6KS01/ 6KE01 OPERATING SYSTEMS

Unit-I : Introduction: Operating System(OS) definition, OS Evolution, OS Components, OS Services, Process Concept, Process Scheduling, Operations on Processes, Cooperating Processes, Inter-process Communication, Threads: Multithreading Models, Threading Issues, Java Threads.

Unit-II: CPU Scheduling: Concepts, Scheduling Criteria, Scheduling Algorithms, Process Synchronization: The Critical Section Problem, Synchronization Hardware, Semaphores, Monitors. Deadlocks: Definition & Characterization, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock.

Unit-III: Memory Management: Background, Swapping, Contiguous Memory Allocation, Paging, Segmentation, Segmentation with Paging. Virtual Memory: Background, Demand Paging, Process Creation, Page Replacement, Allocation of Frames, Thrashing.

Unit-IV: File-System Interface: Directory Structure, File-System Mounting, File Sharing, Protection. File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods, Free-Space Management, File Recovery.

Unit-V : I/O Systems: Overview, I/O Hardware, Application I/O Interface, Kernel I/O Subsystem, Transforming I/O to Hardware Operations. Disk Scheduling, Disk Management, Swap-Space Management, RAID Structure.

Unit-VI: The Linux System: History, Design Principles, Kernel Modules, Process Management, Scheduling, Memory Management, File systems, Input and Output, Inter process Communication, Network Structure & Security in Linux.

Text Book:

Avi Silberschatz ,P.B.Galvin, G.Gagne: "Operating System Concepts" (6/e) John-Wiley & Sons.

Reference Books:

1.A.S Tanenbaum "Modern Operating Systems" Pearson Education.
2.William Stallings "Operating Systems" Prentice-Hall.
3. D M Dhamdhere "Operating Systems" Tata McGraw-Hill.
4. P.Balkrishna Prasad: "Operating Systems" Scitech Pubications(I) Pvt. Ltd.

6KS02 / 6KE02 DATABASE SYSTEMS

Unit-I : Database System Applications, Database Systems versus File Systems, View of Data, Data Models, Database Languages, Database Users and Administrators, Transaction Management, Database System Structure, Application architectures, History of Database Systems. Entity- Relationship Model, Basic Concepts, Constraints, Keys, Design Issues, Entity- Relationship Diagram, Weak Entity Sets, Extended E-R Features, Design of an E-R Database Schema, Reduction of an E-R Schema to Tables.

Unit-II: Relational Model: Structure of Relational Databases, The Relational Algebra, Extended Relational-Algebra Operations, Modification of the Database, Views, The Tuple Relational Calculus, The Domain Relational Calculus, SQL: Basic Structure, Set Operations, Aggregate Functions, Null Values, Nested Subqueries, Views.

Unit-III: Integrity and Security, Domain Constraints, Referential Integrity, Assertions, Triggers, Security and Authorization, Authorization in SQL, Encryption and Authentication, Relational Database Design:, First Normal Form, Pitfalls in Relational-Database, Design, Functional Dependencies, Decomposition, BCNF, Third, Fourth and more Normal Forms, Overall Database Design Process.

Unit-IV: Query Processing: Overview, Measures of Query Cost, Selection Operation, Sorting, Join Operation, Other Operations, Evaluation of Expressions, Query Optimization: Overview, Estimating Statistics of Expression Results, Transformation of Relational Expressions, Choice of Evaluation Plans, Materialized Views.

Unit-V : Transaction Management: Transaction Concept, Transaction State, Implementation of Atomicity and Durability, Concurrent Execution, Serializability, Recoverability, Implementation of Isolation, Transaction Definition in SQL, Testing for Serializability.

Unit-VI: Concurrency Control: Lock-Based Protocols, Timestamp- Based Protocols, Validation-Based Protocols, Multiple Granularities, Multi-version Schemes, Deadlock Handling, Insert and Delete Operations Weak Levels of Consistency, Concurrency in Index Structures. Recovery System: issues & solutions.

Text Book:
Silberschatz, Korth, Sudarshan: "Database System Concepts" , (5th Edition)McGraw Hill,

Reference Books:
1. Garcia-Molina, Ullman, Widom: Database System Implementation,
Pearson education.
2. S. K. Singh: Database Systems, Concepts, Design and Applications,
Pearson Education.
3. G.K. Gupta: Database Management Systems, McGraw Hill.
4. Toledo and Cushman: Database Management Systems, (Schaum's Outlines)

6KS03 / 6KE03 COMPUTING RESOURCES MANAGEMENT

Unit-I : Systems Management: Definition, Building a Business Case for Systems Management, Organizing for Systems Management, Factors to Consider in Designing IT Organizations and Infrastructure. Staffing for Systems Management, IT as Service, and IT Service Management.

Unit-II : Availability, Methods for Measuring Availability, Seven ' Rs' of High Availability. Performance and Tuning, Definition and characteristics. Performance and Tuning Applied to the Five Major Resource Environments. Problem Management: Definition and scope. Key Steps to Developing a Problem Management Process.

Unit-III : Storage Management: Definition, Desired Traits, Capacity, Performance, Reliability, Recoverability. Network Management: Definition, Key Decisions about Network Management, Assessing, Measuring and Streamlining an Infrastructure's Network Management Process.

Unit-IV : Configuration Management, Definition, Practical Tips for Improving Configuration Management. Capacity Planning: Definition, reasons for poor Capacity Planning, Developing an Effective Capacity Planning Process, Benefits and hints for effective capacity planning.

Unit-V : Strategic Security: Definition, Developing a Strategic Security Process, Assessing, Measuring and Streamlining the Security Process. Facilities Management: Definition, Major Elements, Tips, Assessing, Measuring and Streamlining the Facilities Management Process.

Unit-VI: Developing Robust Processes: Features of World-Class Infrastructure. Characteristics of a Robust Process. Integrating Systems Management Processes. Client-Server Environment Issues. Web-Enabled Environment Issues.

Text Book:
Ritch Schiesser "IT Systems Management", 2nd Edition, Prentice Hall.

Reference Books :
1. Bill Holtsnider, Brian Jaffe, Brian D Jaffe "IT Managers Handbook" (2/e) Morgan Kaufmann.
2. Jan Van Bon,et.el.,"Foundation of IT Service Management Based on ITIL V3" Van Haren.
3. Harrise Kern, Rich Schiesser " IT Systems Management", 1st Edition, Prentice Hall.

6KS04 / 6KE04 COMPUTER ARCHITECTURE

Unit I : Instruction Sets: Machine Instruction Characteristics, Types of Operands, Intel x86 and ARM Data Types, Types of Operations, Intel x86 and ARM Operation Types.

Unit II: Instruction Sets: Addressing, x86 and ARM Addressing modes, Instruction Formats, x86 and ARM Instruction Formats, Assembly language.

Unit III : Processor Structure and Function: Processor Organization, Register Organization, The Instruction Cycle, Instruction Pipelining, The x86 Processor Family, The ARM Processor.

Unit IV: Reduced Instruction Set Computers (RISCs): Instruction Execution Characteristics, The Use of Large Register File, Compiler-Based Register Optimization, RISC Architecture, RISC Pipelining. RISC versus CISC.

Unit V : Control Unit Operation: Micro-operations, Control of the Processor, Hardwired Implementation, Microprogrammed control, Basic Concepts, Microinstruction Sequencing & Execution.

Unit VI : Parallel Processing: The Use of Multiple Processors, Symmetric Multiprocessors, Multithreading and Chip Multiprocessors, Clusters, Multicore Organization, Intel x 86 Multi-Core Organization.

Text Book:
William Stallings: "Computer Organization and Architecture", (8/e) Pearson Education.

Reference Books:
1.Behrooz Parhami: "Computer Architecture", Oxford University Press.
2. J.P. Hayes: "Computer Architecture and Organization" ,McGraw Hill.
3. D.A. Patterson, J.L. Hennessy: "Computer Architecture" Morgan Kauffmann, 2002.
4. Hwang and Briggs: "Computer Architecture and Parallel Processing" McGraw-Hill.

6KS06 / 6KE06 PROFESSIONAL ETHICS

Unit I : Introduction: Computers in a Social Context. Moral and Legal Issues. Computer Ethical Issues. Philosophical Ethics: Descriptive and Normative Claims, Ethical Relativism, Utilitarianism, Deontological Theories, Rights, Virtue Ethics, Individual and Social Policy Ethics. Professional Ethics: Characteristics and system of Professions, Computing as Profession, Professional Relationships, Conflicting Responsibilities, Code of Ethics and Professional Conduct, Collective Responsibility.

Unit II : Ethics and The Internet: Three Morally Significant Characteristics, Hacking and Hacker Ethics, New Species of Old Crime, Netiquette, And Policy Approaches. Computers and Privacy issues, Legislative Background, Global Perspective, Proposals for Better Privacy Protection. Property Rights in Computer Software: Definitions, Current Legal Protection, Philosophical basis and analysis of Property, Proprietary Software, and Software Copying.

Unit III : Accountability, Computer and Information Technology: Different Senses of Responsibility, Buying and Selling Software, Y2K Problem, Diffusion of Accountability, Internet Issues, ISP Liability, and Virtual Action. Technology and Social change, Embedded Values, Enhanced and Impeded Values, Democratic Values in the Internet, Internet as Democratic Technology, Access and the Digital Divide, Free Expression, Overarching and Future Issues.

Text Book:

Deborah G. Johnson: "Computer Ethics" Pearson Education (Third Edition).

Reference Books:

1. George Reynolds: "Ethics in Information Technology" Cengage Learning.
2. Hester and Ford: "Computers and Ethics in the Cyberage.
3. Duncan Langford: "Internet Ethics"
4. Richard A. Spinello: "Case Studies in Information Technology Ethics" PHI.

FREE ELECTIVE - II
6FEIT05 (i) E-COMMERCE

Unit I : E Commerce : The difference between E-commerce and Ebusiness, Why study E-commerce? Eight unique features of Ecommerce Technology, Types of E-Commerce, Growth of the Internet and the Web, Origins and Growth of E-commerce, Ecommerce - A brief History.

Unit II : E-commerce Business Models and Concepts : E-Commerce business Model-eigh Key elements of a Business Model, Major Business-to-Consumer (B2C) Business Models, Major Busiess to -Business (B2B) Business Models:Businss Models emerging inE-Commer areas, How the INternet and the WEB change Business; Strategy, Structure and Process.

Unit III : E-Commerce Infrastructure : The Internet: Technology Background, The Intenet Today, Intenet II; The future infrastructure,The World Wibe WEb, The Intenetand the Web Featurs.

Unit IV : Building an E-Commerce Web Site : Building and E-Commerce Wet Site- A strategic approach, Choosing Server Software, Choosing the Hardware for an E-Commerce site, Ohter Ecommerce Site Tools.

Unit V : Online Security and payment systems :The E-Commerce Security Environment, Security threads in the E-commerce environment, Technology solutions,Management Policies, business procedures and public laws, payment systems.

Unit VI : E-Commerce Marketing Concepts : Cosumer online; The Internet Audience and Consumer behaviour, Basic Marketing Concepts, INtrernet Marketing Technologies, B2C and B2C E=Commerce marketing and Branding strategies.

Text Book :

KenethC. Laudon, Carol Gurcio Trave"e-commerce, business, technology, society" (Pearson)

References:

1. Dave Chaffley "E-Business and E-commerce management"(3rd Edition) Pearson.
2. Kalkakofa Whirttoton, "Frontiers of E-Commerce" Pearson.