MSE 301(A)Web Engineering

UNIT I

Introduction to Web Engineering : History, Web Applications, layering, DNS - encapsulation, de-multiplexing, client /server model, port numbers, standardization process, the Internet. Link layer: introduction, Ethernet and IEEE 802 encapsulation, trailer encapsulation, SLIP, PPP- Loop back interface, MTU.

Internet protocol: introduction, IP header, IP routing, subnet addressing, subnet Mask special case of IP addresses, a subnet example.

UNIT II

Binding Protocol Address- Address Resolution Protocol & RARP, ARP & RARP, packet format, Encapsulation, Internet protocol: Introduction, Ipv4 header, Ipv4Datagrams, Encapsulation, Fragmentation and Reassembly, IP routing, Subnet addressing, Subnet mask, Super-netting- special case of IP addresses, Ipv6-Motivation, frame format and addressing, comparison of Ipv4 and Ipv6.

UNIT III

ICMP: Introduction, ICMP Header, ICMP message types , ICMP timestamp request and reply, trace route, ping program, Intra & inter domain routing-distance vector routing, RIP, Link State Routing, OSPF, Path Vector Routing, BGP, Unicast Routing protocols, IGMP-IGMP message, operation, encapsulation.

UNIT IV

UDP: introduction,UDP Operation , header, checksum, IP Fragmentation, UDP Server design. DNS Introduction-basics, message format, simple example, pointer quires, resource records, caching, UDP. TFTP: introduction, protocol, security. BOOTP: introduction, packet format, server design, through router.

UNIT V

TCP: Introduction, TCP services, headers, connection establishment and termination, timeout of connection establishment- maximum segment size- half, close, state transition diagram, reset segments, simultaneous open and close- options, server design. SNMP Introduction, protocol, structure of management information, object identifiers, management information base, instance identification.

Telnet: rlogin protocols, examples, telnet protocol and examples. FTP, protocol, examples, SMTP protocols, examples, NFS, TCP/IP Applications.

Reference Books :

1. W. Richard Stevens, TCP/IP Illustrated Volume-I "The Protocols ", Addison W 2

2. Jaiswal .S, TCP\IP Principles, Architecture, Protocols And Implementation, First Edition, Galgotia Publications Pvt Ltd.

MSE 301(B)Parallel Computation and Applications

UNIT I

Parallel Processing-Evolution of Parallel architectures-Applications of architectural Parallelism-Architectural classification schemes- parallelism in algorithms- Parameters characterizing algorithm parallelism- speedup and efficiency of parallel algorithms- architectures- interconnection networks.

UNIT II

Array Processors -SIMD array processors: SIMD computer organization- SIMD interconnection networks: static v/s dynamic, mesh connected ILLIAC network, MIMD Computers and Multiprocessors, Shared memory and message passing architecture – overview of shared memory multiprocessor programming- pipelined MIMD- multithreading.

UNIT III

Multiprocessor Architecture -Functional structures, UMA and NUMA multiprocessors. Interconnection Networks: Time shared or common buses, Cross bar switch and multiport memories, Comparison of multiprocessor interconnection structure, multistage networks for multiprocessors.

UNIT IV

Data dependence and Parallelism: Discovering parallel operations in sequential code- variables with complex names-sample compiler techniques - data flow principles-data flow architectures- Implementing Synchronization and Data Sharing: The character of information conveyed by synchronization - synchronizing different kinds of cooperative computations-waiting mechanisms- mutual exclusion using atomic read and write.

UNIT V

Parallel Programming: Shared memory programming, distributed memory programming, object oriented programming, data parallel programming, functional and dataflow programming.

References:

1. Harry F. Jordan and Gita Alaghband, "Fundamentals Of Parallel Processing", Pearson Education, 2003.
2. Kaihwang and Faye A. Briggs, "Computer Architecture and Parallel Processing", McGraw Hill Series.
3. Kaihwang, "Advanced Computer Architecture – Parallelism, Scalability, Programmability".
4. Michael J. Quinn, "Parallel Computing – Theory and Practice", McGraw Hill Publication.

MSE 301(C)Wireless LAN and Mobile Computing

UNIT-I

Wireless Systems: Overview of Paging Systems, Cordless Phones, Cellular Telephone Systems, Satellite Communication, Wireless LANs, Bluetooth. Modern Wireless Communication Systems 2G/2.5G/3G/4G Wireless Networks and Standards, Wireless in Local loop & LMDS Cellular Concepts.

Introduction to cellular mobile systems: Basic cellular system, performance, criteria, Uniqueness of mobile Radio environment, operation of cellular systems, marketing Image of Hexagonal shaped cells, planning of cellular system, Analog cellular systems, digital cellular systems, cell splitting.

UNIT-II

Cell coverage for signal & Traffic: Introduction, obtaining the mobile point to point model, Propagation over water or flat open areas, Foliage loss, Propagation in near in distance, long distance Propagation obtain path less from a point to point Prediction model, call-site antenna Heights & Signal coverage calls, mobile to mobile Propagation.

UNIT-III

Co channel Interference reduction: Co channel interference , exploring co channel interference area, in a system, Real time co channel interference measurement at mobile radio Transceivers, Decision of an Omni directional antenna system, Design of a directional antenna system,. Lowering the antenna height, reduction of co channel interference by mean of a notech in the tilted antenna Pattern, Power control.

UNIT-IV

Frequency management & channel Assignment: Frequency management, Frequency spectrum utilization, set up channels definition of channel assignment, fixed channel assignment, non fixed channel assignment algorithms How to operate north additional spectrum, Traffic & channel assignment, Perception of call blocking from the subscribers.

UNIT-V

Handoffs and Dropped calls: Value of Implementing Handoffs, initiation of a hand off, Delaying a handoff, Forced Handoffs, Queuing of Handoffs, power difference handoff , Mobile assisted handoff & soft Handoff, call site Handoff only, intersystem Handoff, introduction to dropped call rate, Formula of Dropped call rate, Finding the values of g & u.

Reference Books:
1. J. Schiller, Mobile Communication, Pearson Press.
2. Wireless Network, Kaveh Pahalwan
3. Adhoc Networking by Charles E. Perkins, Addison Wisely
4. Mobile cellular Telecommunications by William C.Y. Lee TMH

MSE 301(D)CLOUD COMPUTING

UNIT-I

Introduction: Historical development, Vision of Cloud Computing, Characteristics of cloud computing as per NIST, Cloud computing reference model, Cloud computing environments, Cloud services requirements, Cloud and dynamic infrastructure, Cloud Adoption and rudiments.

UNIT-II

Cloud Computing Architecture: Cloud Reference Model, Types of Clouds, Cloud Interoperability & Standards, Scalability and Fault Tolerance, **Cloud Solutions:** Cloud Ecosystem, Cloud Business Process Management, Cloud Service Management. **Cloud Offerings**: Cloud Analytics, Testing Under Control, Virtual Desktop Infrastructure.

UNIT –III

Cloud Management & Virtualization Technology: Resiliency, Provisioning, Asset management, Conceps of Map reduce, Cloud Governance, High Availability and Disaster Recovery. Virtualization: Fundamental concepts of compute ,storage, networking, desktop and application virtualization .Virtualization benefits, server virtualization, Block and file level storage virtualization Hypervisor management software, Infrastructure Requirements , Virtual LAN(VLAN) and Virtual SAN(VSAN) and their benefits .

UNIT-IV

Cloud Security: Cloud Information security fundamentals, Cloud security services, Design principles, Secure Cloud Software Requirements, Policy Implementation, Cloud Computing Security Challenges, Virtualization security Management, Cloud Computing Security Architecture.

UNIT-V

Market Based Management of Clouds, Federated Clouds/Inter Cloud: Characterization & Definition, Cloud Federation Stack, Third Party Cloud Services. Case study: Google App Engine, Microsoft Azure, Hadoop, Amazon, Aneka

Reference Books:
1. Krutz, Vines, "Cloud Security ", Wiley Pub
2. Velte, "Cloud Computing- A Practical Approach" TMH Pub
3. Sosinsky, "Cloud Computing", Wiley Pub
4. Kumar Saurabh, "Cloud Computing", Wiley Pub

MSE 302(A)Data Mining and Warehousing

UNIT I

Data Mining: Basic concept ,technology and rules, application of data mining, KDD v/s Data Mining, DBMS v/s Data Mining , DM techniques, Mining problems, Issues and Challenges in DM, DM Application areas.

UNIT II

Rules & Clustering Techniques: Introduction, Various association algorithms like A Priori,Partition, Pincer search etc., Generalized association rules. Clustering paradigms; Partitioning algorithms like K- Method, CLARA, CLARANS; Hierarchical clustering, DBSCAN, BIRCH, CURE; categorical clustering algorithms, STIRR, ROCK, CACTUS.

UNIT III

Data mining techniques: Exploration of data mining methodologies, decision tables, decision trees, classification rules, association rules, clustering, statistical models &linear models.

Web mining: Introduction to web mining techniques, web basics and HTTP, data sources on the web, personalization, working with logs, forms and cookies, user identification and path analysis. E-Metrics.

UNIT IV

Data Mining of Image and Video : A case study. Image and Video representation techniques, feature extraction, motion analysis, content based image and video retrieval, clustering and association paradigm, knowledge discovery.

UNIT V

Data warehousing : Data ware house, OLAP and Data mining. OLTP vs. OLAP. Data Warehouse Design Identifying facts & dimensions, designing fact tables, dimension tables, star flake schema query redirection. OLAP operations Data ware house High Performance Computing architecture, Multidimensional schemes:1 partitioning strategy, aggregation, data marting, metadata. Capacity planning, tuning the data warehouse testing the data warehouse: developing test plan, testing operational environment Distributed and virtual data warehouses.

Reference Books :

1. Data Mining Techniques ; Arun K.Pujari ; University Press.

2. Data Mining; Adriaans & Zantinge; Pearson education.

3. Mastering Data Mining; Berry Linoff; Wiley.

4. Data Mining; Dunham; Pearson education.

MSE 302(B) Software Configuration Management

UNIT I

Overview To Software Configuration Management: SCM: Concepts and definitions – SCM Plan – Software development life cycle models – SDLC Phases – Need and importance of Software configuration management – Increased complexity and demand – Changing nature of software and need for change management – Lower maintenance costs and better quality assurance – Faster problem identification and bug fixes -SCM: Basic concepts – Baselines – Check-in and Check-out-Versions and Variants –System Building- Releases.

UNIT II

Different Phases Of Software Configuration Management: Different Phases Of Scm – SCM System design - SCM Plan preparation-SCM Team organization – SCM Infrastructure organization – SCM Team training – Project team training – Configuration identification – Configuration Control – Configuration status accounting – Configuration and its.

UNIT III

Configuration Audits And Management Plans When, what and who of auditing- Functional Configuration audit – Physical Configuration audit – Auditing the SCM System – Role of SCM Team in configuration audits – SCM plan and the incremental approach – SCM Plan and SCM Tools – SCM Organization.

UNIT IV

Software Configuration Management Tools And Implementation Advantages of SCM tools – Reasons for the increasing popularity of SCM tools – SCM Tools and SCM Functions – SCM tool selection – Role of Technology – Selection criteria – Tool implementation – SCM implementation plan – implementation strategy – SCM Implementation team.

UNIT V

Trends In Scm: FUTURE DIRECTIONS SCM in different scenarios – SCM and project size –SCM in integrated development environments – SCM In distributed environments – SCM and CASE Tools - Trends in SCM - Hardware and Software Management – Better integration with IDE'S and CASE environments – Customization – Better decision making capabilities – Reduction in SCM Team size – Market snapshot.

References

1.Jessica Keyes,Software Configuration Management,Auerbach Publications, 2008.

2.Alexis Leon,Software Configuration Management Handbook,Artech Print on Demand; 2 edition,2009.

3.Robert Aiello and Leslie SachsConfiguration Management Best Practices: Practical Methods that work in Real World, , Addison(Wesley Professional; 1 edition, 2010.

4.Stephen P. Berczuk, Brad Appleton and Kyle Brown , "Software Configuration Management Patterns: Effective Teamwork and Practical Integration", Addison(Wesley , 2003)