

**DECREASE-AND-CONQUER APPROACHES, SPACE-TIME TRADEOFFS:** Decrease-and-Conquer Approaches: Introduction, Insertion Sort, Depth First Search and Breadth First Search, Topological Sorting  
**Space-Time Tradeoffs:** Introduction, Sorting by Counting, Input Enhancement in String Matching.

**UNIT – 6**

**7 Hours**

**LIMITATIONS OF ALGORITHMIC POWER AND COPING WITH THEM:** Lower-Bound Arguments, Decision Trees, P, NP, and NP-Complete Problems, Challenges of Numerical Algorithms.

**UNIT - 7**

**6 Hours**

**COPING WITH LIMITATIONS OF ALGORITHMIC POWER:**  
Backtracking: n - Queens problem, Hamiltonian Circuit Problem, Subset - Sum Problem.

Branch-and-Bound: Assignment Problem, Knapsack Problem, Traveling Salesperson Problem.

Approximation Algorithms for NP-Hard Problems – Traveling Salesperson Problem, Knapsack Problem

**UNIT – 8**

**6 Hours**

**PRAM ALGORITHMS:** Introduction, Computational Model, Parallel Algorithms for Prefix Computation, List Ranking, and Graph Problems,

**Text Books:**

1. Anany Levitin: Introduction to The Design & Analysis of Algorithms, 2<sup>nd</sup> Edition, Pearson Education, 2007.  
(Listed topics only from the Chapters 1, 2, 3, 5, 7, 8, 10, 11).
2. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran: Fundamentals of Computer Algorithms, 2<sup>nd</sup> Edition, Universities Press, 2007.  
(Listed topics only from the Chapters 3, 4, 5, 13)

**Reference Books:**

1. Thomas H. Cormen, Charles E. Leiserson, Ronal L. Rivest, Clifford Stein: Introduction to Algorithms, 3<sup>rd</sup> Edition, PHI, 2010.
2. R.C.T. Lee, S.S. Tseng, R.C. Chang & Y.T.Tsai: Introduction to the Design and Analysis of Algorithms A Strategic Approach, Tata McGraw Hill, 2005.

**UNIX AND SHELL PROGRAMMING**  
(Common to CSE & ISE)

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H. O. D.  
Dept. Of Computer Science & Engineering  
Alva's Institute of Engg. & Technology  
Mijar, MOODBIDRI - 574 225

**Subject Code: 10CS44**  
**Hours/Week : 04**  
**Total Hours : 52**

**L.A. Marks : 25**  
**Exam Hours: 03**  
**Exam Marks: 100**

**PART - A**

**UNIT - 1** **6 Hours**  
The Unix Operating System, The UNIX architecture and Command Usage,  
The File System

**UNIT - 2** **6 Hours**  
Basic File Attributes, the vi Editor

**UNIT - 3** **7 Hours**  
The Shell, The Process, Customizing the environment

**UNIT - 4** **7 Hours**  
More file attributes, Simple filters

**PART - B**

**UNIT - 5** **6 Hours**  
Filters using regular expressions,

**UNIT - 6** **6 Hours**  
Essential Shell Programming

**UNIT - 7** **7 Hours**  
awk - An Advanced Filter

**UNIT - 8** **7 Hours**  
perl - The Master Manipulator

**Text Book:**

1. Sumitabha Das: UNIX - Concepts and Applications, 4<sup>th</sup> Edition,  
Tata McGraw Hill, 2006.  
(Chapters 1.2, 2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 18, 19)

**Reference Books:**

1. Behrouz A. Forouzan and Richard F. Gilberg: UNIX and Shell  
Programming, Cengage Learning, 2005,
2. M.G. Venkateshmurthy: UNIX & Shell Programming, Pearson  
Education, 2005.

**MICROPROCESSORS**



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