



## CS 501 : Wireless Networks

**Introduction :** Why wireless, IEEE802.11

**802.11 MAC Fundamentals:** Challenges for MAC, Access Mode, Contention Based access using DCF, Fragmentation and reassembly, Frame Format, 802.11 framing in detail( DS bits, BSSID, RTS, CTS, Control frame, management frame), Contention based data service, Frame processing and bridging, 802.11 to Ethernet

**WEP:** WEP cryptographic operations, WEP data processing, Problem with WEP, User Authentication with 802.11.

**802.11i Robust security networks, TKIP and CCMP:** Temporal key integrity protocol, Counter mode with CCB-MAC, Robust security network operation

**Management Operations:** Association, power conservation, timer synchronization, spectrum management

Contention free service with PCF.

**Physical Layer:** Physical layer architecture, Radio Link, RF with 802.11, Frequency, GFSK, PLSP, DSSS, HR/DSSS. 802.11a and 802.11j (OFDM Phy), 802.11g(extended rate Phy), 802.11n: MIMO-OFDM

**Experiencing on 802.11 on windows OS, Linux**

**802.11 Access point:** Functions of AP, Power over Ethernet, Selecting AP

**Security Architecture:** Authentication and Access Point, Ensuring secrecy through encryption, selecting security protocols.

**Site Planning and Project Management :** Network Requirement, PHY layer selection and design, Planning placing AP, Using Antennas to tailor Coverage.

802.11 Network analysis, 802.11 performance running

**Text Books:**

1. 802.11 Wireless Networks by Mathew S. Gost,SPD

## CS 502 : Distributed System

**Fundamentals:** Definitions, Evolution of distributed computing system, Distributed Computing System Models, Distributed Operating System, Designing a distributed Operating System, Introduction of distributed computing environment.

**Message Passing:** Introduction Desirable features, Issues in IPC by message passing, synchronization, Buffering, Multi datagram messages, encoding and decoding message data.

**Remote Procedure Calls:** Introduction, The RPC Model, Transparency of RPC, Implementing RPC mechanism, RPC message server management, parameter – passing and call semantic, Communication protocols for RPC's.

**Distributed Shared Memory:** Introduction, Architecture of DSM Systems Design and implementation, granularly, structure of shared memory space consistency models, replacement strategy, Threshing

**Resource Management:** Desirable feature, Task assignment approach, Load-balancing approach, Load sharing approach.

**Process Management:** Process Migration, Threads

**Distributed File Systems:** Intakes, Desirable features, File Models, File accessing models, file-sharing semantic, file- caching schemes, file replication Fault tolerance, Automatic Transactions, Design principle

**Text Books:**

1. George Coulouris, Jean Dollimore and Tim Kindberg “Distributed System Concepts and Design”, third Edition, Pearson Education Asia

### **Reference Books:**

1. 2002 Distributed Computing by Liu, Pearson Education
2. Distributed Computing by Hagit Attiya and Jennifer Weleh, Wiley India
3. Distributed Operating System: Concepts and Design by P. K. Sinha, PHI
4. Distributed Operating System by Tannenbaum, Pearson Education

## **CS 503 : Data and Web Mining**

Introduction to data mining, need for data warehousing and data mining, application potential, keywords and techniques.

**Data Warehousing and Online analytical Processing (OLAP):** Aggregation operations, models for data warehousing, star schema fact and dimension tables, conceptualisation of data warehouse and multidimensional databases, Relationship between warehouse and mining.

**Data Mining And Primitives:** Data preprocessing, data integration, data transformation, Definition and specification of a generic data mining task. Description of Data mining query language with examples.

**Association Analysis:** Different methods for mining association rules in transaction based databases. Illustration of confidence and support. Multidimensional and multilevel association rules. Classification of Association rules. Association rule algorithms – A period and frequent pattern growth.

**Classification and Prediction:** Different classification algorithms. Use of genie index, decision tree induction, Bayesian classification, neural network technique of back propagation, fuzzy set theory and genetic algorithms

**Clustering:** Partition based clustering, hierarchical clustering, model based clustering for continuous and Discrete data. Scalability of clustering algorithms. Parallel approaches for clustering.

**Web Mining:** web usage mining, web content mining, web log attributes.

Data mining issues in object oriented data bases, spatial data bases and multimedia databases and text data bases.

### **Text Books:**

1. Data Mining Concepts and Techniques by J. Han, M. Kamber, Harcourt India
2. Data Mining: introductory and Advanced Topics, by M. Dunham, Pearson pub
3. Data Mining Techniques by A.K. Pujari, Universities Press

## **CS 504 : Parallel Computing**

Introduction to Parallel Computing, Supercomputers and grand challenge problems, Modern Parallel Computers, Data Parallelism, Functional Parallelism, Pipelining and Data Clustering, Minsky Conjecture

**Performance Analysis :** Introduction, SpeedUp, Super Linear Speedup and Efficiency, Arridahl's Law, Gustafson Law, Gustafson-Barsis's Law, The Karp-Flatt Metric, The Isoefficiency Metric, Isoefficiency Relation, Cost and Scalability.

**Inter-Connection Networks:** Tree, Diamond Network, Mesh, Linear Array, Ring, Star, Hypercube, Chordal ring, Cube-connected-cycles, Perfect Shuffle network, ILLIAC IV, Torus, Butterfly, Mesh-of-tree, Pyramid, Generalized Hyperbus, Twisted Cube Folded Hypercube, Incomplete Hypercube, Enhanced incomplete Hypercube, Cross Connected Cube, Banyan Hypercube

**Parallel Computational Model :** PRAM, CRCW, CREW EREW, Simulating CRCW on CREW & SREW, PRAM algorithms, P-Complete problems.

**Introduction to Parallel Algorithms:** PVM, MPI Paradigms, Simple parallel programs in MPI/PVM environments, Parallel algorithms on network, Addition of Matrices, Multiplication of Matrices, Systolic Array

## CS 505 : .NET

**Introduction :** Introduction to .NET Architecture, Features of Visual Studio .NET

**VB.NET FUNDAMENTALS :** Introduction to .NET Framework – Controls – Menus and Dialog Boxes – Variables and Operators – Decision Structures – Loops and Timers – Debugging – Trapping and Handling Errors.

**VB.NET PROGRAMMING :** Modules and Procedures – Arrays and Collections – Exploring Text Files and String Processing – Automating Microsoft Office Applications – Deployment of VB.NET Applications.

**VB.NET UI DESIGN AND DATABASE APPLICATIONS:** Windows Forms – Graphics and Animation – Inheriting Forms and Creating Base Classes – Working with Printers – ADO.NET – Data Grid Control.

**VC++ FUNDAMENTALS :** Windows Programming Fundamentals – Event Driven Programming – MFC Library Application Framework – App Wizard – Class Wizard – Event Handling – Message Mapping – Device Context – Dialog Data Exchange and Validation (DDX and DDV)

**VC++ UI DESIGN AND DATABASE APPLICATIONS:** Dialog Based Applications- Windows Common Controls – Using ActiveX Controls – SDI and MDI applications – Document View Architecture – Splitter Windows – Serialization – Reading and Writing Documents – ODBC – MFC Database Classes

### TEXT BOOKS

1. Michael Halvorson, “ Visual Basic.NET”, Prentice Hall Of India, New Delhi, 2002
2. Beginning Visual C# 2005 By Karli Watson, Christian Nagel, Wiley India
3. Microsoft Visual C#.NET- STEP by STEP by SHARP & JAGGER Microsoft / PHI

### REFERENCE BOOKS:

1. Professional C# 2005 by, Christian Nagel, Bill Evgen, Wiley India
2. The Complete Reference C# 2.0 By Schildt, TMH

## CS 506 : Colloquial

### Section I: Reading

**Select Short Stories:** Three short stories from the book , “*Added Values: The Life Stories of Indian Business Leaders*”, by Peter Church; New Delhi

1. NR Narayana Murthy/ Infosys
2. Dr. Anand Deshpande/ Persistent Systems
3. Deepak Puri/ Moser/ Baer India

### Section II Phonetics

Phonetic Symbols, identifying vowel and Consonant Sounds, syllable; Intonation

### Section III: Language Proficiency

Day-to-day expressions, words often confused; Synonyms & Antonyms; One-word Substitution, syntax, Idiom and Phrases, Direct & indirect, Active and Passive, tenses and Articles.

### Section IV: Effective Writing/Business Correspondance:

Composition (Expository/ argumentative/ Descriptive/ Narrative); Summary Writing; Report Writing; Creative Writing; Fax; Email; Taking Notes; Writing & handling Complaints; Abstract; Memo; Minutes; Proposal; Inquiring Letter, Sales Letter, Order Letter.

### Section V : Communication Skills/ Effective Presentations

Impromptu Speech; Debate; Group Discussion; Presentations ( Seminar, class-room, business and academic)

### Section VI:Preparation for job

Covering Letter; Curriculum Vitae, Job Application; Preparing for Interviews; Soft Skills Training

### Text Books:

Church, Peter *The Life Stories of Indian Business Leaders*: Roli Books, New delhi

Hall, Richard h. *Organisations-Structures, Processes and Outcomes*: PHI, New Delhi

Raman, M & S Sharma. *Technical communication*: OUP

Guffey. M. E. *Business Communication: Process and Product*: Thomson Learning, New York

**References:**

1. Balasubramaniam, T.A *Textbook Of English Phonetics for Indian students*. Macmillan India, Delhi
2. Mclearn, Stephen. *Writing Essays and Report: A Student's Guide*: Viva Books, New Delhi
3. Burton, Robert N. *Analysing Sentences*: Longman, London
4. Wekker, H. and Haegeman, L. *A Modern Course in English syntax*: Croom Helm, London

