14 - Planar Point Location
- Lecture 15 - Point Location and Triangulation Contd...
- Lecture 16 - Triangulation of Arbitrary Polygon
- Lecture 17 - Voronoi Diagram
- Lecture 18 - Voronoi Diagram Construction
- Lecture 19 - Delaunay Triangulation
- Lecture 20 - Quick sort and Backward Analysis
- Lecture 21 - Generalized RIC
- Lecture 22 - RIC Continued
- Lecture 23 - Arrangements
- Lecture 24 - Zone Theorem and Application
- Lecture 25 - Levels
- Lecture 26 - Range Searching
- Lecture 27 - Orthogonal Range searching
- Lecture 28 - Priority Search Trees
- Lecture 29 - Non - Orthogonal Range Searching

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- Lecture 30 - Half - Plane Range Query
- Lecture 31 - Well Separated Partitioning
- Lecture 32 - Quadtrees Epsilon -WSPD
- Lecture 33 - Construction of Epsilon - WSPD
- Lecture 34 - Epsilon - WSPD to Geometric Spanner
- Lecture 35 - Epsilon-Nets & VC Dimension
- Lecture 36 - Epsilon-Nets & VC Dimension contd
- Lecture 37 - Geometric Set Cover
- Lecture 38 - Geometric Set Cover (with Bounded VC Dimension)
- Lecture 39 - Shape Representation
- Lecture 40 - Shape Comparison

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

NPTEL Video Course - Computer Science and Engineering - Logic for CS

Subject Co-ordinator - Prof. S. Arun Kumar

Co-ordinating Institute - IIT - Delhi

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

Lecture 1 - Introduction
Lecture 2 - Propositional Logic Syntax
Lecture 3 - Semantics of Propositional Logic
Lecture 4 - Logical and Algebraic Concepts
Lecture 5 - Identities and Normal forms
Lecture 6 - Tautology Checking
Lecture 7 - Propositional Unsatisfiability
Lecture 8 - Analytic Tableaux
Lecture 9 - Consistency and Completeness
Lecture 10 - The Completeness Theorem
Lecture 11 - Maximally Consistent Sets
Lecture 12 - Formal Theories
Lecture 13 - Proof Theory
Lecture 14 - Derived Rules
Lecture 15 - The Hilbert System
Lecture 16 - The Hilbert System
Lecture 17 - Introduction to Predicate Logic
Lecture 18 - The Semantic of Predicate Logic
Lecture 19 - Substitutions
Lecture 20 - Models
Lecture 21 - Structures and Substructures
Lecture 22 - First-Order Theories
Lecture 23 - Predicate Logic
Lecture 24 - Existential Quantification
Lecture 25 - Normal Forms
Lecture 26 - Skolemization
Lecture 27 - Substitutions and Instantiations
Lecture 28 - Unification
Lecture 29 - Resolution in FOL

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- Lecture 30 - More on Resolution in FOL
- Lecture 31 - Resolution
- Lecture 32 - Resolution and Tableaux
- Lecture 33 - Completeness of Tableaux Method
- Lecture 34 - Completeness of the Hilbert System
- Lecture 35 - First-Order Theories
- Lecture 36 - Towards Logic Programming
- Lecture 37 - Verification of Imperative Programs
- Lecture 38 - Verification of WHILE Programs
- Lecture 39 - References

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

NPTEL Video Course - Computer Science and Engineering - Computer Architecture (Prof. Anshul Kumar)

Subject Co-ordinator - Prof. Anshul Kumar

Co-ordinating Institute - IIT - Delhi

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

Lecture 1 - Introduction to Computer Architecture
Lecture 2 - History of Computers
Lecture 3 - Instruction Set Architecture - I
Lecture 4 - Instruction Set Architecture - II
Lecture 5 - Instruction Set Architecture - III
Lecture 6 - Recursive Programs
Lecture 7 - Architecture Space
Lecture 8 - Architecture Examples
Lecture 9 - Performance
Lecture 10 - Performance
Lecture 11 - Binary Arithmetic, ALU Design
Lecture 12 - ALU Design, Overflow
Lecture 13 - Multiplier Design
Lecture 14 - Divider Design
Lecture 15 - Fast Addition , Multiplication
Lecture 16 - Floating Point Arithmetic
Lecture 17 - Processor Design - Introduction
Lecture 18 - Processor Design
Lecture 19 - Processor Design - Simple Design
Lecture 20 - Processor Design - Multi Cycle Approach
Lecture 21 - Processor Design - Control for Multi Cycle
Lecture 22 - Processor Design - Micro programmed Control
Lecture 23 - Processor Design - Exception Handling
Lecture 24 - Pipelined Processor Design Basic Idea
Lecture 25 - Pipelined Processor Design
Lecture 26 - Pipelined Processor Design
Lecture 27 - Pipelined Processor Design
Lecture 28 - Memory Hierarchy
Lecture 29 - Memory Hierarchy

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- Lecture 30 - Memory Hierarchy
- Lecture 31 - Memory Hierarchy
- Lecture 32 - Memory Hierarchy
- Lecture 33 - Input / Output Subsystem
- Lecture 34 - Input / Output Subsystem
- Lecture 35 - Input / Output Subsystem
- Lecture 36 - Input / Output Subsystem
- Lecture 37 - Input / Output Subsystem
- Lecture 38 - Concluding Remarks

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

NPTEL Video Course - Computer Science and Engineering - Data Structures And Algorithms

Subject Co-ordinator - Prof. Naveen Garg

Co-ordinating Institute - IIT - Delhi

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

Lecture 1 - Introduction to Data Structures and Algorithms

Lecture 2 - Stacks

Lecture 3 - Queues and Linked Lists

Lecture 4 - Dictionaries

Lecture 5 - Hashing

Lecture 6 - Trees

Lecture 7 - Tree Walks / Traversals

Lecture 8 - Ordered Dictionaries

Lecture 9 - Deletion

Lecture 10 - Quick Sort

Lecture 11 - AVL Trees

Lecture 12 - AVL Trees

Lecture 13 - Trees

Lecture 14 - Red Black Trees

Lecture 15 - Insertion in Red Black Trees

Lecture 16 - Disk Based Data Structures

Lecture 17 - Case Study

Lecture 18 - Tries

Lecture 19 - Data Compression

Lecture 20 - Priority Queues

Lecture 21 - Binary Heaps

Lecture 22 - Why Sorting

Lecture 23 - More Sorting

Lecture 24 - Graphs

Lecture 25 - Data Structures for Graphs

Lecture 26 - Two Applications of Breadth First Search

Lecture 27 - Depth First Search

Lecture 28 - Applications of DFS

Lecture 29 - DFS in Directed Graphs

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- Lecture 30 - Applications of DFS in Directed Graphs
- Lecture 31 - Minimum Spanning Trees
- Lecture 32 - The Union
- Lecture 33 - Prims Algorithm for Minimum Spanning Trees
- Lecture 34 - Single Source Shortest Paths
- Lecture 35 - Correctness of Dijkstras Algorithm
- Lecture 36 - Single Source Shortest Paths

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

NPTEL Video Course - Computer Science and Engineering - Introduction to Computer Graphics

Subject Co-ordinator - Prof. Prem K Kalra

Co-ordinating Institute - IIT - Delhi

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

Lecture 1 - Introduction
Lecture 2 - Raster Graphics
Lecture 3 - Raster Graphics (Continued...)
Lecture 4 - Clipping
Lecture 5 - Polygon Clipping and Polygon Scan Conversion
Lecture 6 - Transformations
Lecture 7 - Transformations (Continued...)
Lecture 8 - 3D Viewing
Lecture 9 - 3D Viewing (Continued...)
Lecture 10 - Curves
Lecture 11 - Assignment - I
Lecture 12 - Curves (Continued...)
Lecture 13 - Curves (Continued...)
Lecture 14 - Curves (Continued...)
Lecture 15 - Curves (Continued...)
Lecture 16 - Surfaces
Lecture 17 - Surfaces (Continued...)
Lecture 18 - Surfaces (Continued...)
Lecture 19 - Surfaces (Continued...)
Lecture 20 - Hierarchical Models
Lecture 21 - Rendering
Lecture 22 - Rendering (Continued...)
Lecture 23 - Rendering (Continued...)
Lecture 24 - Ray Tracing
Lecture 25 - Ray Tracing (Continued...)
Lecture 26 - Ray Tracing (Continued...)
Lecture 27 - Assignment
Lecture 28 - Hidden Surface Elimination
Lecture 29 - Hidden Surface Elimination (Continued...)

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- Lecture 30 - Hidden Surface Elimination (Continued...)
- Lecture 31 - Fractals
- Lecture 32 - Fractals (Continued...)
- Lecture 33 - Computer Animation
- Lecture 34 - Animation (Continued...)
- Lecture 35 - Animation (Continued...)

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

NPTEL Video Course - Computer Science and Engineering - Principles of Programming Languages

Subject Co-ordinator - Prof. S. Arun Kumar

Co-ordinating Institute - IIT - Delhi

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

Lecture 1 - Introduction
Lecture 2 - Syntax
Lecture 3 - Grammars
Lecture 4 - Ambiguity
Lecture 5 - PLO
Lecture 6 - Semantics
Lecture 7 - Syntactic Classes
Lecture 8 - Transition Systems
Lecture 9 - PLO
Lecture 10 - Binding
Lecture 11 - Environments
Lecture 12 - Declarations
Lecture 13 - Commands
Lecture 14 - Stores
Lecture 15 - Summary
Lecture 16 - Declarations and Commands
Lecture 17 - Blocks
Lecture 18 - Qualification
Lecture 19 - Pragmatics
Lecture 20 - Data
Lecture 21 - Structured Data
Lecture 22 - Sequences
Lecture 23 - Control
Lecture 24 - Non-Determinacy
Lecture 25 - Programming Languages
Lecture 26 - Programming Languages
Lecture 27 - Programming Languages
Lecture 28 - Data as Functions
Lecture 29 - Data and Fixpoints

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- Lecture 30 - Normal Forms
- Lecture 31 - Programming Languages
- Lecture 32 - Monomorphism
- Lecture 33 - Polymorphism
- Lecture 34 - Type Checking
- Lecture 35 - Contexts
- Lecture 36 - Abstracts
- Lecture 37 - Procedures
- Lecture 38 - Meanings
- Lecture 39 - Parameters
- Lecture 40 - The Future

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

NPTEL Video Course - Computer Science and Engineering - Parallel Computing

Subject Co-ordinator - Dr. Subodh Kumar

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Introduction
- Lecture 2 - Parallel Programming Paradigms
- Lecture 3 - Parallel Architecture
- Lecture 4 - Parallel Architecture (case studies)
- Lecture 5 - Open MP
- Lecture 6 - Open MP (Continued.)
- Lecture 7 - Open MP (Continued..)
- Lecture 8 - Open MP & PRAM Model of Computation
- Lecture 9 - PRAM
- Lecture 10 - Models of Parallel Computation, Complexity
- Lecture 11 - Memory Consistency
- Lecture 12 - Memory Consistency & Performance Issues
- Lecture 13 - Parallel Program Design
- Lecture 14 - Shared Memory & Message Passing
- Lecture 15 - MPI
- Lecture 16 - MPI (Continued.)
- Lecture 17 - MPI (Continued..)
- Lecture 18 - Algorithmic Techniques
- Lecture 19 - Algorithmic Techniques (Continued.)
- Lecture 20 - Algorithmic Techniques (Continued..)
- Lecture 21 - CUDA
- Lecture 22 - CUDA (Continued.)
- Lecture 23 - CUDA (Continued..)
- Lecture 24 - CUDA (Continued...)
- Lecture 25 - CUDA (Continued....)
- Lecture 26 - CUDA (Continued.....)
- Lecture 27 - CUDA (Continued.....)
- Lecture 28 - Algorithms, Merging & Sorting
- Lecture 29 - Algorithms, Merging & Sorting (Continued.)

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- Lecture 30 - Algorithms, Merging & Sorting (Continued..)
- Lecture 31 - Algorithms, Merging & Sorting (Continued...)
- Lecture 32 - Algorithms, Merging & Sorting (Continued....)
- Lecture 33 - Lower Bounds Lock Free Synchronization, Load Stealing
- Lecture 34 - Lock Free Synchronization, Graph Algorithms

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

NPTEL Video Course - Computer Science and Engineering - Design Verification and Test of Digital VLSI Circuits

Subject Co-ordinator - Dr. Santosh Biswas, Prof. Jatindra Kumar Deka

Co-ordinating Institute - IIT - Guwahati

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

Lecture 1 - Introduction to Digital VLSI Design Flow

Lecture 2 - High Level Design Representation

Lecture 3 - Transformations for High Level Synthesis

Lecture 4 - Introduction to HLS

Lecture 5 - Scheduling Algorithms - 1

Lecture 6 - Scheduling Algorithms - 2

Lecture 7 - Binding and Allocation Algorithms

Lecture 8 - Two level Boolean Logic Synthesis - 1

Lecture 9 - Two level Boolean Logic Synthesis - 2

Lecture 10 - Two level Boolean Logic Synthesis - 3

Lecture 11 - Heuristic Minimization of Two-Level Circuits

Lecture 12 - Finite State Machine Synthesis

Lecture 13 - Multilevel Implementation

Lecture 14 - Introduction to formal methods for design verification

Lecture 15 - Temporal Logic

Lecture 16 - Syntax and Semantics of CTL

Lecture 17 - Syntax and Semantics of CTL â Continued

Lecture 18 - Equivalence between CTL Formulas

Lecture 19 - Introduction to Model Checking

Lecture 20 - Model Checking Algorithms - I

Lecture 21 - Model Checking Algorithms - II

Lecture 22 - Model Checking with Fairness

Lecture 23 - Binary Decision Diagram

Lecture 24 - Ordered Binary Decision Diagram

Lecture 25 - Operation on Ordered Binary Decision Diagram

Lecture 26 - Ordered Binary Decision Diagram for State Transition Systems

Lecture 27 - Symbolic Model Checking

Lecture 28 - Introduction to Digital VLSI Testing

Lecture 29 - Functional and Structural Testing

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- Lecture 30 - Fault Equivalence
- Lecture 31 - Fault Simulation - 1
- Lecture 32 - Fault Simulation - 2
- Lecture 33 - Fault Simulation - 3
- Lecture 34 - Testability Measures (SCOAP)
- Lecture 35 - Introduction to Automatic Test Pattern Generation (ATPG) and ATPG Algebras
- Lecture 36 - D-Algorithm - 1
- Lecture 37 - D-Algorithm - 2
- Lecture 38 - ATPG for Synchronous Sequential Circuits
- Lecture 39 - Scan Chain based Sequential Circuit Testing - 1
- Lecture 40 - Scan Chain based Sequential Circuit Testing - 2
- Lecture 41 - Built in Self Test - 1
- Lecture 42 - Built in Self Test - 2
- Lecture 43 - Memory Testing - 1
- Lecture 44 - Memory Testing - 2

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NPTEL Video Course - Computer Science and Engineering - Computer Algorithms - 2

Subject Co-ordinator - Prof. Shashank K. Mehta

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Graph_Basics
Lecture 2 - Breadth_First_Search
Lecture 3 - Dijkstra_Algo
Lecture 4 - All Pair Shortest Path
Lecture 5 - Matriods
Lecture 6 - Minimum Spanning Tree
Lecture 7 - Edmond's Matching Algo I
Lecture 8 - Edmond's Matching Algo II
Lecture 9 - Flow Networks
Lecture 10 - Ford Fulkerson Method
Lecture 11 - Edmond Karp Algo
Lecture 12 - Matrix Inversion
Lecture 13 - Matrix Decomposition
Lecture 14 - Knuth Morris Pratt Algo
Lecture 15 - Rabin Karp Algo
Lecture 16 - NFA Simulation
Lecture 17 - Integer-Polynomial Ops-I
Lecture 18 - Integer-Polynomial Ops-II
Lecture 19 - Integer-Polynomial Ops-III
Lecture 20 - Chinese Remainder-I
Lecture 21 - Chinese Remainder-II
Lecture 22 - Chinese Remainder-III
Lecture 23 - Discrete Fourier Transform-I
Lecture 24 - Discrete Fourier Transform-II
Lecture 25 - Discrete Fourier Transform-III
Lecture 26 - Schonhage Strassen Algo
Lecture 27 - Linear Programming-I
Lecture 28 - Linear Programming-II
Lecture 29 - Geometry-I

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- Lecture 30 - Geometry-II
- Lecture 31 - Geometry-III
- Lecture 32 - Approximation Algo-I
- Lecture 33 - Approximation Algo-II
- Lecture 34 - Approximation Algo-III
- Lecture 35 - General

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

NPTEL Video Course - Computer Science and Engineering - Theory of Computation

Subject Co-ordinator - Prof. Somenath Biswas

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Theory of Computation
Lecture 2 - Theory of Computation
Lecture 3 - Theory of Computation
Lecture 4 - Theory of Computation
Lecture 5 - Theory of Computation
Lecture 6 - Theory of Computation
Lecture 7 - Theory of Computation
Lecture 8 - Theory of Computation
Lecture 9 - Theory of Computation
Lecture 10 - Theory of Computation
Lecture 11 - Theory of Computation
Lecture 12 - Theory of Computation
Lecture 13 - Theory of Computation
Lecture 14 - Theory of Computation
Lecture 15 - Theory of Computation
Lecture 16 - Theory of Computation
Lecture 17 - Theory of Computation
Lecture 18 - Theory of Computation
Lecture 19 - Theory of Computation
Lecture 20 - Theory of Computation
Lecture 21 - Theory of Computation
Lecture 22 - Theory of Computation
Lecture 23 - Theory of Computation
Lecture 24 - Theory of Computation
Lecture 25 - Theory of Computation
Lecture 26 - Theory of Computation
Lecture 27 - Theory of Computation
Lecture 28 - Theory of Computation
Lecture 29 - Theory of Computation

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Lecture 31 - Theory of Computation
Lecture 32 - Theory of Computation
Lecture 33 - Theory of Computation

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

NPTEL Video Course - Computer Science and Engineering - Introduction to Problem Solving and Programming

Subject Co-ordinator - Prof. D. Gupta

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1
Lecture 2
Lecture 3
Lecture 4
Lecture 5
Lecture 6
Lecture 7
Lecture 8
Lecture 9
Lecture 10
Lecture 11
Lecture 12
Lecture 13
Lecture 14
Lecture 15
Lecture 16
Lecture 17
Lecture 18
Lecture 19
Lecture 20
Lecture 21
Lecture 22
Lecture 23
Lecture 24

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NPTEL Video Course - Computer Science and Engineering - Riemann Hypothesis and its Applications

Subject Co-ordinator - Prof. Manindra Agrawal

Co-ordinating Institute - IIT - Kanpur

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

Lecture - 1
Lecture - 2
Lecture - 3
Lecture - 4
Lecture - 5
Lecture - 6
Lecture - 7
Lecture - 8
Lecture - 9
Lecture - 10
Lecture - 11
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Lecture - 13
Lecture - 14
Lecture - 15
Lecture - 16
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Lecture - 27
Lecture - 28
Lecture - 29

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

NPTEL Video Course - Computer Science and Engineering - Biometrics

Subject Co-ordinator - Prof. Phalguni Gupta

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Biometrics
Lecture 2 - Biometrics
Lecture 3 - Biometrics
Lecture 4 - Biometrics
Lecture 5 - Biometrics
Lecture 6 - Biometrics
Lecture 7 - Biometrics
Lecture 8 - Biometrics
Lecture 9 - Biometrics
Lecture 10 - Biometrics
Lecture 11 - Biometrics
Lecture 12 - Biometrics
Lecture 13 - Biometrics
Lecture 14 - Biometrics
Lecture 15 - Biometrics
Lecture 16 - Biometrics
Lecture 17 - Biometrics
Lecture 18 - Biometrics
Lecture 19 - Biometrics
Lecture 20 - Biometrics
Lecture 21 - Biometrics
Lecture 22 - Biometrics
Lecture 23 - Biometrics
Lecture 24 - Biometrics
Lecture 25 - Biometrics
Lecture 26 - Biometrics

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

NPTEL Video Course - Computer Science and Engineering - Parallel Algorithm

Subject Co-ordinator - Prof. Phalguni Gupta

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Parallel Algorithm
Lecture 2 - Parallel Algorithm
Lecture 3 - Parallel Algorithm
Lecture 4 - Parallel Algorithm
Lecture 5 - Parallel Algorithm
Lecture 6 - Parallel Algorithm
Lecture 7 - Parallel Algorithm
Lecture 8 - Parallel Algorithm
Lecture 9 - Parallel Algorithm
Lecture 10 - Parallel Algorithm
Lecture 11 - Parallel Algorithm
Lecture 12 - Parallel Algorithm
Lecture 13 - Parallel Algorithm
Lecture 14 - Parallel Algorithm
Lecture 15 - Parallel Algorithm
Lecture 16 - Parallel Algorithm
Lecture 17 - Parallel Algorithm
Lecture 18 - Parallel Algorithm
Lecture 19 - Parallel Algorithm
Lecture 20 - Parallel Algorithm
Lecture 21 - Parallel Algorithm
Lecture 22 - Parallel Algorithm
Lecture 23 - Parallel Algorithm
Lecture 24 - Parallel Algorithm
Lecture 25 - Parallel Algorithm

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

NPTEL Video Course - Computer Science and Engineering - Computer Architecture (Dr. Mainak Chaudhuri)

Subject Co-ordinator - Dr. Mainak Chaudhuri

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction, Amdahl's law, CPI equation
- Lecture 2 - CPI equation, research practices, instruction set architecture
- Lecture 3 - Instruction set architecture
- Lecture 4 - Instruction set architecture
- Lecture 5 - Instruction set architecture, case study with MIPS-I
- Lecture 6 - Case study with MIPS-I
- Lecture 7 - Case study with MIPS-I
- Lecture 8 - Binary instrumentation for architectural studies
- Lecture 9 - Binary instrumentation for architectural studies
- Lecture 10 - Basic pipelining, branch prediction
- Lecture 11 - Basic pipelining, branch prediction
- Lecture 12 - Basic pipelining, branch prediction
- Lecture 13 - Basic pipelining, branch prediction
- Lecture 14 - Basic pipelining, branch prediction
- Lecture 15 - Basic pipelining, branch prediction
- Lecture 16 - Basic pipelining, branch prediction
- Lecture 17 - Basic pipelining, branch prediction
- Lecture 18 - Basic pipelining, branch prediction
- Lecture 19 - Basic pipelining, branch prediction
- Lecture 20 - Dynamic scheduling, speculative execution
- Lecture 21 - Dynamic scheduling, speculative execution
- Lecture 22 - Dynamic scheduling, speculative execution
- Lecture 23 - Dynamic scheduling, speculative execution
- Lecture 24 - Dynamic scheduling, speculative execution
- Lecture 25 - Virtual memory and caches
- Lecture 26 - Virtual memory and caches
- Lecture 27 - Virtual memory and caches
- Lecture 28 - Topics in memory system, DRAM and SRAM technology
- Lecture 29 - Topics in memory system, DRAM and SRAM technology

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

- Lecture 30 - Topics in memory system, DRAM and SRAM technology
- Lecture 31 - Case study
- Lecture 32 - Case study
- Lecture 33 - Case study
- Lecture 34 - Case study
- Lecture 35 - Input/Output
- Lecture 36 - Simultaneous multithreading, multi-cores

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

NPTEL Video Course - Computer Science and Engineering - Compiler Design (Prof. Sanjeev K Aggarwal)

Subject Co-ordinator - Prof. Sanjeev K Aggarwal

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Compiler Design
Lecture 2 - Compiler Design
Lecture 3 - Compiler Design
Lecture 4 - Compiler Design
Lecture 5 - Compiler Design
Lecture 6 - Compiler Design
Lecture 7 - Compiler Design
Lecture 8 - Compiler Design
Lecture 9 - Compiler Design
Lecture 10 - Compiler Design
Lecture 11 - Compiler Design
Lecture 12 - Compiler Design
Lecture 13 - Compiler Design
Lecture 14 - Compiler Design
Lecture 15 - Compiler Design
Lecture 16 - Compiler Design
Lecture 17 - Compiler Design
Lecture 18 - Compiler Design
Lecture 19 - Compiler Design
Lecture 20 - Compiler Design
Lecture 21 - Compiler Design
Lecture 22 - Compiler Design
Lecture 23 - Compiler Design
Lecture 24 - Compiler Design
Lecture 25 - Compiler Design
Lecture 26 - Compiler Design
Lecture 27 - Compiler Design
Lecture 28 - Compiler Design
Lecture 29 - Compiler Design
Lecture 30 - Compiler Design

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

NPTEL Video Course - Computer Science and Engineering - NOC:Introduction to programming in C

Subject Co-ordinator - Prof. Satyadev Nandakumar

Co-ordinating Institute - IIT - Kanpur

Lecture 1 - Intro - Process of programming
Lecture 2 - Intro - GCD
Lecture 3 - Intro - Programming cycle
Lecture 4 - Intro - Tracing a simple program
Lecture 5 - Intro - Variables
Lecture 6 - Intro - Operators
Lecture 7 - Loops - While
Lecture 8 - Loops - While example
Lecture 9 - Loops - While GCD example
Lecture 10 - Loops - Longest 1
Lecture 11 - Loops - Longest 2
Lecture 12 - Loops - Longest 3
Lecture 13 - Loops - Do-while
Lecture 14 - Loops - Matrix using nested loops
Lecture 15 - Loops - For
Lecture 16 - Loops - Matrix using nested for loops
Lecture 17 - Loops - Break statement
Lecture 18 - Loops - Continue statement
Lecture 19 - Loops - Continue statement example
Lecture 20 - Data types in C
Lecture 21 - ASCII code
Lecture 22 - Operators Expressions Associativity
Lecture 23 - Precedence of operators
Lecture 24 - Expression evaluation
Lecture 25 - Functions - Introduction
Lecture 26 - Functions - How functions are executed
Lecture 27 - Functions - Examples - 1
Lecture 28 - Functions - Examples - 2
Lecture 29 - Arrays in C
Lecture 30 - Initializing arrays
Lecture 31 - Initializing character arrays
Lecture 32 - Pointers in C
Lecture 33 - Pointer arithmetic

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

- Lecture 34 - Function with pointer arguments
- Lecture 35 - Example - copy a subarray
- Lecture 36 - Programming using arrays and pointers
- Lecture 37 - sizeof operator
- Lecture 38 - Returning pointers from functions
- Lecture 39 - Example - return duplicate of a string
- Lecture 40 - Recursion - Linear Recursion
- Lecture 41 - Recursion - Linear Recursion - 2
- Lecture 42 - Recursion - Two-way Recursion
- Lecture 43 - Multidimensional Arrays
- Lecture 44 - Multidimensional Arrays and Pointers
- Lecture 45 - Multidimensional Arrays and Pointers - continued (2)
- Lecture 46 - Multidimensional Arrays and Pointers - continued (3)
- Lecture 47 - Multidimensional Arrays
- Lecture 48 - Multidimensional Arrays and Pointers
- Lecture 49 - Multidimensional Arrays and Pointers - 2
- Lecture 50 - Multidimensional Arrays and Pointers - 3
- Lecture 51 - File Handling
- Lecture 52 - Some other file-handling functions

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

NPTEL Video Course - Computer Science and Engineering - NOC:Fundamentals of Database Systems

Subject Co-ordinator - Dr. Arnab Bhattacharya

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Introduction to Databases
Lecture 2 - Relational Data Model
Lecture 3 - Relational Algebra Basic Operators
Lecture 4 - Relational Algebra Composition of Operators
Lecture 5 - Relational Algebra Additional Operators
Lecture 6 - Relational Algebra Extended Relational Algebra
Lecture 7 - Relational Algebra
Lecture 8 - SQL
Lecture 9 - SQL
Lecture 10 - SQL
Lecture 11 - SQL
Lecture 12 - Normalization Theory
Lecture 13 - Normalization Theory
Lecture 14 - Normalization Theory
Lecture 15 - Normalization Theory
Lecture 16 - Normalization Theory
Lecture 17 - Physical Design
Lecture 18 - Database Indexing
Lecture 19 - Database Indexing
Lecture 20 - Query Processing
Lecture 21 - Query Processing
Lecture 22 - Query Processing
Lecture 23 - Query Processing
Lecture 24 - Query Optimization
Lecture 25 - Query Optimization
Lecture 26 - Query Optimization
Lecture 27 - Query Optimization
Lecture 28 - Database Transactions
Lecture 29 - Database Transactions

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

- Lecture 30 - Recovery Systems
- Lecture 31 - Recovery Systems
- Lecture 32 - Recovery Systems
- Lecture 33 - Schedules
- Lecture 34 - Schedules
- Lecture 35 - Schedules
- Lecture 36 - Schedules
- Lecture 37 - Schedules
- Lecture 38 - Concurrency Control
- Lecture 39 - Concurrency Control
- Lecture 40 - Concurrency Control
- Lecture 41 - Concurrency Control
- Lecture 42 - Concurrency Control
- Lecture 43 - Concurrency Control
- Lecture 44 - Concurrency Control
- Lecture 45 - NoSQL
- Lecture 46 - NoSQL
- Lecture 47 - NoSQL
- Lecture 48 - Big Data

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

NPTEL Video Course - Computer Science and Engineering - NOC:Theory of Computation

Subject Co-ordinator - Prof. Raghunath Tewari

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to Finite Automata
- Lecture 2 - Basic Notation and Convention, DFA Edit Lesson
- Lecture 3 - Example of DFAs
- Lecture 4 - Computation by DFA and Regular operation
- Lecture 5 - Introduction to Nondeterminism
- Lecture 6 - NFA, definition and examples
- Lecture 7 - Equivalence of NFA and DFA, Closure properties
- Lecture 8 - Regular expressions
- Lecture 9 - Algebraic properties, RE to NFA conversion
- Lecture 10 - GNFA to RE conversion
- Lecture 11 - More closure properties of regular languages
- Lecture 12 - Non-regular languages and pumping lemma
- Lecture 13 - Examples of non-regular languages
- Lecture 14 - DFA minimization
- Lecture 15 - Introduction to CFGs
- Lecture 16 - Examples of CFGs, Reg subset of CFL
- Lecture 17 - Parse tree, derivation, ambiguity
- Lecture 18 - Normal forms, Chomsky normal form
- Lecture 19 - Non-CFLs, pumping lemma
- Lecture 20 - Examples of non- CFLs
- Lecture 21 - Pushdown Automata
- Lecture 22 - Pushdown Automata - Definition and Example
- Lecture 23 - Pushdown Automata - Examples and Relation with CFGs
- Lecture 24 - Closure Properties of CFLs
- Lecture 25 - Deterministic Context Free Languages
- Lecture 26 - Turing Machine
- Lecture 27 - More on Turing Machine
- Lecture 28 - Non deterministic Turing Machine Edit Lesson
- Lecture 29 - Configuration Graphs

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

- Lecture 30 - Closure Properties of Decidable and Turing recognizable languages
- Lecture 31 - Decidability properties of Regular and Context Free Languages
- Lecture 32 - Undecidability
- Lecture 33 - More on Undecidability
- Lecture 34 - Reduction
- Lecture 35 - Applications of Reduction
- Lecture 36 - Rice's theorem
- Lecture 37 - Introduction to Computational Complexity Theory
- Lecture 38 - More on the class NP
- Lecture 39 - NP-Completeness
- Lecture 40 - More on NP-Completeness

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

NPTEL Video Course - Computer Science and Engineering - NOC:Modern Algebra

Subject Co-ordinator - Prof. Manindra Agrawal

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Groups

Lecture 2 - Groups

Lecture 3 - Groups

Lecture 4 - Groups

Lecture 5 - Groups

Lecture 6 - Groups

Lecture 7 - Rings

Lecture 8 - Rings

Lecture 9 - Rings

Lecture 10 - Rings

Lecture 11 - Rings

Lecture 12 - Rings

Lecture 13 - Rings

Lecture 14 - Fields

Lecture 15 - Cauchy sequences and real numbers

Lecture 16 - Properties of Fields

Lecture 17 - Finite Fields

Lecture 18 - Application of Fields

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

NPTEL Video Course - Computer Science and Engineering - Cryptography and Network Security

Subject Co-ordinator - Dr. Debdeep Mukhopadhyay

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction
- Lecture 2 - Overview on Modern Cryptography
- Lecture 3 - Introduction to Number Theory
- Lecture 4 - Probability and Information Theory
- Lecture 5 - Classical Cryptosystems
- Lecture 6 - Cryptanalysis of Classical Ciphers
- Lecture 7 - Shannons Theory
- Lecture 8 - Shannons Theory (Continued...1)
- Lecture 9 - Shannons Theory (Continued...2)
- Lecture 10 - Symmetric Key Ciphers
- Lecture 11 - Block Cipher Standards (DES)
- Lecture 12 - Block Cipher Standards (AES)
- Lecture 13 - Block Cipher Standards (AES) (Continued...)
- Lecture 14 - Linear Cryptanalysis
- Lecture 15 - Differential Cryptanalysis
- Lecture 16 - Few other Cryptanalytic Techniques
- Lecture 17 - Overview on S-Box Design Principles
- Lecture 18 - Modes of Operation of Block Ciphers
- Lecture 19 - Stream Ciphers
- Lecture 20 - Stream Ciphers (Continued...1)
- Lecture 21 - Stream Ciphers (Continued...2)
- Lecture 22 - Pseudorandomness
- Lecture 23 - Cryptographic Hash Functions
- Lecture 24 - Cryptographic Hash Functions (Continued...1)
- Lecture 25 - Cryptographic Hash Functions (Continued...2)
- Lecture 26 - Message Authentication Codes
- Lecture 27 - More Number Theoretic Results
- Lecture 28 - The RSA Cryptosystem
- Lecture 29 - Primality Testing

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

- Lecture 30 - Factoring Algorithms
- Lecture 31 - Some Comments on the Security of RSA
- Lecture 32 - Discrete Logarithm Problem (DLP)
- Lecture 33 - The Diffie-Hellman Problem and Security of ElGamal Systems
- Lecture 34 - An Introduction to Elliptic Curve Cryptography
- Lecture 35 - Application of Elliptic Curves to Cryptography
- Lecture 36 - Implementation of Elliptic Curve Cryptography
- Lecture 37 - Secret Sharing Schemes
- Lecture 38 - A Tutorial on Network Protocols
- Lecture 39 - System Security
- Lecture 40 - Firewalls and Intrusion Detection Systems
- Lecture 41 - Side Channel Analysis of Cryptographic Implementations

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

NPTEL Video Course - Computer Science and Engineering - High Performance Computer Architecture

Subject Co-ordinator - Prof. Ajit Pal

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction & Course Outline
Lecture 2 - Performance
Lecture 3 - Instruction Set Architecture
Lecture 4 - MIPS ISA and Processor
Lecture 5 - MIPS ISA and Processor (Continued...)
Lecture 6 - Pipelining - Introduction
Lecture 7 - Instruction Pipelining
Lecture 8 - Pipeline Hazards
Lecture 9 - Data Hazards
Lecture 10 - Software Pipelining
Lecture 11 - In Quest of Higher ILP
Lecture 12 - In Quest of Higher ILP (Continued...)
Lecture 13 - Dynamic Instruction Scheduling
Lecture 14 - Dynamic Instruction Scheduling (Continued...)
Lecture 15 - Control Hazards
Lecture 16 - Branch Prediction
Lecture 17 - Branch Prediction (Continued...)
Lecture 18 - Dynamic Instruction Scheduling with Branch Prediction
Lecture 19 - Hardware-based Speculation
Lecture 20 - Tutorial - I
Lecture 21 - Hierarchical Memory Organization
Lecture 22 - Hierarchical Memory Organization (Continued...1)
Lecture 23 - Hierarchical Memory Organization (Continued...2)
Lecture 24 - Hierarchical Memory Organization (Continued...3)
Lecture 25 - Cache Optimization Techniques (Continued...1)
Lecture 26 - Cache Optimization Techniques (Continued...2)
Lecture 27 - Main Memory Organization
Lecture 28 - Main Memory Optimizations
Lecture 29 - Virtual Memory

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

- Lecture 30 - Virtual Memory (Continued...)
- Lecture 31 - Virtual Machines
- Lecture 32 - Storage Technology
- Lecture 33 - Storage Technology (Continued...)
- Lecture 34 - Case Studies
- Lecture 35 - Case Studies (Continued...1)
- Lecture 36 - Case Studies (Continued...2)
- Lecture 37 - Multithreading & Multiprocessing
- Lecture 38 - Simultaneous Multithreading
- Lecture 39 - Symmetric Multiprocessors
- Lecture 40 - Distributed Memory Multiprocessors
- Lecture 41 - Cluster, Grid and Cloud Computing

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

NPTEL Video Course - Computer Science and Engineering - Low Power VLSI Circuits and Systems

Subject Co-ordinator - Prof. Ajit Pal

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction & Course Outline
- Lecture 2 - MOS Transistors - I
- Lecture 3 - MOS Transistors - II
- Lecture 4 - MOS Transistors - III
- Lecture 5 - MOS Transistors - IV
- Lecture 6 - MOS Inverters - I
- Lecture 7 - MOS Inverters - II
- Lecture 8 - MOS Inverters - III
- Lecture 9 - MOS Inverters - IV
- Lecture 10 - Static CMOS Circuits - I
- Lecture 11 - Static CMOS Circuits - II
- Lecture 12 - MOS Dynamic Circuits - I
- Lecture 13 - MOS Dynamic Circuits - II
- Lecture 14 - Pass Transistor Logic Circuits - I
- Lecture 15 - Pass Transistor Logic Circuits - II
- Lecture 16 - MOS Memories
- Lecture 17 - Finite State Machines
- Lecture 18 - Switching Power Dissipation
- Lecture 19 - Tutorial - I
- Lecture 20 - Dynamic Power Dissipation
- Lecture 21 - Leakage Power Dissipation
- Lecture 22 - Supply Voltage Scaling - I
- Lecture 23 - Supply Voltage Scaling - II
- Lecture 24 - Supply Voltage Scaling - III
- Lecture 25 - Supply Voltage Scaling - IV
- Lecture 26 - Tutorial - II
- Lecture 27 - Minimizing Switched Capacitance - I
- Lecture 28 - Minimizing Switched Capacitance - II
- Lecture 29 - Minimizing Switched Capacitance - III

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

- Lecture 30 - Minimizing Switched Capacitance - IV
- Lecture 31 - Minimizing Switched Capacitance - V
- Lecture 32 - Minimizing Leakage Power - I
- Lecture 33 - Minimizing Leakage Power - II
- Lecture 34 - Minimizing Leakage Power - III
- Lecture 35 - Variation Tolerant Design
- Lecture 36 - Adiabatic Logic Circuits
- Lecture 37 - Battery-Driven System Design
- Lecture 38 - CAD Tools for Low Power
- Lecture 39 - Tutorial - III
- Lecture 40 - Course Summary

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

NPTEL Video Course - Computer Science and Engineering - Real Time Systems

Subject Co-ordinator - Prof. Rajib Mall

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction
- Lecture 2 - Real - Time System Characteristics
- Lecture 3 - Few Basic Issues
- Lecture 4 - Modelling Timing Constraints
- Lecture 5 - Modelling Timing Constraints (Continued.)
- Lecture 6 - Basics of Real - Time Task Scheduling
- Lecture 7 - Cyclic Scheduler
- Lecture 8 - Event - Driven Scheduling
- Lecture 9 - Rate Monotonic Scheduler
- Lecture 10 - RMA Scheduling
- Lecture 11 - Deadline Monotonic Scheduling and Other Issues
- Lecture 12 - Few Issues in Use of RMA
- Lecture 13 - Resource Sharing Among Real-Time Tasks
- Lecture 14 - Highest Locker and Priority Ceiling Protocols
- Lecture 15 - An Analysis of Priority Ceiling Protocol
- Lecture 16 - Handling Task Dependencies
- Lecture 17 - Real-Time Task Scheduling on Multiprocessors and Distributed Systems
- Lecture 18 - Real-Time Task Scheduling on Multiprocessors and Distributed Systems (Continued.)
- Lecture 19 - Clock Synchronization in Distributed Real-Time Systems
- Lecture 20 - Internal Clock Synchronization in Presence of Byzantine Clocks
- Lecture 21 - A Few Basic Issues in Real-Time Operating Systems
- Lecture 22 - Tutorial - I
- Lecture 23 - A Few Basic Issues in Real-Time Operating Systems (Continued.)
- Lecture 24 - Unix and Windows as RTOS
- Lecture 25 - Real - Time POSIX
- Lecture 26 - Real - Time POSIX (Continued.)
- Lecture 27 - Open Source and Commercial RTOS
- Lecture 28 - Open Source and Commercial RTOS (Continued.)
- Lecture 29 - Benchmarking Real - Time Computer & Operating Systems

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

- Lecture 30 - Benchmarking Real - Time Computer & Operating Systems (Continued.)
- Lecture 31 - Real - Time Communications
- Lecture 32 - Few Basic Issues in Real - Time Communications
- Lecture 33 - Review of Computer Networking
- Lecture 34 - Real - Time Communication in a LAN
- Lecture 35 - Real - Time Communication in a LAN (Continued.)
- Lecture 36 - Performance of Two Real -Time Communication Protocols
- Lecture 37 - Real - Time Communication over Packet Switched Networks
- Lecture 38 - Real - Time Communication over Packet Switched Networks (Continued.)
- Lecture 39 - Real - Time Communication over Packet Switched Networks (Continued.)
- Lecture 40 - Real - Time Databases

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

NPTEL Video Course - Computer Science and Engineering - Artificial Intelligence (Prof. Anupam Basu)

Subject Co-ordinator - Prof. Sudeshna Sarkar, Prof. Anupam Basu

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction to Artificial Intelligence
Lecture 2 - Intelligent Agents
Lecture 3 - State Space Search
Lecture 4 - Uninformed Search
Lecture 5 - Informed Search
Lecture 6 - Informed Search - 2
Lecture 7 - Two Players Games - I
Lecture 8 - Two Players Games - II
Lecture 9 - Constraint Satisfaction Problems - 1
Lecture 10 - Constraint Satisfaction Problems - 2
Lecture 11 - Knowledge Representation and Logic
Lecture 12 - Interface in Propositional Logic
Lecture 13 - First Order Logic
Lecture 14 - Reasoning Using First Order Logic
Lecture 15 - Resolution in FOPL
Lecture 16 - Rule Based System
Lecture 17 - Rule Based Systems II
Lecture 18 - Semantic Net
Lecture 19 - Reasoning in Semantic Net
Lecture 20 - Frames
Lecture 21 - Planning - 1
Lecture 22 - Planning - 2
Lecture 23 - Planning - 3
Lecture 24 - Planning - 4
Lecture 25 - Rule Based Expert System
Lecture 26 - Reasoning with Uncertainty - I
Lecture 27 - Reasoning with Uncertainty - II
Lecture 28 - Reasoning with Uncertainty - III
Lecture 29 - Reasoning with Uncertainty - IV

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- Lecture 30 - Fuzzy Reasoning - I
- Lecture 31 - Fuzzy Reasoning - II
- Lecture 32 - Introduction to Learning - I
- Lecture 33 - Introduction to Learning - II
- Lecture 34 - Rule Induction and Decision Trees - I
- Lecture 35 - Rule Induction and Decision Trees - II
- Lecture 36 - Learning Using neural Networks - I
- Lecture 37 - Learning Using Neural Networks - II
- Lecture 38 - Probabilistic Learning
- Lecture 39 - Natural Language Processing - I
- Lecture 40 - Natural Language Processing - II

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

NPTEL Video Course - Computer Science and Engineering - Artificial Intelligence (Prof. P. Dasgupta)

Subject Co-ordinator - Prof. P. Dasgupta

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction to Artificial Intelligence

Lecture 2 - Problem Solving by Search

Lecture 3 - Searching with Costs

Lecture 4 - Informed State Space Search

Lecture 5 - Heuristic Search

Lecture 6 - Problem Reduction Search

Lecture 7 - Searching Game Trees

Lecture 8 - Knowledge Based Systems

Lecture 9 - First Order Logic

Lecture 10 - Inference in First Order Logic

Lecture 11 - Resolution - Refutation Proofs

Lecture 12 - Resolution Refutation Proofs

Lecture 13 - Logic Programming

Lecture 14 - Prolog Programming

Lecture 15 - Prolog

Lecture 16 - Additional Topics

Lecture 17 - Introduction to Planning

Lecture 18 - Partial Order Planning

Lecture 19 - GraphPLAN and SATPlan

Lecture 20 - SATPlan

Lecture 21 - Reasoning under uncertainty

Lecture 22 - Bayesian Networks

Lecture 23 - Reasoning with Bayes Networks

Lecture 24 - Reasoning with Bayes networks (Contd.)

Lecture 25 - Reasoning under uncertainty

Lecture 26 - Learning

Lecture 27 - Learning

Lecture 28 - Back Propagation Learning

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NPTEL Video Course - Computer Science and Engineering - Computer Networks

Subject Co-ordinator - Prof. Sujoy Ghosh

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Emergence of Networks & Reference Models
Lecture 2 - Network Topology
Lecture 3 - Physical Medium - I
Lecture 4 - Physical Medium - II
Lecture 5 - Multiplexing (Sharing a Medium)
Lecture 6 - Telecom Networks
Lecture 7 - Switches - I
Lecture 8 - Pocket Switches
Lecture 9 - SONET/SDH
Lecture 10 - Fiber Optic Components
Lecture 11 - Routing and Wavelength Assignment
Lecture 12 - Protection and Restoration
Lecture 13 - Multiple Access
Lecture 14 - Token Based Mac
Lecture 15 - Data Link Protocols
Lecture 16 - Error Control
Lecture 17 - Stop & Wait Protocol
Lecture 18 - Satellite Communication
Lecture 19 - Ethernet - CSMA/CD
Lecture 20 - Modern Ethernet
Lecture 21 - Local Internetworking
Lecture 22 - Cellular Networks
Lecture 23 - Wireless Network
Lecture 24 - ATM
Lecture 25 - ATM Signaling, Routing and LAN Emulation
Lecture 26 - Introduction to Routing
Lecture 27 - RIP - Distance Vector Routing
Lecture 28 - IP version 4
Lecture 29 - IP Version 6 & Mobile IP

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

- Lecture 30 - UDP & Client Server
- Lecture 31 - TCP
- Lecture 32 - IP Multicasting
- Lecture 33 - DHCP and ICMP
- Lecture 34 - DNS & Directory
- Lecture 35 - Congestion Control
- Lecture 36 - QOS & Multimedia
- Lecture 37 - Network Management
- Lecture 38 - Security
- Lecture 39 - FTP - SMTP
- Lecture 40 - HTTP

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

NPTEL Video Course - Computer Science and Engineering - Data Communication

Subject Co-ordinator - Prof. Ajit Pal

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction and Course Outline - Data Communication

Lecture 2 - Layered Architecture

Lecture 3 - Data and Signal

Lecture 4 - Transmission Impairments and Channel Capacity

Lecture 5 - Guided Transmission Media

Lecture 6 - Unguided Media

Lecture 7 - Transmission of Digital Signal - I

Lecture 8 - Transmission of Digital Signal - II

Lecture 9 - Transmission of Analog Signal - I

Lecture 10 - Transmission of Analog Signal - II

Lecture 11 - Multiplexing

Lecture 12 - Multiplexing

Lecture 13 - Multiplexing Applications - I

Lecture 14 - Multiplexing Applications - II

Lecture 15 - Interfacing to the Media

Lecture 16 - Error Detection and Correction

Lecture 17 - Flow and Error Control

Lecture 18 - Data Link Control

Lecture 19 - Switching Techniques Circuit Switching

Lecture 20 - Switching Techniques Packet Switching

Lecture 21 - Routing - I

Lecture 22 - Routing - II

Lecture 23 - Congestion Control

Lecture 24 - X.25 and Frame Relay

Lecture 25 - ATM

Lecture 26 - Medium Access Control - I

Lecture 27 - Medium Access Control - II

Lecture 28 - Medium Access Control - III

Lecture 29 - IEEE 802 LANs

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

- Lecture 30 - High Speed LANs
- Lecture 31 - Wireless LANs
- Lecture 32 - Cellular Telephone Systems
- Lecture 33 - Satellite Communications
- Lecture 34 - Internet and Internetworking
- Lecture 35 - TCP/IP - I
- Lecture 36 - TCP/IP - II
- Lecture 37 - Multimedia Networks
- Lecture 38 - Audio and Video Compression
- Lecture 39 - Multimedia Services
- Lecture 40 - Secured Communication - I
- Lecture 41 - Secured Communication - II

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

NPTEL Video Course - Computer Science and Engineering - Electronic Design Automation

Subject Co-ordinator - Prof. Indranil Sengupta

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction
Lecture 2 - Verilog
Lecture 3 - Verilog
Lecture 4 - Verilog
Lecture 5 - Verilog
Lecture 6 - Verilog
Lecture 7 - Verilog
Lecture 8 - Synthesis
Lecture 9 - Synthesis
Lecture 10 - Synthesis
Lecture 11 - Synthesis
Lecture 12 - Synthesis
Lecture 13 - Synthesis
Lecture 14 - Synthesis
Lecture 15 - Backend Design
Lecture 16 - Backend Design
Lecture 17 - Backend Design
Lecture 18 - Backend Design
Lecture 19 - Backend Design
Lecture 20 - Backend Design
Lecture 21 - Backend Design
Lecture 22 - Backend Design
Lecture 23 - Backend Design
Lecture 24 - Backend Design
Lecture 25 - Backend Design
Lecture 26 - Backend Design
Lecture 27 - Backend Design
Lecture 28 - Backend Design
Lecture 29 - Backend Design

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

Lecture 30 - Testing Part - I
Lecture 31 - Testing Part - II
Lecture 32 - Testing Part - III
Lecture 33 - Testing Part - IV
Lecture 34 - Testing Part - V
Lecture 35 - Testing Part - VI

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

NPTEL Video Course - Computer Science and Engineering - Internet Technology

Subject Co-ordinator - Prof. Indranil Sengupta

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction To Internet
Lecture 2 - Review Of Network Technologies
Lecture 3 - TCP/IP - Part-I
Lecture 4 - TCP/IP - Part-II
Lecture 5 - TCP/IP - Part-III
Lecture 6 - IP Subnetting and Addressing
Lecture 7 - Internet Routing Protocol - Part-I
Lecture 8 - Internet Routing Protocol - Part-II
Lecture 9 - Client Server Concepts DNS, Telnet, FTP
Lecture 10 - Electronic Mail
Lecture 11 - World Wide Web - Part-I
Lecture 12 - World Wide Web - Part-II
Lecture 13 - HTML
Lecture 14 - HTML
Lecture 15 - HTML
Lecture 16 - Extensible Markup Language (XML)
Lecture 17 - HTML Forms
Lecture 18 - Image Maps
Lecture 19 - CGI Scripts
Lecture 20 - Other Technologies
Lecture 21 - PERL - Part-I
Lecture 22 - PERL - Part II
Lecture 23 - PERL - Part III
Lecture 24 - PERL - Part IV
Lecture 25 - Javascript
Lecture 26 - Javascript Examples (Continued)
Lecture 27 - Using Cookies
Lecture 28 - Java Applets
Lecture 29 - Java Applets

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

- Lecture 30 - Client-Server Programming In Java
- Lecture 31 - Intranet, Extranet, Firewall
- Lecture 32 - Basic Cryptographic Concepts Part - I
- Lecture 33 - Basic Cryptographic Concepts Part - II
- Lecture 34 - Basic Cryptographic Concepts Part - III
- Lecture 35 - Electronic Commerce
- Lecture 36 - Streaming Multimedia Applications
- Lecture 37 - Internet Telephony
- Lecture 38 - Search Engine And Web Crawlers
- Lecture 39 - Search Engine And Web Crawlers
- Lecture 40 - Course Summary And Conclusion

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

NPTEL Video Course - Computer Science and Engineering - Programming and Data Structure

Subject Co-ordinator - Dr. P.P. Chakraborty

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction
Lecture 2 - C Programming - I
Lecture 3 - C Programming - II
Lecture 4 - C Programming - III
Lecture 5 - Data Structuring
Lecture 6 - Data Structuring
Lecture 7 - Data Structuring
Lecture 8 - Problem Decomposition By Recursion - I
Lecture 9 - Problem Decomposition By Recursion - II
Lecture 10 - Problem Decomposition By Recursion - III
Lecture 11 - Merge sort And Quick sort
Lecture 12 - Characters And Strings
Lecture 13 - Arrays
Lecture 14 - Structures - I
Lecture 15 - Structures - II
Lecture 16 - Dynamic Allocation Part - I
Lecture 17 - Linked Lists - I
Lecture 18 - Complexity (Efficiency) of Algorithms
Lecture 19 - Asymptotic Growth Functions
Lecture 20 - Asymptotic Analysis of Algorithms
Lecture 21 - Data Structuring
Lecture 22 - Search Trees
Lecture 23 - Search Trees - II
Lecture 24 - Search Trees - III
Lecture 25 - 2-3 Trees
Lecture 26 - Algorithm Design - I
Lecture 27 - Algorithm Design - II
Lecture 28 - Algorithm Design - III
Lecture 29 - Graphs - I

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

Lecture 30 - Graphs - II
Lecture 31 - Graphs - III
Lecture 32 - Conclusions

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

NPTEL Video Course - Computer Science and Engineering - NOC:Software Testing

Subject Co-ordinator - Prof. Rajib Mall

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction
- Lecture 2 - Levels of Testing
- Lecture 3 - Basic Concepts in Testing
- Lecture 4 - Basic Concepts in Testing (Continued...)
- Lecture 5 - Unit Testing
- Lecture 6 - Equivalence and BV Testing
- Lecture 7 - Special Value Testing
- Lecture 8 - Combinatorial Testing
- Lecture 9 - Pairwise Testing
- Lecture 10 - White Box Testing
- Lecture 11 - MC/DC Testing
- Lecture 12 - MC/DC Testing (Continued...)
- Lecture 13 - Path Testing
- Lecture 14 - Dataflow and Mutation Testing
- Lecture 15 - Mutation Testing
- Lecture 16 - Integration Testing
- Lecture 17 - System Testing
- Lecture 18 - Regression Testing
- Lecture 19 - Testing Object-Oriented Program - Part 1
- Lecture 20 - Testing Object-Oriented Program - Part 2

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

NPTEL Video Course - Computer Science and Engineering - NOC:Programming in C++

Subject Co-ordinator - Prof. Partha Pratim Das

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Module 1
Lecture 2 - Module 1
Lecture 3 - Module 1
Lecture 4 - Module 2
Lecture 5 - Module 3
Lecture 6 - Module 4
Lecture 7 - Module 5
Lecture 8 - Module 6
Lecture 9 - Module 6
Lecture 10 - Module 7
Lecture 11 - Module 7
Lecture 12 - Module 8
Lecture 13 - Module 8
Lecture 14 - Module 8
Lecture 15 - Module 9
Lecture 16 - Module 9
Lecture 17 - Module 10
Lecture 18 - Module 10
Lecture 19 - Module 11
Lecture 20 - Module 11
Lecture 21 - Module 12
Lecture 22 - Module 12
Lecture 23 - Module 13
Lecture 24 - Module 13
Lecture 25 - Module 13
Lecture 26 - Module 14
Lecture 27 - Module 14
Lecture 28 - Module 14
Lecture 29 - Module 15

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Lecture 30 - Module 15
Lecture 31 - Module 16
Lecture 32 - Module 17
Lecture 33 - Module 18
Lecture 34 - Module 19
Lecture 35 - Module 20
Lecture 36 - Module 21
Lecture 37 - Module 22
Lecture 38 - Module 23
Lecture 39 - Module 24
Lecture 40 - Module 25
Lecture 41 - Module 26
Lecture 42 - Module 27
Lecture 43 - Module 28
Lecture 44 - Module 29
Lecture 45 - Module 30
Lecture 46 - Module 31
Lecture 47 - Module 32
Lecture 48 - Module 33
Lecture 49 - Module 34
Lecture 50 - Module 35
Lecture 51 - Module 35
Lecture 52 - Module 36
Lecture 53 - Module 37
Lecture 54 - Module 38
Lecture 55 - Module 39
Lecture 56 - Module 40

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

NPTEL Video Course - Computer Science and Engineering - NOC:Introduction to Machine Learning

Subject Co-ordinator - Prof. S. Sarkar

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction
Lecture 2 - Different Types of Learning
Lecture 3 - Hypothesis Space and Inductive Bias
Lecture 4 - Evaluation and Cross-Validation
Lecture 5 - Tutorial - I
Lecture 6 - Linear Regression
Lecture 7 - Introduction to Decision Trees
Lecture 8 - Learning Decision Tree
Lecture 9 - Overfitting
Lecture 10 - Python Exercise on Decision Tree and Linear Regression
Lecture 11 - Tutorial - II
Lecture 12 - k-Nearest Neighbour
Lecture 13 - Feature Selection
Lecture 14 - Feature Extraction
Lecture 15 - Collaborative Filtering
Lecture 16 - Python Exercise on kNN and PCA
Lecture 17 - Tutorial - III
Lecture 18 - Bayesian Learning
Lecture 19 - Naive Bayes
Lecture 20 - Bayesian Network
Lecture 21 - Python Exercise on Naive Bayes
Lecture 22 - Tutorial - IV
Lecture 23 - Logistic Regression
Lecture 24 - Introduction Support Vector Machine
Lecture 25 - SVM
Lecture 26 - SVM
Lecture 27 - Nonlinear SVM and Kernel Function
Lecture 28 - SVM
Lecture 29 - Python Exercise on SVM

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- Lecture 30 - Introduction
- Lecture 31 - Multilayer Neural Network
- Lecture 32 - Neural Network and Backpropagation Algorithm
- Lecture 33 - Deep Neural Network
- Lecture 34 - Python Exercise on Neural Network
- Lecture 35 - Tutorial - VI
- Lecture 36 - Introduction to Computational Learning Theory
- Lecture 37 - Sample Complexity
- Lecture 38 - VC Dimension
- Lecture 39 - Introduction to Ensembles
- Lecture 40 - Bagging and Boosting
- Lecture 41 - Introduction to Clustering
- Lecture 42 - Kmeans Clustering
- Lecture 43 - Agglomerative Hierarchical Clustering
- Lecture 44 - Python Exercise on kmeans clustering

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

NPTEL Video Course - Computer Science and Engineering - NOC:Object-Oriented Analysis and Design

Subject Co-ordinator - Prof. Partha Pratim Das

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Challenges in Software Engineering
- Lecture 2 - Complexity of Software
- Lecture 3 - Complexity of Software (Continued...)
- Lecture 4 - Structure and Attributes of a Complex System
- Lecture 5 - Structure and Attributes of a Complex System (Continued...)
- Lecture 6 - Object-Oriented Analysis and Design
- Lecture 7 - Bringing Order to Chaos
- Lecture 8 - Bringing Order to Chaos (Continued...)
- Lecture 9 - Evolution of Object Models - Programming Languages and Paradigms
- Lecture 10 - Foundations of the Object Model - OOA, OOD and OOP
- Lecture 11 - Foundations of the Object Model - OOA, OOD and OOP (Continued...)
- Lecture 12 - Elements of Object Model (Major)
- Lecture 13 - Elements of Object Model (Major)
- Lecture 14 - Elements of the Object Model (Major)
- Lecture 15 - Elements of the Object Model (Major)
- Lecture 16 - Elements of the Object Model (Minor)
- Lecture 17 - Elements of the Object Model (Minor)
- Lecture 18 - Nature of an object
- Lecture 19 - Nature of an object
- Lecture 20 - Relationships among objects
- Lecture 21 - Relationships among objects (Continued...)
- Lecture 22 - Nature of a class
- Lecture 23 - Nature of a class
- Lecture 24 - Relationships among classes
- Lecture 25 - Relationships among classes (Continued...)
- Lecture 26 - How to Build Quality Classes and Objects
- Lecture 27 - Tutorial
- Lecture 28 - How to Identify Classes and Objects ?
- Lecture 29 - Identification of Classes, Objects and Relationship in LMS

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- Lecture 30 - Identification of Classes, Objects and Relationship in LMS (Continued...)
- Lecture 31 - Identification of Classes, Objects and Relationship in LMS (Continued...)
- Lecture 32 - Identification of Classes, Objects and Relationship in LMS (Continued...)
- Lecture 33 - Overview of UML
- Lecture 34 - SDLC Phases and UML Diagrams
- Lecture 35 - Use-Case Diagrams - Part I
- Lecture 36 - Use-Case Diagrams - Part II
- Lecture 37 - Use-Case Diagrams - Part III
- Lecture 38 - Class Diagrams - Part 1 (Class, Property and Operation)
- Lecture 39 - Class Diagrams - Part 2 (Association, Weak and Strong Aggregation)
- Lecture 40 - Class Diagrams - Part 3 (Generalization, Dependency and Constraints)
- Lecture 41 - Sequence Diagrams - Part 1
- Lecture 42 - Sequence Diagrams - Part 2
- Lecture 43 - Communication Diagram
- Lecture 44 - Activity Diagrams - Part II
- Lecture 45 - Activity Diagrams - Part II
- Lecture 46 - Activity Diagrams - Part III
- Lecture 47 - Interaction Overview Diagram
- Lecture 48 - State Machine Diagrams - Part I
- Lecture 49 - State Machine Diagrams - Part II
- Lecture 50 - State Machine Diagrams - Part III
- Lecture 51 - Various UML Diagrams
- Lecture 52 - Closing Comments

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

NPTEL Video Course - Computer Science and Engineering - NOC:Complex Network : Theory and Application

Subject Co-ordinator - Prof. Animesh Mukherjee

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction
Lecture 2 - Network Analysis - I
Lecture 3 - Network Analysis - II
Lecture 4 - Network Analysis - III
Lecture 5 - Network Analysis - IV
Lecture 6 - Network Analysis - V
Lecture 7 - Network Analysis - VI
Lecture 8 - Social Network Principles - I
Lecture 9 - Social Network Principles - II
Lecture 10 - Social Network Principles - III
Lecture 11 - Social Network Principles - IV
Lecture 12 - Community Analysis - I
Lecture 13 - Community Analysis - II
Lecture 14 - Community Analysis - III
Lecture 15 - Community Analysis - IV
Lecture 16 - Community Analysis - V
Lecture 17 - Community Analysis - VI
Lecture 18 - Citation Analysis - I
Lecture 19 - Citation Analysis - II
Lecture 20 - Citation Analysis - III
Lecture 21 - Citation Analysis - IV

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NPTEL Video Course - Computer Science and Engineering - Fundamental Algorithms: Design and Analysis

Subject Co-ordinator - Prof.Sourav Mukhopadhyay

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Insertion Sort and Asymptotic Analysis

Lecture 2 - Solving Recurrences

Lecture 3 - Divide and Conquer Paradigm

Lecture 4 - Quick Sort

Lecture 5 - Heap Sort

Lecture 6 - Decision Tree

Lecture 7 - Linear Time Sorting

Lecture 8 - Order Statistics

Lecture 9 - Hashing

Lecture 10 - Universal Hashing, BST Sort

Lecture 11 - Red-Black Tree

Lecture 12 - Augmenting Data Structure

Lecture 13 - Computational Geometry

Lecture 14 - Van Emde Boas Data Structure

Lecture 15 - Dynamic Programming

Lecture 16 - Graph Algorithm

Lecture 17 - BFS and DFS

Lecture 18 - Dijkstra

Lecture 19 - Bellman Ford

Lecture 20 - Floyd Marshall

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

NPTEL Video Course - Computer Science and Engineering - Pattern Recognition

Subject Co-ordinator - Prof. Sukhendu Das, Prof. C.A. Murthy

Co-ordinating Institute - IIT - Madras | Indian Statistical Institute

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

- Lecture 1 - Principles of Pattern Recognition I (Introduction and Uses)
- Lecture 2 - Principles of Pattern Recognition II (Mathematics)
- Lecture 3 - Principles of Pattern Recognition III (Classification and Bayes Decision Rule)
- Lecture 4 - Clustering vs. Classification
- Lecture 5 - Relevant Basics of Linear Algebra, Vector Spaces
- Lecture 6 - Eigen Value and Eigen Vectors
- Lecture 7 - Vector Spaces
- Lecture 8 - Rank of Matrix and SVD
- Lecture 9 - Types of Errors
- Lecture 10 - Examples of Bayes Decision Rule
- Lecture 11 - Normal Distribution and Parameter Estimation
- Lecture 12 - Training Set, Test Set
- Lecture 13 - Standardization, Normalization, Clustering and Metric Space
- Lecture 14 - Normal Distribution and Decision Boundaries I
- Lecture 15 - Normal Distribution and Decision Boundaries II
- Lecture 16 - Bayes Theorem
- Lecture 17 - Linear Discriminant Function and Perceptron
- Lecture 18 - Perceptron Learning and Decision Boundaries
- Lecture 19 - Linear and Non-Linear Decision Boundaries
- Lecture 20 - K-NN Classifier
- Lecture 21 - Principal Component Analysis (PCA)
- Lecture 22 - Fisher's LDA
- Lecture 23 - Gaussian Mixture Model (GMM)
- Lecture 24 - Assignments
- Lecture 25 - Basics of Clustering, Similarity/Dissimilarity Measures, Clustering Criteria.
- Lecture 26 - K-Means Algorithm and Hierarchical Clustering
- Lecture 27 - K-Medoids and DBSCAN
- Lecture 28 - Feature Selection
- Lecture 29 - Feature Selection

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- Lecture 30 - Feature Selection
- Lecture 31 - Cauchy Schwartz Inequality
- Lecture 32 - Feature Selection Criteria Function
- Lecture 33 - Feature Selection Criteria Function
- Lecture 34 - Principal Components
- Lecture 35 - Comparison Between Performance of Classifiers
- Lecture 36 - Basics of Statistics, Covariance, and their Properties
- Lecture 37 - Data Condensation, Feature Clustering, Data Visualization
- Lecture 38 - Probability Density Estimation
- Lecture 39 - Visualization and Aggregation
- Lecture 40 - Support Vector Machine (SVM)
- Lecture 41 - FCM and Soft-Computing Techniques
- Lecture 42 - Examples of Uses or Application of Pattern Recognition; And When to do clustering
- Lecture 43 - Examples of Real-Life Dataset

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

NPTEL Video Course - Computer Science and Engineering - Performance Evaluation of Computer Systems

Subject Co-ordinator - Prof. Krishna Moorthy Sivalingam

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction to performance evaluation of computer systems
- Lecture 2 - How to avoid common mistakes
- Lecture 3 - Selection of techniques and metrics
- Lecture 4 - Case study
- Lecture 5 - Random Variables and probability distributions
- Lecture 6 - Probability distributions - I
- Lecture 7 - Probability distributions - II
- Lecture 8 - Probability distributions - III
- Lecture 9 - Stochastic process
- Lecture 10 - Markov Chain
- Lecture 11 - Slotted Aloha protocol model and discrete-time birth death process
- Lecture 12 - Continuous time Markov chain and queuing theory - I
- Lecture 13 - Queuing theory - I (Continued)
- Lecture 14 - Queuing theory - II
- Lecture 15 - Queuing theory - III
- Lecture 16 - Queuing theory - IV
- Lecture 17 - Queuing theory - V
- Lecture 18 - Queuing theory - VI
- Lecture 19 - Queuing networks - I
- Lecture 20 - Queuing networks - II
- Lecture 21 - Slotted Aloha Markov model
- Lecture 22 - Simulations - I
- Lecture 23 - Simulations - II
- Lecture 24 - Simulations - III
- Lecture 25 - Operational laws - I
- Lecture 26 - Operational laws - II
- Lecture 27 - Open and closed queuing networks
- Lecture 28 - Approximate MVA
- Lecture 29 - Convolution algorithm - I

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- Lecture 30 - Convolution algorithm - II
- Lecture 31 - Load-dependent service centers
- Lecture 32 - Hierarchical decomposition
- Lecture 33 - Balanced Job Bounds
- Lecture 34 - Confidence interval for proportions and introduction to experimental design
- Lecture 35 - 2k factorial design
- Lecture 36 - 2k r factorial design and 2k-p fractional factorial design
- Lecture 37 - Programming aspects of discrete-event simulations - I
- Lecture 38 - Programming aspects of discrete-event simulations - II
- Lecture 39 - Discrete-event simulations - III
- Lecture 40 - PetriNets - I
- Lecture 41 - PetriNets - II
- Lecture 42 - PetriNets - III

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

NPTEL Video Course - Computer Science and Engineering - Theory of Automata, Formal Languages and Computation

Subject Co-ordinator - Prof. Kamala Krithivasan

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Grammars and Natural Language Processing
- Lecture 2 - Grammars and Languages Generated
- Lecture 3 - Grammars and Languages Generated (Continued.)
- Lecture 4 - Ambiguity in CFG
- Lecture 5 - Simplification of CFG
- Lecture 6 - Removal of Unit Productions, Chomsky Normal Form for CFG
- Lecture 7 - Greibach Normal Form for CFG
- Lecture 8 - Final State Automata
- Lecture 9 - Non Deterministic FSA
- Lecture 10 - Non Deterministic FSA (Continued.)
- Lecture 11 - Non Deterministic FSA with E(Epsilon)- Moves
- Lecture 12 - Equivalence Between FSA and Type 3 Grammars
- Lecture 13 - Regular Expressions, Regular Expressions to NFSA
- Lecture 14 - DFSA to Regular Expressions
- Lecture 15 - Problems and Solutions - I
- Lecture 16 - Pumping Lemmas for Regular Sets and CFL
- Lecture 17 - MYHILL - Nerode Theorem
- Lecture 18 - Minimization of DFSA
- Lecture 19 - FSA with output Moore and Mealy Machines
- Lecture 20 - Pushdown Automata
- Lecture 21 - Pushdown Automata, Equivalence Between Acceptance by Empty Store and Acceptance by Final State
- Lecture 22 - Pushdown Automata CFG to PDA
- Lecture 23 - Pushdown Automata PDA to CFG
- Lecture 24 - Problems and Solutions - II
- Lecture 25 - Problems and Solutions - III
- Lecture 26 - Turing Machines
- Lecture 27 - Turing Machines (Continued.)
- Lecture 28 - Turing Machine as Acceptor, Techniques for TM Construction
- Lecture 29 - Generalized Versions of Turing Machines

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- Lecture 30 - Turing Machine as a Generating Device
- Lecture 31 - Recursive Sets, Recursively Innumerable Sets, Encoding of TM, Halting Problem
- Lecture 32 - Problems and Instances, Universal TM, Decidability
- Lecture 33 - RICE'S Theorem, Linear Bounded Automata, Properties of TM
- Lecture 34 - POST'S Correspondence Problems
- Lecture 35 - POST'S Correspondence Problems (Continued.), Time and Tape Complexity of TM
- Lecture 36 - NP - Complete Problems, Cook's Theorem
- Lecture 37 - NP - Complete Problems (Continued.)
- Lecture 38 - Regulated Rewriting
- Lecture 39 - L-Systems
- Lecture 40 - Grammar Systems
- Lecture 41 - DNA Computing
- Lecture 42 - Membrane Computing

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

NPTEL Video Course - Computer Science and Engineering - Computer Graphics

Subject Co-ordinator - Prof. Sukhendu Das

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Definition
Lecture 2 - Basic Elements
Lecture 3 - History
Lecture 4 - Application
Lecture 5 - Graphic rendering pipeline
Lecture 6 - Input devices
Lecture 7 - Line Drawing Algorithm
Lecture 8 - Midpoint Circle Algorithm
Lecture 9 - Ellipse drawing algorithm
Lecture 10 - Point Clipping
Lecture 11 - Line Clipping
Lecture 12 - Polygon Clipping
Lecture 13 - Two - Dimensional
Lecture 14 - Three - Dimensional
Lecture 15 - 3D Viewing
Lecture 16 - Parametric Curves
Lecture 17 - Introduction
Lecture 18 - Generation of Fractals
Lecture 19 - Geometric fractals
Lecture 20 - Recapitulation
Lecture 21 - Random Fractals
Lecture 22 - Applications
Lecture 23 - Conventional Animation
Lecture 24 - Real time vs Image
Lecture 25 - Animation Techniques
Lecture 26 - Rotoscopy
Lecture 27 - Key Framing
Lecture 28 - Spline Driven Animation
Lecture 29 - Morphing

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

- Lecture 30 - Particle Systems
- Lecture 31 - Illumination Model
- Lecture 32 - Polygon Shading
- Lecture 33 - Solid Models

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

NPTEL Video Course - Computer Science and Engineering - Computer Organization

Subject Co-ordinator - Prof. S. Raman

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction To Computing
Lecture 2 - Introduction To System
Lecture 3 - Introduction To System
Lecture 4 - Processor Activities
Lecture 5 - Processor As a State Machine
Lecture 6 - Data Path Architecture
Lecture 7 - Data Path Controller
Lecture 8 - State Machine Design
Lecture 9 - Controller Design
Lecture 10 - Controller Design (Contd)
Lecture 11 - Typical Micro Instructions
Lecture 12 - Addressing Modes
Lecture 13 - Problem Exercise
Lecture 14 - Problem Exercise
Lecture 15 - Introduction to memory system
Lecture 16 - CPU - Memory Interaction
Lecture 17 - Cache Organization
Lecture 18 - Cache Organization
Lecture 19 - Virtual Memory
Lecture 20 - Virtual Memory
Lecture 21 - Performance Calculation
Lecture 22 - Segmentation
Lecture 23 - Address Translation and Protection
Lecture 24 - Programmed I/O
Lecture 25 - Interrupt Driven I/O
Lecture 26 - DMA
Lecture 27 - Device Service Routines
Lecture 28 - Evolution Of I/O
Lecture 29 - I/O Devices

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

- Lecture 30 - I/O Devices - Contd
- Lecture 31 - Buses
- Lecture 32 - Buses Contd
- Lecture 33 - Conclusion

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

NPTEL Video Course - Computer Science and Engineering - Database Design

Subject Co-ordinator - Dr. S. Srikanth, Prof. D. Janaki Ram

Co-ordinating Institute - IIT - Madras | IIIT - Bangalore

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

Lecture 1 - Introduction to Database Management System
Lecture 2 - Conceptual Designs
Lecture 3 - Conceptual Designs
Lecture 4 - Relational Model
Lecture 5 - Relational Model
Lecture 6 - Structured Query Language - I
Lecture 7 - Structured Query Language - II
Lecture 8 - ER Model to Relational Mapping
Lecture 9 - Functional Dependencies and Normal Form
Lecture 10 - ER Model to Relational Model Mapping
Lecture 11 - Storage Structures
Lecture 12 - Indexing Techniques Single Level
Lecture 13 - Indexing Techniques Multi Level
Lecture 14 - Constraints and Triggers
Lecture 15 - Query Processing and Optimization
Lecture 16 - Query Processing and Optimization - II
Lecture 17 - Query Processing and Optimization - III
Lecture 18 - Transaction Processing Concepts
Lecture 19 - Transaction Processing and Database Manager
Lecture 20 - Foundation for Concurrency Control
Lecture 21 - Concurrency Control Part - 1
Lecture 22 - Concurrency Control Part - 2
Lecture 23 - Concurrency Control Part - 3
Lecture 24 - Concurrency Control Part - 4
Lecture 25 - Distributed Transaction Models
Lecture 26 - Basic 2-Phase and 3-phase commit protocol
Lecture 27 - Concurrency Control for Distributed Transaction
Lecture 28 - Introduction to Transaction Recovery
Lecture 29 - Recovery Mechanisms - II

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

- Lecture 30 - Recovery Mechanisms - III
- Lecture 31 - Introduction to Data Warehousing and OLAP
- Lecture 32 - Introduction to Data Warehousing and OLAP
- Lecture 33 - Case Study
- Lecture 34 - Case Study ORACLE and Microsoft Access
- Lecture 35 - Data Mining and Knowledge Discovery
- Lecture 36 - Data Mining and Knowledge Discovery Part - II
- Lecture 37 - Object Oriented Databases
- Lecture 38 - Object Oriented Databases - II
- Lecture 39 - XML - Introductory Concepts
- Lecture 40 - XML - Advanced Concepts
- Lecture 41 - XML - Databases
- Lecture 42 - Case Study - Part One - Database Design
- Lecture 43 - Case Study - Part Two - Database Design

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

NPTEL Video Course - Computer Science and Engineering - Discrete Mathematical Structures

Subject Co-ordinator - Prof. Kamala Krithivasan

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Propositional Logic
- Lecture 2 - Propositional Logic (Continued)
- Lecture 3 - Predicates & Quantifiers
- Lecture 4 - Predicates & Quantifiers (Continued)
- Lecture 5 - Logical Inference
- Lecture 6 - Resolution Principles & Application to PROLOG
- Lecture 7 - Methods of Proof
- Lecture 8 - Normal Forms
- Lecture 9 - Proving Programs Correct (Continued)
- Lecture 10 - Sets
- Lecture 11 - Induction
- Lecture 12 - Set Operations On Strings
- Lecture 13 - Relations
- Lecture 14 - Graphs
- Lecture 15 - Graphs (Continued)
- Lecture 16 - Trees
- Lecture 17 - Trees And Graphs
- Lecture 18 - Special Properties Of Relations
- Lecture 19 - Closure Of Relations
- Lecture 20 - Closure Properties Of Relations
- Lecture 21 - Order Relations
- Lecture 22 - Order Relations And Equivalence Relations
- Lecture 23 - Equivalence Relations And Partitions
- Lecture 24 - Functions
- Lecture 25 - Functions (Continued)
- Lecture 26 - Functions (Continued)
- Lecture 27 - Pigeonhole Principle
- Lecture 28 - Permutations And Combinations
- Lecture 29 - Permutations And Combinations (Continued)

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

- Lecture 30 - Generating Functions
- Lecture 31 - Generating Functions (Continued)
- Lecture 32 - Recurrence Relations
- Lecture 33 - Recurrence Relations (Continued)
- Lecture 34 - Recurrence Relations (Continued)
- Lecture 35 - Algebras
- Lecture 36 - Algebras (Continued)
- Lecture 37 - Algebras (Continued)
- Lecture 38 - Finite State Automaton
- Lecture 39 - Finite State Automaton (Continued)
- Lecture 40 - Lattices

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

NPTEL Video Course - Computer Science and Engineering - Artificial Intelligence (Prof. Deepak Khemani)

Subject Co-ordinator - Prof. Deepak Khemani

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Artificial Intelligence
Lecture 2 - Introduction to AI
Lecture 3 - AI Introduction
Lecture 4 - AI Introduction
Lecture 5 - Introduction
Lecture 6 - State Space Search - Introduction
Lecture 7 - Search - DFS and BFS
Lecture 8 - Search DFID
Lecture 9 - Heuristic Search
Lecture 10 - Hill Climbing
Lecture 11 - Solution Space Search, Beam Search
Lecture 12 - TSP Greedy Methods
Lecture 13 - Tabu Search
Lecture 14 - Optimization - I (Simulated Annealing)
Lecture 15 - Optimization - II (Genetic Algorithms)
Lecture 16 - Population based methods for Optimization
Lecture 17 - Population Based Methods II
Lecture 18 - Branch and Bound, Dijkstra's Algorithm
Lecture 19 - A* Algorithm
Lecture 20 - Admissibility of A*
Lecture 21 - A* Monotone Property, Iterative Deeping A*
Lecture 22 - Recursive Best First Search, Sequence Allignment
Lecture 23 - Pruning the Open and Closed lists
Lecture 24 - Problem Decomposition with Goal Trees
Lecture 25 - AO* Algorithm
Lecture 26 - Game Playing
Lecture 27 - Game Playing - Minimax Search
Lecture 28 - Game Playing - AlphaBeta
Lecture 29 - Game Playing - SSS *

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- Lecture 30 - Rule Based Systems
- Lecture 31 - Inference Engines
- Lecture 32 - Rete Algorithm
- Lecture 33 - Planning
- Lecture 34 - Planning FSSP, BSSP
- Lecture 35 - Goal Stack Planning. Sussman's Anomaly
- Lecture 36 - Non-linear planning
- Lecture 37 - Plan Space Planning
- Lecture 38 - GraphPlan
- Lecture 39 - Constraint Satisfaction Problems
- Lecture 40 - CSP continued
- Lecture 41 - Knowledge-based systems
- Lecture 42 - Knowledge-based Systems, PL
- Lecture 43 - Propositional Logic
- Lecture 44 - Resolution Refutation for PL
- Lecture 45 - First-order Logic (FOL)
- Lecture 46 - Reasoning in FOL
- Lecture 47 - Backward chaining
- Lecture 48 - Resolution for FOL

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

NPTEL Video Course - Computer Science and Engineering - NOC:Programming, Data Structures and Algorithms

Subject Co-ordinator - Prof. Hema A Murthy, Prof. Shankar Balachandran, Dr. N.S. Narayanaswamy

Co-ordinating Institute - IIT - Madras

- Lecture 1 - Introduction to Computers and Programming
- Lecture 2 - Writing your first program
- Lecture 3 - Variables, Operators and Expressions
- Lecture 4 - Variable declarations, more operators and precedence
- Lecture 5 - Input and Output Statements
- Lecture 6 - Conditionals
- Lecture 7 - Loops
- Lecture 8 - Video Solution to Digital Root Programming Assignment
- Lecture 9 - Introduction to arrays
- Lecture 10 - Working with 1D arrays
- Lecture 11 - Find prime numbers
- Lecture 12 - Debugging demo
- Lecture 13 - Multi-dimensional arrays
- Lecture 14 - Pointers
- Lecture 15 - More on pointers
- Lecture 16 - Arrays and pointer arithmetic
- Lecture 17 - Introduction to Strings
- Lecture 18 - More on Strings
- Lecture 19 - Video Solution to Print Elements of a Matrix in Spiral Order Programming Assignment
- Lecture 20 - Introduction to functions
- Lecture 21 - More details on functions
- Lecture 22 - Arguments, variables and parameters
- Lecture 23 - Pass parameters by reference
- Lecture 24 - Recursive functions
- Lecture 25 - Running time of a program
- Lecture 26 - Computing time complexity
- Lecture 27 - Video Solution to Palindrome Checker Programming Assignment
- Lecture 28 - Algorithms and Powering
- Lecture 29 - Polynomial evaluation and multiplication
- Lecture 30 - Linear and Binary Search Analysis
- Lecture 31 - Analysis of minimum and maximum in an array
- Lecture 32 - Sorting I
- Lecture 33 - Sorting II

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

- Lecture 34 - Finding i-th smallest number
- Lecture 35 - Video Solution to Sorting words Programming Assignment
- Lecture 36 - Structures
- Lecture 37 - More on structures
- Lecture 38 - Using structures and pointers to structures
- Lecture 39 - Dynamic memory allocation
- Lecture 40 - Linked Lists
- Lecture 41 - Brief introduction to C++
- Lecture 42 - Data Structures
- Lecture 43 - Lists
- Lecture 44 - Supplementary Lesson
- Lecture 45 - Video Solution to Implementing a Hash Table ADT Programming Assignment
- Lecture 46 - Stacks
- Lecture 47 - Queues
- Lecture 48 - Trees
- Lecture 49 - Tree traversal
- Lecture 50 - Binary Search Trees
- Lecture 51 - Heaps
- Lecture 52 - Graphs and Representation
- Lecture 53 - Supplementary Lesson
- Lecture 54 - Video Solution to the Queue in a Hospital Programming Assignment
- Lecture 55 - Greedy Algorithms
- Lecture 56 - Dynamic Programming
- Lecture 57 - Matrix Chain Multiplication
- Lecture 58 - Dijkstra's Algorithm
- Lecture 59 - Boyer-Moore String Matching Algorithm
- Lecture 60 - File I/O
- Lecture 61 - Modular Programming

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

NPTEL Video Course - Computer Science and Engineering - NOC:Introduction to Information Security I

Subject Co-ordinator - Prof. V. Kamakoti

Co-ordinating Institute - IIT - Madras

Lecture 1 - Module 1 - Part 0 - Introduction to the Course
Lecture 2 - Module 1 - Part 1 - Definition of Information Security
Lecture 3 - Module 1 - Part 2 - Information Security Terminologies
Lecture 4 - Module 1 - Part 3 - Goals of Information Security
Lecture 5 - Module 1 - Part 4 - Implementation Issues of the Goals of Information Security - I
Lecture 6 - Module 1 - Part 5 - Implementation Issues of the Goals of Information Security - II
Lecture 7 - Module 1 - Part 6 - Control Mechanisms for Information Security - I
Lecture 8 - Module 1 - Part 7 - Access Control - Administrative and Technical
Lecture 9 - Module 1 - Part 8 - Passwords - Are they secure? - I
Lecture 10 - Module 1 - Part 9 - Access Control - Administrative and Technical
Lecture 11 - Module 1 - Part 10 - Passwords - Are they secure? - III
Lecture 12 - Module 1 - Part 11 - Multifactor Authentication - Challenges
Lecture 13 - Module 1 - Part 12 - Application Level Control and Information Security Planning
Lecture 14 - Module 1 - Part 13 - Information Security - Policy, Standard and Practice
Lecture 15 - Module 1 - Part 14 - Policies governing Issues, Roles and Responsibilities
Lecture 16 - Module 1 - Part 15 - Managing changes in Information Security Policies
Lecture 17 - Module 1 - Part 16 - Spheres of Information Security
Lecture 18 - Module 2 - Part 1 - Protecting your Personal Computer - I
Lecture 19 - Module 2 - part 2 - Protecting your Personal Computer - II
Lecture 20 - Module 2 - Part 3 - Protecting your Personal Computer - III
Lecture 21 - Module 2 - Part 4 - Cloud Computing (Basic Definitions) - I
Lecture 22 - Module 2 - Part 5 - Cloud Computing (Deployment) - II
Lecture 23 - Module 2 - Part 6 - Cloud Computing (Security Issues) - III
Lecture 24 - Module 2 - Part 7 - Cloud Computing (Trust and Risk) - IV
Lecture 25 - Module 2 - Part 8 - Cloud Computing (Security and Privacy Issues) - V
Lecture 26 - Module 2 - Part 9 - Cloud Computing (Security and Privacy Issues) - VI
Lecture 27 - Module 2 - Part 10 - Cloud Computing (Application and Data level security) - VII
Lecture 28 - Module 2 - Part 11 - Cloud Computing (Summary) - VIII
Lecture 29 - Module 2 - Part 12 - Standard I
Lecture 30 - Module 2 - Part 13 - Standard II
Lecture 31 - Module 2 - Part 14 - Standard III
Lecture 32 - Module 3 - Part 1
Lecture 33 - Module 3 - Part 2

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Lecture 34 - Module 3 - Part 3
Lecture 35 - Module 3 - Part 4
Lecture 36 - Module 3 - Part 5
Lecture 37 - Module 3 - Part 6
Lecture 38 - Module 3 - Part 7
Lecture 39 - Module 3 - Part 8
Lecture 40 - Module 3 - Part 9
Lecture 41 - Module 4 - Part 1
Lecture 42 - module 4 - Part 2
Lecture 43 - Module 4 - Part 3
Lecture 44 - Module 4 - Part 4
Lecture 45 - Module 4 - Part 5
Lecture 46 - Module 4 - Part 6
Lecture 47 - Module 4 - Part 7
Lecture 48 - Module 4 - Part 8
Lecture 49 - Module 4 - Part 9
Lecture 50 - Module 4 - Part 10
Lecture 51 - Module 5 - Part 1
Lecture 52 - Module 5 - Part 2
Lecture 53 - Module 5 - Part 3
Lecture 54 - Module 5 - Part 4
Lecture 55 - Module 5 - Part 5
Lecture 56 - Module 5 - Part 6
Lecture 57 - Module 5 - Part 7
Lecture 58 - Module 6 - Part 1
Lecture 59 - Module 6 - Part 2
Lecture 60 - Module 6 - Part 3
Lecture 61 - Module 6 - Part 4
Lecture 62 - Module 6 - Part 5
Lecture 63 - Module 6 - Part 6
Lecture 64 - Module 6 - Part 7
Lecture 65 - Module 6 - Part 8

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NPTEL Video Course - Computer Science and Engineering - NOC:Programming and Data structures (PDS)

Subject Co-ordinator - Dr. N S. Narayanaswamy

Co-ordinating Institute - IIT - Madras

- Lecture 1 - A Simple C Program for Sorting
- Lecture 2 - Review of Structures, Pointers, and Functions
- Lecture 3 - Recursion
- Lecture 4 - Abstract Data Types-Data + Methods
- Lecture 5 - List Data Type
- Lecture 6 - Access and update methods
- Lecture 7 - Doubly Linked List Data Type
- Lecture 8 - Doubly Linked Lists and Arrays
- Lecture 9 - ADT Stacks
- Lecture 10 - Checking of Balanced Parenthesis
- Lecture 11 - Infix and Postfix expressions and Expression evaluation
- Lecture 12 - Queue ADT Definition and Implementation
- Lecture 13 - Merging using Queue ADT and Queue types
- Lecture 14 - Tree ADT and Traversals
- Lecture 15 - Binary Tree ADT and traversals
- Lecture 16 - Tree Applications

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

NPTEL Video Course - Computer Science and Engineering - NOC:Design and Analysis of Algorithms

Subject Co-ordinator - Prof. Madhavan Mukund

Co-ordinating Institute - Chennai Mathematical Institute

- Lecture 1 - Course Outline
- Lecture 2 - Example
- Lecture 3 - Example
- Lecture 4 - Example
- Lecture 5 - Introduction and motivation
- Lecture 6 - Input size, worst case, average case
- Lecture 7 - Quantifying efficiency
- Lecture 8 - Examples
- Lecture 9 - Arrays and lists
- Lecture 10 - Searching in an array
- Lecture 11 - Selection Sort
- Lecture 12 - Insertion sort
- Lecture 13 - Merge sort
- Lecture 14 - Merge sort - analysis
- Lecture 15 - Quicksort
- Lecture 16 - Quicksort - analysis
- Lecture 17 - Sorting - Concluding remarks
- Lecture 18 - Introduction to graphs
- Lecture 19 - Representing graphs
- Lecture 20 - Breadth first search (BFS)
- Lecture 21 - Depth first search (DFS)
- Lecture 22 - Applications of BFS and DFS
- Lecture 23 - Directed acyclic graphs
- Lecture 24 - Directed acyclic graphs
- Lecture 25 - Single source shortest paths
- Lecture 26 - Dijkstras algorithm
- Lecture 27 - Negative edge weights
- Lecture 28 - All pairs shortest paths
- Lecture 29 - Minimum Cost Spanning Trees
- Lecture 30 - Prims Algorithm
- Lecture 31 - Kruskals algorithm
- Lecture 32 - Union-Find using arrays
- Lecture 33 - Union-Find using pointers

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- Lecture 34 - Priority queues
- Lecture 35 - Heaps
- Lecture 36 - Heaps
- Lecture 37 - Counting inversions
- Lecture 38 - Closest pair of points
- Lecture 39 - Binary Search Trees
- Lecture 40 - Balanced search trees
- Lecture 41 - Interval scheduling
- Lecture 42 - Scheduling with deadlines
- Lecture 43 - Huffman codes
- Lecture 44 - Introduction to dynamic programming
- Lecture 45 - Memoization
- Lecture 46 - Grid Paths
- Lecture 47 - Common subwords and subsequences
- Lecture 48 - Edit distance
- Lecture 49 - Matrix multiplication
- Lecture 50 - Linear Programming
- Lecture 51 - LP modelling
- Lecture 52 - LP modelling
- Lecture 53 - Network Flows
- Lecture 54 - Reductions
- Lecture 55 - Checking Algorithms
- Lecture 56 - P and NP

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

NPTEL Video Course - Computer Science and Engineering - NOC:Programming, Data Structures and Algorithms (Aricent)

Subject Co-ordinator - Dr. N S. Narayanaswamy, Prof. Shankar Balachandran, Prof. Hema A Murthy

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction to Computers and Programming
- Lecture 2 - Writing your first program
- Lecture 3 - Variables, Operators and Expressions
- Lecture 4 - Variable declarations, more operators and precedence
- Lecture 5 - Input and Output Statements
- Lecture 6 - Conditionals
- Lecture 7 - Loops
- Lecture 8 - Introduction to Arrays
- Lecture 9 - Working with 1D Arrays
- Lecture 10 - Find prime numbers
- Lecture 11 - Debugging demo
- Lecture 12 - Multi-dimensional arrays
- Lecture 13 - Pointers
- Lecture 14 - More on pointers
- Lecture 15 - Arrays and pointer arithmetic
- Lecture 16 - Introduction to Strings
- Lecture 17 - More on String
- Lecture 18 - Introduction to functions
- Lecture 19 - More details on functions
- Lecture 20 - Arguments, variables and parameters
- Lecture 21 - Pass parameters by reference
- Lecture 22 - Recursive Functions
- Lecture 23 - C control structures, functional specification of programs
- Lecture 24 - Complexity Analysis using Sum and Product Rule
- Lecture 25 - Complexity Analysis of Recursive Functions
- Lecture 26 - Algorithms and Powering
- Lecture 27 - Polynomial evaluation and multiplication
- Lecture 28 - Linear and Binary Search Analysis

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- Lecture 29 - Analysis of minimum and maximum in an array
- Lecture 30 - Sorting I
- Lecture 31 - Sorting II
- Lecture 32 - Finding i-th smallest number
- Lecture 33 - Structures
- Lecture 34 - More on Structures
- Lecture 35 - Using structures and pointers to structures
- Lecture 36 - Dynamic memory allocation
- Lecture 37 - Linked List
- Lecture 38 - Brief introduction to C++
- Lecture 39 - Abstract Data Types
- Lecture 40 - More on ADT

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NPTEL Video Course - Computer Science and Engineering - NOC:Computer Architecture

Subject Co-ordinator - Prof.Madhu Mutyam

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction to Computer Architecture
Lecture 2 - Quantitative Principles of Computer Design
Lecture 3 - Instruction Set Principles-Part 1
Lecture 4 - Instruction Set Principles-Part 2
Lecture 5 - Instruction Set Principles-Part 3
Lecture 6 - Cache Memory Hierarchy - Part 1
Lecture 7 - Cache Memory Hierarchy - Part 2
Lecture 8 - Cache Memory Hierarchy - Part 3
Lecture 9 - Cache Memory Hierarchy - Part 4
Lecture 10 - Main Memory Design - Part 1
Lecture 11 - Main Memory Design - Part 2
Lecture 12 - Main Memory Design - Part 3
Lecture 13 - Fundamentals of Pipelining - Part 1
Lecture 14 - Fundamentals of Pipelining - Part 2
Lecture 15 - Fundamentals of Pipelining - Part 3
Lecture 16 - Fundamentals of Pipelining - Part 4
Lecture 17 - Fundamentals of Pipelining - Part 5
Lecture 18 - Scalar to Superscalar pipeline
Lecture 19 - Instruction Dependencies
Lecture 20 - Compiler optimizations for Exposing ILP
Lecture 21 - Advanced Branch Prediction Techniques - Part 1
Lecture 22 - Advanced Branch Prediction Techniques - Part 2
Lecture 23 - Superscalar Organization
Lecture 24 - Register Renaming
Lecture 25 - Tomasulo Algorithm
Lecture 26 - Dynamic Execution Core
Lecture 27 - Multi threading
Lecture 28 - Multicore Processor Architecture
Lecture 29 - Cache Coherence

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- Lecture 30 - Cache Coherence Protocol Design
- Lecture 31 - Synchronization
- Lecture 32 - Memory Consistency - Part 1
- Lecture 33 - Memory Consistency - Part 2

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NPTEL Video Course - Computer Science and Engineering - NOC:Model Checking

Subject Co-ordinator - Prof. B. Srivathsan

Co-ordinating Institute - Chennai Mathematical Institute

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

Lecture 1 - Course Overview

Lecture 2 - Module 1

Lecture 3 - Module 2

Lecture 4 - Module 3

Lecture 5 - Module 4

Lecture 6 - Summary

Lecture 7 - Module 1

Lecture 8 - Module 2

Lecture 9 - Module 3

Lecture 10 - Module 4

Lecture 11 - Summary.

Lecture 12 - Module 1

Lecture 13 - Module 2

Lecture 14 - Module 3

Lecture 15 - Module 4

Lecture 16 - Module 5

Lecture 17 - Summary..

Lecture 18 - Module 1

Lecture 19 - Module 2

Lecture 20 - Module 3

Lecture 21 - Module 4

Lecture 22 - Summary...

Lecture 23 - Module 1

Lecture 24 - Module 2

Lecture 25 - Module 3

Lecture 26 - Module 4

Lecture 27 - Summary....

Lecture 28 - Module 1

Lecture 29 - Module 2

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Lecture 30 - Module 3
Lecture 31 - Module 4
Lecture 32 - Summary.....
Lecture 33 - Module 1
Lecture 34 - Module 2
Lecture 35 - Module 3
Lecture 36 - Summary.
Lecture 37 - Module 1
Lecture 38 - Module 2
Lecture 39 - Module 3
Lecture 40 - Summary..
Lecture 41 - Module 1
Lecture 42 - Module 2
Lecture 43 - Module 3
Lecture 44 - summary...
Lecture 45 - Module 1
Lecture 46 - Module 2
Lecture 47 - Module 3
Lecture 48 - Module 4
Lecture 49 - Summary....
Lecture 50 - Module 1
Lecture 51 - Module 2
Lecture 52 - Module 3
Lecture 53 - Summary.....

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NPTEL Video Course - Computer Science and Engineering - NOC:Functional Programming in Haskell

Subject Co-ordinator - Prof. Madhavan Mukund, Prof. S P Suresh

Co-ordinating Institute - Chennai Mathematical Institute

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

Lecture 1 - Functions
Lecture 2 - Types
Lecture 3 - Haskell
Lecture 4 - Running Haskell programs
Lecture 5 - Currying
Lecture 6 - Examples
Lecture 7 - Lists
Lecture 8 - Functions on lists
Lecture 9 - Characters and strings
Lecture 10 - Tuples
Lecture 11 - Computation as rewriting
Lecture 12 - Polymorphism and higher-order functions
Lecture 13 - Map and filter
Lecture 14 - List comprehension
Lecture 15 - Folding through a list
Lecture 16 - Measuring efficiency
Lecture 17 - Sorting
Lecture 18 - Using infinite lists
Lecture 19 - Conditional polymorphism
Lecture 20 - Defining functions in ghci
Lecture 21 - User-defined datatypes
Lecture 22 - Abstract datatypes
Lecture 23 - Modules
Lecture 24 - Recursive data types
Lecture 25 - Binary search trees
Lecture 26 - Balanced search trees
Lecture 27 - Arrays
Lecture 28 - Input/Output

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

NPTEL Video Course - Computer Science and Engineering - Virtual Reality

Subject Co-ordinator - Prof. Steven LaVall

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Course mechanics
- Lecture 2 - Goals and VR definitions
- Lecture 3 - Historical perspective
- Lecture 4 - Birds-eye view (general)
- Lecture 5 - Birds-eye view (general) (Continued...)
- Lecture 6 - Birds-eye view (hardware)
- Lecture 7 - Birds-eye view (software)
- Lecture 8 - Birds-eye view (sensation and perception)
- Lecture 9 - Geometric modeling
- Lecture 10 - Transforming models
- Lecture 11 - Matrix algebra and 2D rotations
- Lecture 12 - 3D rotations and yaw, pitch, and roll
- Lecture 13 - 3D rotations and yaw, pitch, and roll (Continued...)
- Lecture 14 - Axis-angle representations
- Lecture 15 - Quaternions
- Lecture 16 - Converting and multiplying rotations
- Lecture 17 - Converting and multiplying rotations (Continued...)
- Lecture 18 - Homogeneous transforms
- Lecture 19 - The chain of viewing transforms
- Lecture 20 - Eye transforms
- Lecture 21 - Eye transforms (Continued...)
- Lecture 22 - Canonical view transform
- Lecture 23 - Viewport transform
- Lecture 24 - Viewport transform (Continued...)
- Lecture 25 - Three interpretations of light
- Lecture 26 - Refraction
- Lecture 27 - Simple lenses
- Lecture 28 - Diopters
- Lecture 29 - Imaging properties of lenses

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

- Lecture 30 - Lens aberrations
- Lecture 31 - Optical system of eyes
- Lecture 32 - Photoreceptors
- Lecture 33 - Sufficient resolution for VR
- Lecture 34 - Light intensity
- Lecture 35 - Eye movements
- Lecture 36 - Eye movements (Continued...)
- Lecture 37 - Eye movement issues for VR
- Lecture 38 - Neuroscience of vision
- Lecture 39 - Depth perception
- Lecture 40 - Depth perception (Continued...)
- Lecture 41 - Motion perception
- Lecture 42 - Frame rates and displays
- Lecture 43 - Frame rates and displays (Continued...)
- Lecture 44 - Overview
- Lecture 45 - Orientation tracking
- Lecture 46 - Tilt drift correction
- Lecture 47 - Yaw drift correction
- Lecture 48 - Tracking with a camera
- Lecture 49 - Perspective n-point problem
- Lecture 50 - Filtering
- Lecture 51 - Lighthouse approach
- Lecture 52 - Visual Rendering-Overview
- Lecture 53 - Visual Rendering-overview (Continued...)
- Lecture 54 - Shading models
- Lecture 55 - Rasterization
- Lecture 56 - Pixel shading
- Lecture 57 - VR-specific problems
- Lecture 58 - Distortion shading
- Lecture 59 - Post-rendering image warp
- Lecture 60 - Physics and physiology
- Lecture 61 - Auditory perception
- Lecture 62 - Auditory localization
- Lecture 63 - Rendering
- Lecture 64 - Spatialization and display
- Lecture 65 - Combining other senses
- Lecture 66 - Interfaces -overview
- Lecture 67 - Locomotion
- Lecture 68 - Manipulation

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

- Lecture 69 - System control
- Lecture 70 - Social interaction
- Lecture 71 - Evaluation of VR Systems

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

NPTEL Video Course - Computer Science and Engineering - NOC:Introduction to Machine Learning (Sponsored by ANI)

Subject Co-ordinator - Dr. Balaraman Ravindran

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - A brief introduction to machine learning
Lecture 2 - Supervised Learning
Lecture 3 - Unsupervised Learning
Lecture 4 - Reinforcement Learning
Lecture 5 - Probability Basics - 1
Lecture 6 - Probability Basics - 2
Lecture 7 - Linear Algebra - 1
Lecture 8 - Linear Algebra - 2
Lecture 9 - Statistical Decision Theory - Regression
Lecture 10 - Statistical Decision Theory - Classification
Lecture 11 - Bias-Variance
Lecture 12 - Linear Regression
Lecture 13 - Multivariate Regression
Lecture 14 - Subset Selection 1
Lecture 15 - Subset Selection 2
Lecture 16 - Shrinkage Methods
Lecture 17 - Principal Components Regression
Lecture 18 - Partial Least Squares
Lecture 19 - Linear Classification
Lecture 20 - Logistic Regression
Lecture 21 - Linear Discriminant Analysis 1
Lecture 22 - Linear Discriminant Analysis 2
Lecture 23 - Linear Discriminant Analysis 3
Lecture 24 - Optimization
Lecture 25 - Perceptron Learning
Lecture 26 - SVM - Formulation
Lecture 27 - SVM - Interpretation & Analysis
Lecture 28 - SVMs for Linearly Non Separable Data
Lecture 29 - SVM Kernels

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

- Lecture 30 - SVM - Hinge Loss Formulation
- Lecture 31 - Weka Tutorial
- Lecture 32 - Early Models
- Lecture 33 - Backpropogation - I
- Lecture 34 - Backpropogation - II
- Lecture 35 - Initialization, Training and Validation
- Lecture 36 - Maximum Likelihood Estimate
- Lecture 37 - Priors and MAP Estimate
- Lecture 38 - Bayesian Parameter Estimation
- Lecture 39 - Introduction
- Lecture 40 - Regression Trees
- Lecture 41 - Stopping Criteria and Pruning
- Lecture 42 - Loss Functions for Classification
- Lecture 43 - Categorical Attributes
- Lecture 44 - Multiway Splits
- Lecture 45 - Missing Values, Imputation and Surrogate Splits
- Lecture 46 - Instability, Smoothness and Repeated Subtrees
- Lecture 47 - Tutorial
- Lecture 48 - Evaluation Measures I
- Lecture 49 - Bootstrapping and Cross Validation
- Lecture 50 - 2 Class Evaluation Measures
- Lecture 51 - The ROC Curve
- Lecture 52 - Minimum Description Length and Exploratory Analysis
- Lecture 53 - Introduction to Hypothesis Testing
- Lecture 54 - Basic Concepts
- Lecture 55 - Sampling Distributions and the Z Test
- Lecture 56 - Student's t-test
- Lecture 57 - The Two Sample and Paired Sample t-tests
- Lecture 58 - Confidence Intervals
- Lecture 59 - Bagging, Committee Machines and Stacking
- Lecture 60 - Boosting
- Lecture 61 - Gradient Boosting
- Lecture 62 - Random Forest
- Lecture 63 - Naive Bayes
- Lecture 64 - Bayesian Networks
- Lecture 65 - Undirected Graphical Models - Introduction
- Lecture 66 - Undirected Graphical Models - Potential Functions
- Lecture 67 - Hidden Markov Models
- Lecture 68 - Variable Elimination

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

- Lecture 69 - Belief Propagation
- Lecture 70 - Partitional Clustering
- Lecture 71 - Hierarchical Clustering
- Lecture 72 - Threshold Graphs
- Lecture 73 - The BIRCH Algorithm
- Lecture 74 - The CURE Algorithm
- Lecture 75 - Density Based Clustering
- Lecture 76 - Gaussian Mixture Models
- Lecture 77 - Expectation Maximization
- Lecture 78 - Expectation Maximization (Continued...)
- Lecture 79 - Spectral Clustering
- Lecture 80 - Learning Theory
- Lecture 81 - Frequent Itemset Mining
- Lecture 82 - The Apriori Property
- Lecture 83 - Introduction to Reinforcement Learning
- Lecture 84 - RL Framework and TD Learning
- Lecture 85 - Solution Methods and Applications
- Lecture 86 - Multi-class Classification

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

NPTEL Video Course - Computer Science and Engineering - NOC:Artificial Intelligence: Knowledge Representation

Subject Co-ordinator - Prof. Deepak Khemani

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction
- Lecture 2 - Introduction to Knowledge Representation and Reasoning
- Lecture 3 - An Introduction to Formal Logics
- Lecture 4 - Propositional Logic
- Lecture 5 - Propositional Logic
- Lecture 6 - Propositional Logic
- Lecture 7 - Propositional Logic
- Lecture 8 - Propositional Logic
- Lecture 9 - Propositional Logic
- Lecture 10 - Propositional Logic
- Lecture 11 - Syntax
- Lecture 12 - Semantics
- Lecture 13 - Entailment and Models
- Lecture 14 - Proof Systems
- Lecture 15 - Forward Chaining
- Lecture 16 - Unification
- Lecture 17 - Forward Chaining Rule Based Systems
- Lecture 18 - The Rete Algorithm
- Lecture 19 - Rete Algorithm - Example
- Lecture 20 - Programming in a Rule Based Language
- Lecture 21 - The OPS5 Expert System Shell
- Lecture 22 - Skolemization
- Lecture 23 - Terminological Facts
- Lecture 24 - Properties and Categories
- Lecture 25 - Reification and Abstract Entities
- Lecture 26 - Resource Description Framework (RDF)
- Lecture 27 - The Event Calculus
- Lecture 28 - Natural Language Semantics
- Lecture 29 - CD Theory

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

- Lecture 30 - CD Theory (Continued...)
- Lecture 31 - English to CD Theory
- Lecture 32 - Backward Chaining
- Lecture 33 - Logic Programming
- Lecture 34 - Prolog
- Lecture 35 - Search in Prolog
- Lecture 36 - Controlling Search
- Lecture 37 - The Cut Operator in Prolog
- Lecture 38 - Incompleteness
- Lecture 39 - The Resolution Method for FOL
- Lecture 40 - Clause Form
- Lecture 41 - FOL with Equality
- Lecture 42 - Complexity of Resolution Refutation
- Lecture 43 - Semantic Nets and Frames
- Lecture 44 - Scripts
- Lecture 45 - Applying Scripts
- Lecture 46 - Goals, Plans and Actions
- Lecture 47 - Plan Applier Mechanism
- Lecture 48 - Top Down and Bottom Up Reasoning
- Lecture 49 - Introduction
- Lecture 50 - Normalisation
- Lecture 51 - Structure Matching
- Lecture 52 - Structure Matching - Example
- Lecture 53 - Classification
- Lecture 54 - A-box reasoning
- Lecture 55 - DL
- Lecture 56 - DL
- Lecture 57 - ALC examples
- Lecture 58 - Taxonomies and Inheritance
- Lecture 59 - Beliefs
- Lecture 60 - Inheritance Hierarchies
- Lecture 61 - Introduction
- Lecture 62 - Circumscription
- Lecture 63 - Circumscription (Continued...)
- Lecture 64 - Minimal Models
- Lecture 65 - Event Calculus Revisited
- Lecture 66 - Circumscription in EC
- Lecture 67 - Default Logic
- Lecture 68 - Autoepistemic Logic

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

Lecture 69 - Epistemic Logic

Lecture 70 - The Muddy Children Puzzle

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

NPTEL Video Course - Computer Science and Engineering - NOC:Information Security - II

Subject Co-ordinator - Prof. V. Kamakoti

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Experimental Setup
Lecture 2 - Need for Secure Systems
Lecture 3 - Ignorance of A is Sin of B
Lecture 4 - Function calls and Stacks
Lecture 5 - Stack Smashing
Lecture 6 - Virtual Machine Based Rootkits
Lecture 7 - Security and Architecture
Lecture 8 - Structured Computer Organization Completed
Lecture 9 - X86 ISA - Part1
Lecture 10 - X86 ISA - Part 2
Lecture 11 - X86 Protected Mode
Lecture 12 - X86 Memory Segmentation
Lecture 13 - Process Isolation using Segmentation
Lecture 14 - Paging and Virtual Memory
Lecture 15 - Task Switching and Interrupt Service
Lecture 16 - Memory Segmentation Deep dive - Part 1
Lecture 17 - Memory Segmentation Deep dive - Part 2
Lecture 18 - Memory Segmentation Deep dive - Part 3
Lecture 19 - Memory Segmentation Deep dive - Part 4
Lecture 20 - Segmentation Recap
Lecture 21 - Lab 1 - Part 1
Lecture 22 - Lab 1 - Part 2
Lecture 23 - Lab 1 - Part 3
Lecture 24 - ISR Recap
Lecture 25 - Lab 2 - Part 1
Lecture 26 - Lab 2 - Part 2
Lecture 27 - Memory Management Recap
Lecture 28 - Lab 3 - Part 1
Lecture 29 - Lab 3 - Part 2

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

- Lecture 30 - Task Switch recap
- Lecture 31 - Lab 4 - Part 1
- Lecture 32 - Lab 4 - Part 2
- Lecture 33 - Lab 4 - Part 3
- Lecture 34 - Lab 4 - Part 4
- Lecture 35 - Introduction to Basic Cryptography
- Lecture 36 - Public Key Cryptography
- Lecture 37 - Freescale ARM iMX6 Processor
- Lecture 38 - High Assurance Boot in iMX6
- Lecture 39 - Case Study
- Lecture 40 - Basics of Networking
- Lecture 41 - Network Processor Vs General Purpose Processor
- Lecture 42 - Network Processor Architecture

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

NPTEL Video Course - Computer Science and Engineering - NOC:Algorithms for Big Data

Subject Co-ordinator - Prof. John Augustine

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Lesson 1 - Basic definitions
Lecture 2 - Lesson 2 - Conditional probability
Lecture 3 - Lesson 3 - Example problems
Lecture 4 - Lesson 4 - Karger's mincut algorithm
Lecture 5 - Lesson 5 - Analysis of Karger's mincut algorithm
Lecture 6 - Lesson 6 - Random variables
Lecture 7 - Lesson 7 - Randomized quicksort
Lecture 8 - Problem solving video - The rich get richer
Lecture 9 - Problem solving video - Monty Hall problem
Lecture 10 - Lesson 1 - Bernoulli, Binomial, and Geometric distributions
Lecture 11 - Lesson 2 - Tail Bounds
Lecture 12 - Lesson 3 - Application of Chernoff bound
Lecture 13 - Lesson 4 - Application of Chebyshev's inequality
Lecture 14 - Lesson 1 - Intro to Big Data Algorithms
Lecture 15 - Lesson 2 - SAT Problem
Lecture 16 - Lesson 3 - Classification of States
Lecture 17 - Lesson 4 - Stationary Distribution of a Markov Chain
Lecture 18 - Lesson 5 - Celebrities Case Study
Lecture 19 - Lesson 6 - Random Walks on Undirected Graphs
Lecture 20 - Lesson 7 - Intro to Streaming, Morris Algorithm
Lecture 21 - Lesson 8 - Reservoir Sampling
Lecture 22 - Lesson 9 - Approximate Median
Lecture 23 - Lesson 1 - Overview
Lecture 24 - Lesson 2 - Balls, bins, hashing
Lecture 25 - Lesson 3 - Chain hashing, SUHA, Power of Two choices
Lecture 26 - Lesson 4 - Bloom filter
Lecture 27 - Lesson 5 - Pairwise independence
Lecture 28 - Lesson 6 - Estimating expectation of continuous function
Lecture 29 - Lesson 1 - Universal hash functions

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

- Lecture 30 - Lesson 2 - Perfect hashing
- Lecture 31 - Lesson 3 - Count-min filter for heavy hitters in data streams
- Lecture 32 - Problem solving video - Doubly Stochastic Transition Matrix
- Lecture 33 - Problem solving video - Random Walks on Linear Structures
- Lecture 34 - Problem solving video - Lollipop Graph
- Lecture 35 - Problem solving video - Cat And Mouse
- Lecture 36 - Lesson 1 - Estimating frequency moments
- Lecture 37 - Lesson 2 - Property testing framework
- Lecture 38 - Lesson 3 - Testing Connectivity
- Lecture 39 - Lesson 4 - Enforce & Test Introduction
- Lecture 40 - Lesson 5 - Testing if a graph is a biclique
- Lecture 41 - Lesson 6 - Testing bipartiteness
- Lecture 42 - Lesson 1 - Property testing and random walk algorithms
- Lecture 43 - Lesson 2 - Testing if a graph is bipartite (using random walks)
- Lecture 44 - Lesson 3 - Graph streaming algorithms
- Lecture 45 - Lesson 4 - Graph streaming algorithms
- Lecture 46 - Lesson 5 - Graph streaming algorithms
- Lecture 47 - Lesson 1 - MapReduce
- Lecture 48 - Lesson 2 - K-Machine Model (aka Pregel Model)

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

NPTEL Video Course - Computer Science and Engineering - NOC:Reinforcement Learning

Subject Co-ordinator - Dr. B. Ravindran

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Tutorial 1 - Probability Basics 1
Lecture 2 - Tutorial 1 - Probability Basics 2
Lecture 3 - Tutorial 2 - Linear algebra - 1
Lecture 4 - Tutorial 2 - Linear algebra - 2
Lecture 5 - Introduction to RL
Lecture 6 - RL Framework and applications
Lecture 7 - Introduction to Immediate RL
Lecture 8 - Bandit Optimalities
Lecture 9 - Value function based methods
Lecture 10 - UCB 1
Lecture 11 - Concentration Bounds
Lecture 12 - UCB 1 Theorem
Lecture 13 - PAC Bounds
Lecture 14 - Median Elimination
Lecture 15 - Thompson Sampling
Lecture 16 - Policy Search
Lecture 17 - REINFORCE
Lecture 18 - Contextual Bandits
Lecture 19 - Full RL Introduction
Lecture 20 - Returns, Value Functions and MDPs
Lecture 21 - MDP Modelling
Lecture 22 - Bellman Equation
Lecture 23 - Bellman Optimality Equation
Lecture 24 - Cauchy Sequence and Green's Equation
Lecture 25 - Banach Fixed Point Theorem
Lecture 26 - Convergence Proof
Lecture 27 - L_p Convergence
Lecture 28 - Value Iteration
Lecture 29 - Policy Iteration

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

- Lecture 30 - Dynamic Programming
- Lecture 31 - Monte Carlo
- Lecture 32 - Control in Monte Carlo
- Lecture 33 - Off Policy MC
- Lecture 34 - UCT
- Lecture 35 - TD(0)
- Lecture 36 - TD(0) Control
- Lecture 37 - Q-Learning
- Lecture 38 - Afterstate
- Lecture 39 - Eligibility Traces
- Lecture 40 - Backward View of Eligibility Traces
- Lecture 41 - Eligibility Trace Control
- Lecture 42 - Thompson Sampling Recap
- Lecture 43 - Function Approximation
- Lecture 44 - Linear Parameterization
- Lecture 45 - State Aggregation Methods
- Lecture 46 - Function Approximation and Eligibility Traces
- Lecture 47 - LSTD and LSTDQ
- Lecture 48 - LSPI and Fitted Q
- Lecture 49 - DQN and Fitted Q-Iteration
- Lecture 50 - Policy Gradient Approach
- Lecture 51 - Actor Critic and REINFORCE
- Lecture 52 - REINFORCE (cont'd)
- Lecture 53 - Policy Gradient with Function Approximation
- Lecture 54 - Hierarchical Reinforcement Learning
- Lecture 55 - Types of Optimality
- Lecture 56 - Semi Markov Decision Processes
- Lecture 57 - Options
- Lecture 58 - Learning with Options
- Lecture 59 - Hierarchical Abstract Machines
- Lecture 60 - MAXQ
- Lecture 61 - MAXQ Value Function Decomposition
- Lecture 62 - Option Discovery
- Lecture 63 - POMDP Introduction
- Lecture 64 - Solving POMDP

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

NPTEL Video Course - Computer Science and Engineering - NOC:Introduction to Operating Systems

Subject Co-ordinator - Prof. Chester Rebeiro

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Intro to the Course
Lecture 2 - Introduction to OS
Lecture 3 - PC Hardware
Lecture 4 - From Programs to Processes
Lecture 5 - Sharing the CPU
Lecture 6 - Introduction
Lecture 7 - Virtual Memory
Lecture 8 - MMU Mapping
Lecture 9 - Segmentation
Lecture 10 - Memory Management in xv6
Lecture 11 - PC Booting
Lecture 12 - Week 3 Introduction
Lecture 13 - Create Execute and Exit from Processes
Lecture 14 - System Calls for Process Management
Lecture 15 - Interrupts
Lecture 16 - Interrupt Handling
Lecture 17 - Software Interrupts and System calls
Lecture 18 - CPU Context switching
Lecture 19 - CPU Scheduling
Lecture 20 - Priority Based Scheduling Algorithms
Lecture 21 - Multi-Processor Scheduling
Lecture 22 - Scheduling in Linux
Lecture 23 - Completely Fair Scheduling
Lecture 24 - Inter Process Communication
Lecture 25 - Synchronization
Lecture 26 - Software solutions for critical sections
Lecture 27 - Bakery Algorithm
Lecture 28 - Hardware Locks
Lecture 29 - Mutexes

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

- Lecture 30 - Semaphores
- Lecture 31 - Dining Philosophers Problem
- Lecture 32 - Deadlocks
- Lecture 33 - Dealing with Deadlocks
- Lecture 34 - Threads - Part 1
- Lecture 35 - Threads - Part 2
- Lecture 36 - Operating system security
- Lecture 37 - Information Flow policies
- Lecture 38 - Buffer Overflows
- Lecture 39 - Preventing Buffer Overflow Attacks

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

NPTEL Video Course - Computer Science and Engineering - NOC:Programming, Data Structures and Algorithms in Python

Subject Co-ordinator - Prof. Madhavan Mukund

Co-ordinating Institute - Chennai Mathematical Institute

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

Lecture 1 - Lecture 1 - Algorithms and programming
Lecture 2 - Lecture 2 - Improving naive gcd
Lecture 3 - Lecture 3 - Euclid's algorithm for gcd
Lecture 4 - Lecture 4 - Downloading and installing Python
Lecture 5 - Lecture 1 - Assignment statement, basic types - int, float, bool
Lecture 6 - Lecture 2 - Strings
Lecture 7 - Lecture 3 - Lists
Lecture 8 - Lecture 4 - Control Flow
Lecture 9 - Lecture 5 - Functions
Lecture 10 - Lecture 6 - Examples
Lecture 11 - Lecture 1 - More about range()
Lecture 12 - Lecture 2 - Manipulating lists
Lecture 13 - Lecture 3 - Breaking out of a loop
Lecture 14 - Lecture 4 - Arrays vs lists, binary search
Lecture 15 - Lecture 5 - Efficiency
Lecture 16 - Lecture 6 - Selection Sort
Lecture 17 - Lecture 7 - Insertion Sort
Lecture 18 - Lecture 8 - Recursion
Lecture 19 - Lecture 1 - Mergesort
Lecture 20 - Lecture 2 - Mergesort, analysis
Lecture 21 - Lecture 3 - Quicksort
Lecture 22 - Lecture 4 - Quicksort analysis
Lecture 23 - Lecture 5 - Tuples and dictionaries
Lecture 24 - Lecture 6 - Function definitions
Lecture 25 - Lecture 7 - List Comprehension
Lecture 26 - Lecture 1 - Exception Handling
Lecture 27 - Lecture 2 - Standard input and output
Lecture 28 - Lecture 3 - Handling files
Lecture 29 - Lecture 4 - String functions

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

Lecture 30 - Lecture 5 - Formatting printed output
Lecture 31 - Lecture 6 - pass, del() and None
Lecture 32 - Lecture 1 - Backtracking, N queens
Lecture 33 - Lecture 2 - Global scope, nested functions
Lecture 34 - Lecture 3 - Generating permutations
Lecture 35 - Lecture 4 - Sets, stacks, queues
Lecture 36 - Lecture 5 - Priority queues and heaps
Lecture 37 - Lecture 1 - Abstract datatypes, classes and objects
Lecture 38 - Lecture 2 - Classes and objects in Python
Lecture 39 - Lecture 3 - User defined lists
Lecture 40 - Lecture 4 - Search trees
Lecture 41 - Lecture 1 - Memoization and dynamic programming
Lecture 42 - Lecture 2 - Grid paths
Lecture 43 - Lecture 3 - Longest common subsequence
Lecture 44 - Lecture 4 - Matrix multiplication
Lecture 45 - Lecture 5 - Wrap-up, Python vs other languages

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

NPTEL Video Course - Computer Science and Engineering - NOC:Privacy and Security in Online Social Networks

Subject Co-ordinator - Prof. Ponnurangam Kumaraguru

Co-ordinating Institute - IIITD

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

Lecture 1 - Intro to Course
Lecture 2 - Intro to Course
Lecture 3 - Incidents
Lecture 4 - Tutorial 1 - Part 1 Ubuntu
Lecture 5 - Tutorial 1 - Part 2 Python
Lecture 6 - OSM APIs and tools for data collection
Lecture 7 - Tutorial 2 - Part 1 Facebook API
Lecture 8 - Tutorial 2 - Part 2 Facebook API
Lecture 9 - Trust and Credibility on OSM
Lecture 10 - Misinformation on Social Media
Lecture 11 - Privacy and Social Media
Lecture 12 - Tutorial 3 - Part 1 Twitter API
Lecture 13 - Tutorial 3 - Part 2 MySQL
Lecture 14 - Tutorial 3 - Part 3 MongoDB
Lecture 15 - Privacy and Pictures on Online Social Media
Lecture 16 - Policing and Online Social Media
Lecture 17 - Policing and Online Social Media
Lecture 18 - Policing and Online Social Media
Lecture 19 - eCrime on Online Social Media
Lecture 20 - eCrime on Online Social Media
Lecture 21 - Tutorial 4 - Social Network Analysis
Lecture 22 - Link Farming in Online Social Media
Lecture 23 - Nudges
Lecture 24 - Semantic attacks
Lecture 25 - Tutorial 5 - Analyzing text using Python NLTK
Lecture 26 - Profile Linking on Online Social Media
Lecture 27 - Anonymous Networks
Lecture 28 - Tutorial 6 - Gephi Network Visualization
Lecture 29 - Privacy in Location Based Social Networks - Part 1

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

- Lecture 30 - Privacy in Location Based Social Networks - Part 2
- Lecture 31 - Tutorial 7 - Visualization - Highcharts
- Lecture 32 - Beware of What You Share Inferring Home Location in Social Networks
- Lecture 33 - On the dynamics of username change behavior on Twitter
- Lecture 34 - Boston Marathon Analyzing Fake Content on Twitter

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

NPTEL Video Course - Computer Science and Engineering - NOC:Mobile Computing

Subject Co-ordinator - Prof. Pushpendra Singh

Co-ordinating Institute - IIITD

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

Lecture 1 - Java Basics
Lecture 2 - Java
Lecture 3 - Java
Lecture 4 - Java
Lecture 5 - Java
Lecture 6 - Introduction to Android Studio
Lecture 7 - Your First App
Lecture 8 - Deploying your App to a Phone
Lecture 9 - Extending app - Buttons, Toast
Lecture 10 - Android Development Environment
Lecture 11 - User Interface
Lecture 12 - Application Fundamentals
Lecture 13 - Extending the application
Lecture 14 - Activity Lifecycle - I
Lecture 15 - Activity Lifecycle - II
Lecture 16 - Activity LifeCycle - III
Lecture 17 - Adding Icon, Layouts, Handling Rotation - I
Lecture 18 - Adding Icon, Layouts, Handling Rotation - II
Lecture 19 - Debugging
Lecture 20 - Intents - I
Lecture 21 - Intents - II
Lecture 22 - Observer Pattern
Lecture 23 - Fragments - I
Lecture 24 - Fragments - II
Lecture 25 - Fragment Basic Programming Example
Lecture 26 - Fragments - Advanced Example
Lecture 27 - Implicit Intents
Lecture 28 - Saving Data - I
Lecture 29 - Saving Data - II

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

- Lecture 30 - Security and System Permissions
- Lecture 31 - Services
- Lecture 32 - Processes and threads
- Lecture 33 - Working with Fragments - I
- Lecture 34 - Working with Fragments - II
- Lecture 35 - Working with Fragments - III
- Lecture 36 - RecyclerView, Adapter
- Lecture 37 - RecyclerView, Adapter, ViewHolder
- Lecture 38 - ViewPager
- Lecture 39 - Dialogues

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

NPTEL Video Course - Computer Science and Engineering - NOC:Introduction to Modern Application Development

Subject Co-ordinator - Tanmai Gopal, Prof. Gaurav Raina

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction to the course
Lecture 2 - Introduction to a web-app
Lecture 3 - Building a web-app
Lecture 4 - Introducing IMAD
Lecture 5 - Networks
Lecture 6 - Practical - Running your own web-server
Lecture 7 - Protocols
Lecture 8 - Module P2 - Practical
Lecture 9 - Module P3 - Practical
Lecture 10 - Module P4 - Practical
Lecture 11 - Module P5 - Introduction to client-side Javascript
Lecture 12 - Module P6 - Practical
Lecture 13 - Module 6 - Introduction to databases
Lecture 14 - Module 7 - Data modelling and constraints
Lecture 15 - Module P7 - Interacting with a DBMS
Lecture 16 - Module P8 - Practical
Lecture 17 - Module P9 - Introduction to SQL

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

NPTEL Video Course - Computer Science and Engineering - NOC:Introduction to Cryptology

Subject Co-ordinator - Dr. Sugata Gangopadhyay

Co-ordinating Institute - IIT - Roorkee

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

- Lecture 1 - Introduction Caesar cipher
- Lecture 2 - Modular arithmetic, shift cipher
- Lecture 3 - Affine Cipher, Vigenere Cipher
- Lecture 4 - Perfect secrecy, Application of Shift Cipher
- Lecture 5 - Problem Discussion on Affine cipher and Perfect Secrecy
- Lecture 6 - Product Cipher, Block Cipher, Modes of Operation for Block Cipher
- Lecture 7 - Substitution Permutation network, Feistel Cipher
- Lecture 8 - S-Box Theory
- Lecture 9 - Cryptanalysis and its Variants, Linear Attack
- Lecture 10 - Problem Discussion
- Lecture 11 - Public Key Cryptology Introduction RSA Cryptosystem
- Lecture 12 - Complexity analysis of Euclidian Algorithm and RSA Cryptosystem square and multiply algorithm
- Lecture 13 - Primality testing
- Lecture 14 - Efficient Computation of Jacobi Symbol Primality Testing
- Lecture 15 - Problem Discussion on Jacobi Symbol Calculation and RSA Cryptosystem
- Lecture 16 - Cryptographic hash function
- Lecture 17 - Random Oracle model, Security of hash functions
- Lecture 18 - Randomized Algorithm and its application on Preimage resistance and collision resistance
- Lecture 19 - Iterated Hash Functions
- Lecture 20 - Problem Discussion

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

NPTEL Video Course - Computer Science and Engineering - Combinatorics

Subject Co-ordinator - Dr. L. Sunil Chandran

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Pigeon hole principle - (Part 1)
- Lecture 2 - Pigeon hole principle - (Part 2)
- Lecture 3 - Pigeon hole principle - (Part 3)
- Lecture 4 - Pigeon hole principle - (Part 4)
- Lecture 5 - Elementary concepts and basic counting principles
- Lecture 6 - Elementary concepts; Binomial theorem; Bijective proofs - Part (1)
- Lecture 7 - Bijective proofs - Part (2)
- Lecture 8 - Bijective proofs - Part (3); Properties of binomial coefficients; Combinatorial identities - Part (1)
- Lecture 9 - Combinatorial identities - Part (2); Permutations of multisets - Part (1)
- Lecture 10 - Permutations of multisets - Part (2)
- Lecture 11 - Multinomial Theorem, Combinations of Multisets - Part (1)
- Lecture 12 - Combinations of Multisets - Part (2)
- Lecture 13 - Combinations of Multisets - Part (3), Bounds for binomial coefficients
- Lecture 14 - Sterling's Formula, Generalization of Binomial coefficients - Part (1)
- Lecture 15 - Generalization of Binomial coefficients - Part (2)
- Lecture 16 - Generalization of Binomial coefficients - Part (3); Double counting - Part (1)
- Lecture 17 - Double counting - Part (2)
- Lecture 18 - Hall's Theorem for regular bipartite graphs; Inclusion exclusion principle - Part (1)
- Lecture 19 - Inclusion exclusion principle - Part (2)
- Lecture 20 - Inclusion exclusion principle - Part (3)
- Lecture 21 - Inclusion exclusion principle - Part (4)
- Lecture 22 - Inclusion exclusion principle - Part (5)
- Lecture 23 - Recurrence Relations - Part (1)
- Lecture 24 - Recurrence Relations - Part (2)
- Lecture 25 - Recurrence Relations - Part (3)
- Lecture 26 - Recurrence Relations - Part (4)
- Lecture 27 - Recurrence Relations - Part (5)
- Lecture 28 - Generating functions - Part (1)
- Lecture 29 - Generating functions - Part (2)

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- Lecture 30 - Solving recurrence relations using generating functions - Part (1)
- Lecture 31 - Solving recurrence relations using generating functions - Part (2)
- Lecture 32 - Exponential generating functions - Part (1)
- Lecture 33 - Exponential generating functions - Part (2), Partition Number - Part (1)
- Lecture 34 - Partition Number - Part (2)
- Lecture 35 - Partition Number - Part (3)
- Lecture 36 - Partition Number - Part (4); Catalan Numbers - Part (1)
- Lecture 37 - Catalans Numbers - Part (2)
- Lecture 38 - Catalan Numbers - Part (3), Sterling numbers of the 2nd kind
- Lecture 39 - Difference Sequences
- Lecture 40 - Sterling Numbers
- Lecture 41 - Summary

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

NPTEL Video Course - Computer Science and Engineering - Compiler Design (Prof. Y.N. Srikanth)

Subject Co-ordinator - Prof. Y.N. Srikanth

Co-ordinating Institute - IISc - Bangalore

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

Lecture 1 - An Overview of a Compiler - Part 1

Lecture 2 - An Overview of a Compiler - Part 2 and Run-Time Environments - Part 1

Lecture 3 - An Overview of a Compiler - Part 2 and Run-Time Environments - Part 1

Lecture 4 - Run-Time Environments - Part 2

Lecture 5 - Run-Time Environments - Part 3 and Local Optimizations - Part 1

Lecture 6 - Run-Time Environments - Part 3 and Local Optimizations - Part 1

Lecture 7 - Local Optimizations - Part 2 and Code Generation - Part 1

Lecture 8 - Local Optimizations - Part 2 and Code Generation - Part 1

Lecture 9 - Code Generation - Part 1

Lecture 10 - Code Generation - Part 2

Lecture 11 - Code Generation - Part 3 and Global Register Allocation - Part 1

Lecture 12 - Code Generation - Part 3 and Global Register Allocation - Part 1

Lecture 13 - Global Register Allocation - Part 2

Lecture 14 - Global Register Allocation - Part 3 and Implementing Object-Oriented Languages - Part 1

Lecture 15 - Global Register Allocation - Part 3 and Implementing Object-Oriented Languages - Part 1

Lecture 16 - Implementing Object-Oriented Languages - Part 2 and Introduction to Machine-Independent Optimizations

Lecture 17 - Implementing Object-Oriented Languages - Part 2 and Introduction to Machine-Independent Optimizations

Lecture 18 - Introduction to Machine-Independent Optimizations - Part 2 and Data-Flow Analysis - Part 1

Lecture 19 - Introduction to Machine-Independent Optimizations - Part 2 and Data-Flow Analysis - Part 1

Lecture 20 - Data-Flow Analysis - Part 2

Lecture 21 - Data-Flow Analysis - Part 3 and Control-Flow Analysis - Part 1

Lecture 22 - Data-Flow Analysis - Part 3 and Control-Flow Analysis - Part 1

Lecture 23 - Control-Flow Analysis - Part 2

Lecture 24 - Machine-Independent Optimizations - Part 1

Lecture 25 - Machine-Independent Optimizations - Part 2

Lecture 26 - Machine-Independent Optimizations - Part 3 and Data-Flow Analysis

Lecture 27 - Machine-Independent Optimizations - Part 3 and Data-Flow Analysis

Lecture 28 - Data-Flow Analysis

Lecture 29 - Data-Flow Analysis

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- Lecture 30 - Partial Redundancy Elimination - Part 2
- Lecture 31 - The Static Single Assignment Form
- Lecture 32 - The Static Single Assignment Form
- Lecture 33 - The Static Single Assignment Form
- Lecture 34 - Automatic Parallelization - Part 1
- Lecture 35 - Automatic Parallelization - Part 2
- Lecture 36 - Automatic Parallelization - Part 3
- Lecture 37 - Automatic Parallelization - Part 4
- Lecture 38 - Instruction Scheduling - Part 1
- Lecture 39 - Instruction Scheduling - Part 2
- Lecture 40 - Instruction Scheduling - Part 3
- Lecture 41 - Software Pipelining
- Lecture 42 - Energy-Aware Software Systems - Part 1
- Lecture 43 - Energy-Aware Software Systems - Part 2
- Lecture 44 - Energy-Aware Software Systems - Part 3
- Lecture 45 - Energy-Aware Software Systems - Part 4
- Lecture 46 - Just-In-Time Compilation and Optimizations for .NET CLR
- Lecture 47 - Garbage Collection
- Lecture 48 - Interprocedural Data-Flow Analysis
- Lecture 49 - Worst Case Execution Time - Part 1
- Lecture 50 - Worst Case Execution Time - Part 2

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

NPTEL Video Course - Computer Science and Engineering - Graph Theory

Subject Co-ordinator - Dr. L. Sunil Chandran

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction
- Lecture 2 - Matchings
- Lecture 3 - More on Hall's theorem and some applications
- Lecture 4 - Tutte's theorem on existence of a perfect matching
- Lecture 5 - More on Tutte's theorem
- Lecture 6 - More on Matchings
- Lecture 7 - Dominating set, path cover
- Lecture 8 - Gallai's Millgram theorem, Dilworth's theorem
- Lecture 9 - Connectivity
- Lecture 10 - Menger's theorem
- Lecture 11 - More on connectivity
- Lecture 12 - Minors, topological minors and more on k-linkedness
- Lecture 13 - Vertex coloring
- Lecture 14 - More on vertex coloring
- Lecture 15 - Edge coloring
- Lecture 16 - Proof of Vizing's theorem, Introduction to planarity
- Lecture 17 - 5-coloring planar graphs, Kuratowski's theorem
- Lecture 18 - Proof of Kuratowski's theorem, List coloring
- Lecture 19 - List chromatic index
- Lecture 20 - Adjacency polynomial of a graph and combinatorial Nullstellensatz
- Lecture 21 - Chromatic polynomial, k-critical graphs
- Lecture 22 - Gallai-Roy theorem, Acyclic coloring, Hadwiger's conjecture
- Lecture 23 - Perfect graphs
- Lecture 24 - Interval graphs, chordal graphs
- Lecture 25 - Proof of weak perfect graph theorem (WPGT)
- Lecture 26 - Second proof of WPGT, Some non-perfect graph classes
- Lecture 27 - More special classes of graphs
- Lecture 28 - Boxicity, Sphericity, Hamiltonian circuits
- Lecture 29 - More on Hamiltonicity

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- Lecture 30 - Chvatal's theorem, toughness, Hamiltonicity and 4-color conjecture
- Lecture 31 - Network flows
- Lecture 32 - More on network flows
- Lecture 33 - Circulations and tensions
- Lecture 34 - More on circulations and tensions, flow number and Tutte's flow conjectures
- Lecture 35 - Random graphs and probabilistic method
- Lecture 36 - Probabilistic method
- Lecture 37 - Probabilistic method
- Lecture 38 - Probabilistic method
- Lecture 39 - Graph minors and Hadwiger's conjecture
- Lecture 40 - More on graph minors, tree decompositions

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

NPTEL Video Course - Computer Science and Engineering - High Performance Computing

Subject Co-ordinator - Prof. Mathew Jacob

Co-ordinating Institute - IISc - Bangalore

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

Lecture 1 - Programs and Data
Lecture 2 - Data Representation
Lecture 3 - Registers and Memory
Lecture 4 - Instructions, Addressing Modes
Lecture 5 - A RISC Instruction Set
Lecture 6 - A RISC Instruction Set (Continued...)
Lecture 7 - Function Call and Return
Lecture 8 - Function Call and Return (Continued...)
Lecture 9 - Instruction Execution
Lecture 10 - Instruction Execution (Continued...)
Lecture 11 - Software organization
Lecture 12 - System Calls
Lecture 13 - Virtual memory
Lecture 14 - Virtual memory (Continued...)
Lecture 15 - Virtual Memory (Continued...)
Lecture 16 - Process
Lecture 17 - Process scheduling
Lecture 18 - Process lifetime
Lecture 19 - Interprocess communication
Lecture 20 - Concurrent programming
Lecture 21 - Pipelining
Lecture 22 - Pipeline hazards
Lecture 23 - Pipeline hazards (Continued...)
Lecture 24 - Pipeline hazards (Continued...)
Lecture 25 - Cache memory
Lecture 26 - Memory hierarchy
Lecture 27 - Cache operation
Lecture 28 - Cache operation (Continued)
Lecture 29 - Cache aware programming

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- Lecture 30 - Cache aware programming (Continued...)
- Lecture 31 - More on cache
- Lecture 32 - Measuring time
- Lecture 33 - Program Profiling
- Lecture 34 - Secondary storage
- Lecture 35 - Files and disks
- Lecture 36 - Directories
- Lecture 37 - Protection and Performance
- Lecture 38 - Parallel architecture
- Lecture 39 - Cache coherence
- Lecture 40 - MPI programming
- Lecture 41 - MPI programming (Continued...)

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

NPTEL Video Course - Computer Science and Engineering - Numerical Optimization

Subject Co-ordinator - Dr. Shirish K. Shevade

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction
- Lecture 2 - Mathematical Background
- Lecture 3 - Mathematical Background (Continued...)
- Lecture 4 - One Dimensional Optimization - Optimality Conditions
- Lecture 5 - One Dimensional Optimization (Continued...)
- Lecture 6 - Convex Sets
- Lecture 7 - Convex Sets (Continued...)
- Lecture 8 - Convex Functions
- Lecture 9 - Convex Functions (Continued...)
- Lecture 10 - Multi Dimensional Optimization - Optimality Conditions, Conceptual Algorithm
- Lecture 11 - Line Search Techniques
- Lecture 12 - Global Convergence Theorem
- Lecture 13 - Steepest Descent Method
- Lecture 14 - Classical Newton Method
- Lecture 15 - Trust Region and Quasi-Newton Methods
- Lecture 16 - Quasi-Newton Methods - Rank One Correction, DFP Method
- Lecture 17 - i) Quasi-Newton Methods - Broyden Family ii) Coordinate Descent Method
- Lecture 18 - Conjugate Directions
- Lecture 19 - Conjugate Gradient Method
- Lecture 20 - Constrained Optimization - Local and Global Solutions, Conceptual Algorithm
- Lecture 21 - Feasible and Descent Directions
- Lecture 22 - First Order KKT Conditions
- Lecture 23 - Constraint Qualifications
- Lecture 24 - Convex Programming Problem
- Lecture 25 - Second Order KKT Conditions
- Lecture 26 - Second Order KKT Conditions (Continued...)
- Lecture 27 - Weak and Strong Duality
- Lecture 28 - Geometric Interpretation
- Lecture 29 - Lagrangian Saddle Point and Wolfe Dual

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- Lecture 30 - Linear Programming Problem
- Lecture 31 - Geometric Solution
- Lecture 32 - Basic Feasible Solution
- Lecture 33 - Optimality Conditions and Simplex Tableau
- Lecture 34 - Simplex Algorithm and Two-Phase Method
- Lecture 35 - Duality in Linear Programming
- Lecture 36 - Interior Point Methods - Affine Scaling Method
- Lecture 37 - Karmarkar's Method
- Lecture 38 - Lagrange Methods, Active Set Method
- Lecture 39 - Active Set Method (Continued...)
- Lecture 40 - Barrier and Penalty Methods, Augmented Lagrangian Method and Cutting Plane Method
- Lecture 41 - Summary

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

NPTEL Video Course - Computer Science and Engineering - Storage Systems

Subject Co-ordinator - Dr. K. Gopinath

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Overview
- Lecture 2 - Storage, Processing, Networking
- Lecture 3 - Naming and Storing
- Lecture 4 - Storage Filesystems
- Lecture 5 - Access Architecture, Hard Disks
- Lecture 6 - SCSI
- Lecture 7 - Fibre Channel Protocol (FCP)
- Lecture 8 - FCP, 10Gb Ethernet, iSCSI, TCP
- Lecture 9 - NFS, NFSv2
- Lecture 10 - NFSv2, NFSv3, NFSv4, CIFS
- Lecture 11 - USB Storage
- Lecture 12 - Tiering
- Lecture 13 - Mobile/Personal/Organizational - type Storage
- Lecture 14 - Parallel/Cloud/Web-scale Storage
- Lecture 15 - Long-term Storage
- Lecture 16 - Storage interfaces
- Lecture 17 - User-Memory-CPU interactions
- Lecture 18 - Spinlock, Concurrency
- Lecture 19 - Block Layer design
- Lecture 20 - FAT, TFAT, F2FS, LFS, FTL
- Lecture 21 - Data Structures
- Lecture 22 - Abstractions
- Lecture 23 - Link & Write Operations
- Lecture 24 - ZFS
- Lecture 25 - RAID in Filesystems
- Lecture 26 - RAID-Z, NetApp RAID4, Flash Filesystems
- Lecture 27 - Reliability
- Lecture 28 - Performance
- Lecture 29 - Security

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- Lecture 30 - CAP Theorem
- Lecture 31 - POSIX/NFS/S3/Zookeeper, ACID Vs. BASE
- Lecture 32 - Consistency & Commit problems
- Lecture 33 - Paxos
- Lecture 34 - Group Communication problem
- Lecture 35 - Message Ordering
- Lecture 36 - Ordering Models
- Lecture 37 - Orderings in Filesystems
- Lecture 38 - Semantics of highly scalable filesystems
- Lecture 39 - GFS
- Lecture 40 - GFS Model
- Lecture 41 - GFS functions and operations
- Lecture 42 - GFS problems, BigTable
- Lecture 43 - Lessons to learn

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

NPTEL Video Course - Computer Science and Engineering - System Analysis and Design

Subject Co-ordinator - Prof. V. Rajaraman

Co-ordinating Institute - IISc - Bangalore

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

Lecture - 1
Lecture - 2
Lecture - 3
Lecture - 4
Lecture - 5
Lecture - 6
Lecture - 7
Lecture - 8
Lecture - 9
Lecture - 10
Lecture - 11
Lecture - 12
Lecture - 13
Lecture - 14
Lecture - 15
Lecture - 16
Lecture - 17
Lecture - 18
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Lecture - 27
Lecture - 28
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Lecture - 30
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Lecture - 40

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NPTEL Video Course - Computer Science and Engineering - Principles of Compiler Design

Subject Co-ordinator - Prof. Y.N. Srikanth

Co-ordinating Institute - IISc - Bangalore

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

Lecture 1 - An Overview of a Compiler
Lecture 2 - Lexical Analysis - Part 1
Lecture 3 - Lexical Analysis - Part 2
Lecture 4 - Lexical Analysis - Part 3
Lecture 5 - Syntax Analysis
Lecture 6 - Syntax Analysis
Lecture 7 - Syntax Analysis
Lecture 8 - Syntax Analysis
Lecture 9 - Syntax Analysis
Lecture 10 - Syntax Analysis
Lecture 11 - Syntax Analysis
Lecture 12 - Semantic Analysis with Attribute Grammars Part - 1
Lecture 13 - Semantic Analysis with Attribute Grammars Part - 2
Lecture 14 - Semantic Analysis with Attribute Grammars Part - 3
Lecture 15 - Semantic Analysis with Attribute Grammars Part - 4
Lecture 16 - Semantic Analysis with Attribute Grammars Part - 5
Lecture 17 - Intermediate code generation Part - 1
Lecture 18 - Intermediate code generation Part - 2
Lecture 19 - Intermediate code generation Part - 3
Lecture 20 - Intermediate code generation Part - 4 (first half of lecture)
Lecture 21 - Run-time environments - 1 (second half of lecture)
Lecture 22 - Run-time environments - 2
Lecture 23 - Run-time environments - 3
Lecture 24 - Run-time environments - 4 (first half of lecture)
Lecture 25 - Control-Flow Graph and Local Optimizations - Part 1 (second half of lecture)
Lecture 26 - Control-Flow Graph and Local Optimizations - Part 2 (first half of lecture)
Lecture 27 - Machine code generation - 1 (second half of lecture)
Lecture 28 - Machine code generation - 2
Lecture 29 - Machine code generation - 3

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- Lecture 30 - Machine code generation - 4 (first half of lecture), Implementing object-oriented languages 1 (s
- Lecture 31 - Implementing object-oriented languages 2 (first half of lecture)
- Lecture 32 - Global register allocation - 1 (second half of lecture)
- Lecture 33 - Global register allocation - 2
- Lecture 34 - Global register allocation - 3
- Lecture 35 - Introduction to Machine-Independent Optimizations - 1
- Lecture 36 - Introduction to Machine-Independent Optimizations - 2
- Lecture 37 - Introduction to Machine-Independent Optimizations - 3
- Lecture 38 - Introduction to Machine-Independent Optimizations - 4
- Lecture 39 - Introduction to Machine-Independent Optimizations - 5
- Lecture 40 - Introduction to Machine-Independent Optimizations - 6
- Lecture 41 - Introduction to Machine-Independent Optimizations - 7 (first half of lecture)
- Lecture 42 - Instruction Scheduling and Software Pipelining - 1 (second half of lecture)
- Lecture 43 - Instruction Scheduling and Software Pipelining - 2
- Lecture 44 - Instruction Scheduling and Software Pipelining - 3 (first part of lecture)
- Lecture 45 - Automatic parallelization - 1 (second half of lecture)
- Lecture 46 - Automatic parallelization - 2