MCTA - 201 Soft Computing

Unit 1
ARTIFICIAL NEURAL NETWORKS : Basic concepts - Importance of tolerance of imprecision and uncertainty. Biological and artificial neuron, Single layer perception - Multilayer Perception - Supervised and Unsupervised learning – Back propagation networks - Kohnen's self organizing networks - Hopfield network.

Unit 2
FUZZY SYSTEMS : Introduction, History of the Development of Fuzzy Logic, Fuzzy sets and Fuzzy reasoning - Fuzzy matrices - Fuzzy functions - Decomposition - Fuzzy automata and languages - Fuzzy control methods - Fuzzy decision making.

Unit 3
NEURO - FUZZY MODELING : Adaptive networks based Fuzzy interface systems - Classification and Regression Trees - Data clustering algorithms - Rule based structure identification - Neuro-Fuzzy controls - Simulated annealing – Evolutionary computation.

Unit 4
GENETIC ALGORITHMS: Survival of the Fittest - Fitness Computations - Cross over - Mutation - Reproduction - Rank method - Rank space method.

Unit 5
SOFT COMPUTING AND CONVENTIONAL AI : AI search algorithm - Predicate calculus - Rules of interference – Semantic networks - Frames - Objects - Hybrid models – Applications, MATLAB Toolbox - An Overview.

Reference Books:
1. S. Rajasekran, G.A. Vijayalaxmi Pai "Neural Network, Fuzzy Logic and Genatic Algorithm".
2. Martin T. Hagan, Howard B. Demuth, Mark Beale "Neural Network Design, VPH Pub.
3. Bert Kosko "Neural Networks and Fuzzy Systems" PHI Pub.
4. Keeman "Learning & soft computing", Pearson
5. Philip d. Wasserman "Neural Computing", Van Nastrand Reinhold pub.

MCTA - 202 Advance Computer N/W

Unit 1
Layering, Client Server Model, Application Programming Interfaces, RFCS.
Internet address, Link Layer, SLIP, PPP, Ethernet 802 Encapsulation, IP header, Routing, Subnet Addressing, Subnet Mask, CIDR, special case IP Addresses.

Unit 2
Address Resolution Protocol, ARP Cache, Proxy ARP, RARP, Internet Message Control Protocol (ICMP), IP Routing, Routing Principles, Dynamic Routing, RIPv2, OSPF, BGP.

Unit 3
TCP Header, TCP services, UDP, IP Fragmentation, Broadcasting, Multicasting, Internet Group Management Protocol (IGPM), Domain Name System (DNS), Resource Records, Caching, DNS Message Format.

Unit 4
TCP/IP over ATM, Mobile IP, Private Network Interconnection-NAT, VPN, DHCP, Voice and Video over IP, IPV6, Internet Management, SNMP, Socket Programming, RPC and NFS.

Unit 5
Basics of Internet, TCP/IP, Addressing & Routing, Internet Applications, Web Servers and Browsers and Security, Creating a Website and the markup languages, Dynamic functionality in Web pages (introduction to CGI Scripts, Java Script, Servlets, JSP, ASP, COM, DCOM). Internet and Web Protocols.

Reference Books:
1. Douglas Comer, Internetworking with TCP/IP – Volume 1 & Volume 2, Prentice-Hall of India, New Delhi
2. Forouzan, TCP/IP Protocol Suite, TMH

MCTA - 203 Advance Programming with J2EE

Core Java Programming – Fundamental Programming techniques; implementation of data structures in java, API & class libraries, Jar files.
Applet Programming, Event driven programming, Multithreading, Servlets, IDL, RMI, JDBC, CORBA, AWT & swings, Java Beans, Enterprise Java Beans, Java Coding standards.

Reference Books :

1. Ivor Horton – Beginning JAVA –II, JDK 1.3 edition, Wrox Publication.
2. J2EE: Complete reference, Keogh
3. J2EE: 1.4 Bible: James McGovern, Wiley dreamtech

MCTA - 204 Software Engineering & project Management

UNIT 1
Introduction, Life cycle models, Project effort estimation, LOC and function point based estimates. Requirement analysis and specifications, formal requirements, specifications,

UNIT 2
Fundamental issues in software design: goodness of design, cohesion, coupling. Function-oriented design, structured analysis and design. Overview of object-oriented concepts, Object oriented methodology for analysis & design. Unified Modeling Language (UML), Unified design process, User interface design

UNIT 3
Coding standards and guidelines, Code walkthrough and reviews, Unit testing, Black box and white box testing, integration and system testing.

Unit 4
Software quality and reliability, software project management, project planning, measurement and metrics, cost estimation. Scheduling and tracking, team management, risk analysis, project management tools and techniques, PERT, CPM. Software Quality Assurance: factors and components.

UNIT 5
Configuration management, software maintenance issues and techniques, software reuse, client-sever software development.

Reference Books:
1. Pressman R.S. Sofware Engineering: A Practitioner's Approach, MGH
2. Pankaj Jalote. An Intergrated Approach to Software Engineering, Narosa.
3. Foundation of Software Engineering- Mall, PHI
4. Foundation of Software Engineering- Ghezzi, PHI

MCTA - 205 Distributed System

UNIT 1

INTRODUCTION : Introduction to Distributed systems, challenges, architectural models, fundamental models ,Multoprossor operating systems, Introduction to communications, Fundamentals, Remote procedure call, Message oriented communication , Stream oriented communication, Multicast communication.

UNIT II

DISTRIBUTED OBJECTS AND FILE SYSTEM: Introduction ,Communication between distributed objects, Remote procedure call , Events and notifications , Introduction to DFS , File service architecture.

UNIT III

DISTRIBUTED OPERATING SYSTEM SUPPORT :The operating system layer , Protection , Process and threads , Communication and invocation , Operating system architecture , Introduction to time and global states ,Clocks, Events and Process states ,Synchronizing physical clocks , Logical time and logical clocks , Global states, Distributed debugging, Distributed mutual exclusion,distributed multimedia system.

UNIT IV:

TRANSACTION AND CONCURRENCY CONTROL: Distributed transactions**,** Nested transaction ,Locks, Optimistic concurrency control ,Timestamp ordering , Comparison of methods for concurrency control , Introduction to distributed transactions ,Flat and nested distributed transactions , Atomic commit protocols , Concurrency control in distributed transactions , Distributed deadlocks , Transaction recovery.

UNIT –V

SECURITY AND REPLICATION: Overview of security techniques, Cryptographic algorithms, Digital signatures, Cryptography pragmatics, Replication, System model and group communications, Fault tolerant services, Highly available services, Transactions with replicated data.

REFERENCES

1. A.S.Tanenbaum, M.Van Steen " Distributed Systems" Pearson Education 2004

2. George Coulouris, Jean Dollimore, Tim Kindberg "Distributed Systems Concepts and Design" Third Edition –

2002- Pearson Education Asia.

3. Mukesh Singhal, Ohio State University, Columbus "Advanced Concepts In Operating Systems" McGraw-Hill

Series in Computer Science, 1994.