SYSTEM MANAGEMENT AREA

MB 741	RELATIONAL DATABASE MANAGEMENT SYSTEM	1.0 UNIT	MBA SEM - III/IV

Module 1:
Database concepts: Overview of database system, basic database system terminology, data model, Introduction of data base management System (DBMS), Feature of DBMS, Architecture of DBMS

Module 2:
Physical data Organization & Network Model: Model for external storage organization Storage hierarchy, index files, B-Trees, Files with variable length record, DBTG definition Implementation of Network and programme environment.

Module 3:
Relational database Concepts: Introduction to Relational data base Management System, (RDBMS) Relational data Models, Features of RDBMS, Functional Dependencies, decomposition of relational schema, Normal forms (1NF, 2NF, 3NF, BCNF).

Module 4:
Recovery System: Types of failures, Storage Structures, Recovery with concurrent transaction, advanced recovery techniques- transaction rollback, fuzzy checkpoint, savepoint

Module 5:
Introduction to SQL: SQL as standard relational database language, data definition language(DDL) data Manipulation language(DML), Embedded DML in a host programming language, Authorization and Integrity Specification, Transaction Control Statements.

Module 6:
Database Technologies: Client server technology, Distributed database, multidimensional database Data Warehouse, Data marts, CRM

Module 7:
Connectivity: Concept of how HTML form data is sent to a Web Server Concept of HTML form data is stored in a table structure on the Web server.

Reference Text Books:
1. Database Management System - Alex Leon, Mathews Leon.
2. Database Management Concepts – Korth
3. Database Management System – C.J.Date
4. Relation Database: Theory &Practical –Val Occardi
5. Mastering SQL- Vijay Mukhi
6. Oracle 8 –PL/SQL programming –Scott Urman
7. Management Information System - Jawadekar
8. Oracle 7.0 –I.Bayross
9. Oracle 9i –Scott Urman

MB 742	**BUSINESS DATA COMMUNICATION**	**1.0 UNIT**	**MBA SEM - III/IV**

Module 1: Data Communication Fundamentals and Interfaces
Digital data communication system concepts and comparison with analog transmission: advantages and disadvantages. Basic Terminology - Data Rate, Bandwidth, error rate, Serial and parallel transmission. Computer interfaces standards-RS232C,X.21 analog and digital interfaces - X.25.,Character and packet transmission, Coding and decoding Techniques. Standard packet formats – HDLC and SDLC. Characterization of communication channels- hardwired and soft-wired - (radio and satellite). Transmission channel impairments, Applications of data communication systems

Module 2: Digital Modulation
Switching, Error Control and Multiplexing Techniques Digital Modulation and demodulation, PSK and BPSK Modems. Bandwidth efficient digital modulation schemes – MSK, QPSK, QAM. Circuit, message and packet switching techniques, Error control mechanism – parity checks, parity check codes, cyclic redundancy checks, ARQ retransmission strategies, Multiplexing-FDM and TDM, Intelligent TDM Multiplexes.

Module 3: OSI Reference Model
The layering concept in networking, The OSI reference Model, Physical, Data Link Control layer with MAC sub-layer for media access control. The Network layer. Transport Layer and quality of service. The Session Layer, The Presentation layer and Application Layer, TCP/IP architecture and applications in Internet services-E-mail and NFS-network file system, Comparison between peer to peer and client / server networking

Module 4: Data Network Structure
LAN, MAN, WAN: Network topology – bus, tree, star, star- ring, and hybrid, Companying various topologies. Defining LAN, MAN and WAN. Local Area Network design considerations. Network cables: Twisted pair, coaxial, optical and free space. Network components: Bridges, Hubs, gateways, routers and their applications in internetworking design.

Module 5: IEEE 802 Standards for Computer Networks
The -IEEE project; IEEE 802.1-Higher Layer Interface, IEEE 802.2 -LLC Standard, IEEE 802.3-CSMA/CD Bus, IEEE 802.4-Token Passing Bus, IEEE 802.5 Token Passing Ring and more advanced IEEE standards for Wireless and optical LAN.

Module 6: Data Network Security
Security requirements & Attacks - secrecy, integrity, availability, interruption, interception, modification, fabrication, and active attacks, Encryption and Decryption Techniques - Encryption algorithm (DES).Message authentication & Hash functions - Message authentication, message authentication code, and one way hash function, secure hash functions. Public-Key Infrastructure-PKI & Digital Signatures: RSA algorithm and key management. High speed networks and SNMP protocols.

Module 7: Network management
Feasibility Plan, Network design plan, Network requirements, Network configuration, Implementation performance and fault management, End user support, cost management, examples

Reference Text Books:
1. Glover, I.A. and P.M.-Grant Digital Communication
2. Andrew S. Tanenbum - Computer Networks
3. William Stallings - Data and Computer Communication
4. William Stallings - Cryptography and Network Security Principle and Practice
5. Uyless D.Black, Linden VA - Computer Networks:Protocols, Standards and Interface,
6. Atul Kahate – Cryptography and Network security, Tata McGraw-Hill.

MB 743	ENTERPRISE RESOURCE PLANNING	1.0 UNIT	MBA SEM - III/IV

Module 1:
Overview of ERP: Enterprise Perspective: An Overview, Features of ERP, MIS Integration, ERP drivers, Trends in ERP, ERP in India.

Module 2:
ERP: System Perspective: Management Information System, Operations Support System, DSS, Transaction Processing System, Network Structure of ERP System, ERP Work flow, Process modeling for ERP Systems

Module 3:
Communication in ERP Systems: OLTP, (On Line Transaction Processing), OLAP (On Line Analytical Processing), Enterprise Integration Application Tools for ERP.

Module 4:
ERP: Resource Management Perspective: Business Modules in ERP Packages, Finance, Production, Human Resource, Plant Maintenance, Materials Management, Quality Management, Sales and Distribution, Resource Management,

Module 5:
Business Process Reengineering: Relationship between ERP & BPR, ERP Implementation Life Cycle, Implementation methodology, ERP, Project Management & Monitoring.

Module 6:
ERP: Key Issues: ERP and E-Commerce, ERP Culture, ERP and CRM, ERP and SCM, ERP, Selection Issues, ERP in Public Sector Enterprises, Pre and Post Implementation Issues, ERP Vendors, Key ERP Consultants in India, Future Directions in ERP

Module 7:
Next generation enterprise: Emerging trends, information mapping, role of centralized/distributed databases, Linkages of the enterprise customer - enterprise, vendor enterprise, link with in the enterprise and links with environment Client/server architecture.

Reference Text Books:
1. Alexis, Leon: ERP Demystified. Tata McGraw Hill.
2. Garg, V.K. and Venket, Krishna, N.K.: ERP Concepts and Practices. PHI Publications
3. Sadagopan, S: ERP: A Managerial perspective, Tata McGraw Hill.
4. Shankar, Ravi & Jaiswal, S.: Enterprise Resource Planning, Galgotia Publications.
5. Langenalter, A. Gary : Enterprise Resources Planning and Beyond. St. Lucien Press, USA.
6. Imhoff, C. Loftis Lisa & Geiger, G. Jonathan : Building the Customer Centric Enterprise. John Wiley & Sons.
7. Diwan, Parag & Sharma, Sunil : Enterprise Resource Planning: A Manager's Guide

MB 744	**PROGRAMMING TECHNOLOGY – 1 (C++)**	**1.0 UNIT**	**MBA SEM - III/IV**

Module 1: C++ Programming Basics
Basic Program construction, operators in C++, Functions, Simple Functions, Passing argument to Function Returning values, Reference arguments, overloaded, Functions, inline functions, storage classes.

Module 2: Object and Classes
Class and objects, Constructors, Destructors, Objects as Function arguments, Returning object from Functions, Static class data

Module 3: Operator Overloading
Overloading unary and binary operators, Data conversion

Module 4: Inheritance
Derive class and base class, Derive class constructors, overriding member functions, class Hierarchies, Public and private inheritance, Levels of inheritance, Multiple inheritance, Ambiguity in multiple inheritance, containership.

Module 5: Pointers
Memory management, pointer to object, pointers to pointer

Module 6: Virtual Functions
Virtual Function, Pure virtual function, Friend functions, Static functions, Assignment and copy initialization, pointer

Module 7: Files and organisation: Introduction – files and streams

Reference Text Books:
1. Object Oriented Programming in Turbo C++ by Robert Lafore
2. Object Oriented Programming with C++ by E. Balagurusamy
3. The C++ Programming Language by B. Stroustrup
4. Let us C++ by Yashwant kanetkar
5. Richard Halterman, "Fundamentals of Programming: An Introduction to Computer Programming Using C++"
6. Jofel Adams, Sanford Leestma, and Larry Nyhoff, "Turbo C++: An introduction to computing" Prentice-Hall.

MB 745	PROGRAMMING TECHNOLOGY – II (JAVA)	1.0 UNIT	MBA SEM - III/IV

Module 1:
Overview of Java language, Introduction to OOPL, Java program format, compiling and running, methods, classes and inheritance, conditionals; loops and recursion ,Boolean return values ,working with threads and distributed computing, abstract methods and interfaces introduced ,step-wise refinement and problem decomposition, object-oriented programming, software engineering basics

Module 2:
A first look at objects and events, Classes and objects, Classes and source files, Case study: Ramblecs Applet (a prototype for a game), Objects and classes in Ramblecs, Library classes and packages, The import statement, Extending library classes, A first look at fields, constructors, and methods, A brief introduction to events handling in Java.

Module 3:
Java syntax and style, Syntax and style in a programming language, Comments, Reserved words and programmer defined names, Statements, braces, blocks, indentation, Syntax errors, run-time errors, logic errors.

Module 4:
Data types, variables, and arithmetic, The concepts of a variable and a data type, Declarations of variables, Fields vs. local variables, The primitive data types: int, double and char, Literal and symbolic constants., Initialization of variables, Scope of variables, Arithmetic expressions, Data types in arithmetic expressions, The cast operator, The compound assignment (+ =, etc.) and increment and decrement operators(++, --)

Module 5:
The if-else statement: The if-else statement, Boolean expressions, the Boolean data type, true and false values, Relational and logical operators, De Morgan's laws, Short-circuit evaluation, Nested if-else and if-else-if. Case Study: Craps, Elements of OO Design in Craps, The switch statement

Module 6:
Classes, constructors, methods, and fields: Defining methods, Overloaded methods, Constructors, Creating objects with the new operator, Static fields and methods, Calling methods and accessing fields, Passing arguments to methods and constructors, The return statement, Public and private fields and methods, Encapsulation and information hiding.

Module 7:
Network Applications: Relational databases, SQL, JDBC ,Applets, World Wide Web, HTML ,Graphical user interfaces (GUI), AWT ,graphics ,sound , client/server computing, networking, ports, SMTP (email), Java beans, Remote method invocation (RMI) ,IDL and CORBA, Servlets, Security JAR packaging

Reference Text Books:
1. David Flanagan :Java in a Nutshell: O'Reilly
2. Elliotte Rusty Harold :Java Network Programming
3. Ken Arnold, James Gosling :The Java programming Language
4. Joshua Bloch :Effective Java programme Language Guide
5. David Flanagan: java in a Nutshell:A Desktop quick reference
6. Joseph P. Russell :Java Programming for the Absolute Beginner

MB 745	**SOFTWARE ENGINEERING**	**1.0 UNIT**	**MBA SEM - III/IV**

Module1: Software Process
Software life cycles, Software process models, Activities in each phase, Control and life-cycle management of correct, reliable, maintainable and cost effective software, Software documentation, Project management tools, Risk management, Communication and collaboration, Cause and effects of project failure, Cost estimation and scheduling, Factors influencing productivity and success, Productivity metrics, Planning for change, Managing expectations, Software Maintenance, Configuration management.

Module 2: Software Quality Assurance
Validation and Verification concepts, Software Lifecycle and application of validation and verification, Software Quality Assurance processes, Definitions of software product quality, Quality Characteristics, Engineering quality definitions, specifications, Definition and classifications of software Defects, Fitness for use and customer quality definitions, Software Costs, quality costs and economics, Reviews, Walkthroughs and Inspections: General Concepts, Unit (Module / Package) level testing, Subsystem / Integration testing, Regression testing, State based testing, Traditional Functional Testing, Logical Testing/Analysis, OO Testing considerations (polymorphism and inheritance), Safety / Failure Analysis and testing.

Module 3: Software Design
Role of software design activity, Software design quality attributes (correctness, reliability, maintainability, portability, robustness), Software design principles (separation of concerns, abstraction, information hiding), Software architecture, architectural structures and views, Modularity and decomposition, Function-oriented design, Object-oriented design, Components. Interface design, Module level design, Specification for design, Notations (graphical and languages), UML, Basic concepts of design patterns.

Module 4: Real Time Systems
Definition and characteristics of real-time systems, Hard and soft real-time systems, dynamic responses of simple physical, Synchronization and communication, Resource control, Scheduling (cyclic executive, rate monotonic and deadline priority, priority ceiling protocols), Real-time operating systems, Simple embedded systems. Designing real-time systems (requirements, design methods, implementation, testing, human-computer interaction). Reliability and fault tolerance, Exceptions and exception handling. Concurrency

Module 5: Requirements and Specifications
Elicitation sources and techniques, Modelling paradigms, including information modelling, behavioural modelling, domain modelling, functional modelling, constraint modeling, Quality requirements (e.g., performance, usability, reliability, maintainability); expressing quality requirements so that they are testable, Prioritization, trade-off analysis, negotiation, risk analysis, and impact analysis, Requirements management, consistency management, interaction analysis, traceability, Requirements documentation and specification languages, Validation, reviews and inspections, prototyping, validating non-functional requirements, Acceptance test design.

Module 6: Computing Structures
Computer Architecture basics, including Boolean algebra, gates, combinational and sequential logic, machine-level representation of data; machine organization, assembly/machine language programming; memory organization, caches, heaps, stacks; serial and parallel I/O, interrupts, bus protocols, and direct-memory access (DMA). Operating System basics, including concurrency, process scheduling, memory management; protection, access, and authentication; linking and loading. Database basics, including database architecture, query languages, transactions. File system organization and access methods (sequential, indexed-sequential)

Module 7: Algorithms & Data Structures
Fundamental data structures and their associated algorithms, Stacks and queues, trees, tables, lists, arrays, strings, sets; files and access methods, B-trees, multi-key organizations, Searching, Sorting,

Algorithm design techniques such as divide and conquer, the greedy method, balancing, dynamic programming. Algorithms related to set operations, Graphs, graph algorithms: depth-first and breadth-first search, minimum spanning tree, shortest path, Empirical and theoretical measures of the efficiency of algorithms, Complexity analysis, Hard problems, NP-completeness, and intractable problems

Reference Text Books:
1. Software Engineering: Shari Lawrence Pfleeger, Joanne M. Atlee, Pearson .
2. Software Requirements:Karl E. Wiegers
3. Fundamentals of Software Engineering: Carlo Ghezzi, Mehdi Jazayeri, Dino Mandrioli Pearson
4. Real-Time Systems and Software: Alan C. Shaw, Wiley
5. Real-Time Systems: Jane W.S. Liu, Prentice-Hall
6. Computer Organization & Design: David A. Patterson, John L. Hennessy, Morgan Kaufman
7. Waman S. Jawadekar: Software Engineering: Principles and Practice McGraw Hill
8. Carlo Ghezzi, Mehdi Jazayeri and Dino Mandrioli. Fundamentals of Software Engineering, Second Edition, Pearson Education (Addison Wesley)
9. Hans Van Vliet. Software Engineering: Principles and Practice, John Wiley and Sons
10. Eric J. Braude. Software Engineering: An Object-Oriented Perspective, John Wiley and Sons
11. L. Parnas and D. M. Weiss and D. M. Hoffman. Software Fundamentals: Collected Papers by David L. Parnas, Addison-Wesley

MB 747	MULTIMEDIA AND WEB DEVELOPMENT	1.0 UNIT	MBA SEM - III/IV

Module 1:
Establishing and Managing a Web Site: Examine the major components of Dreamweaver Create an online site for class projects, Create and upload a basic web page with Dreamweaver, Format text with the list tools.

Module 2:
Basics of HTML: how to write it, what it is, the difference between HTML and XHTML. Plus hosting and putting your Web page on the Internet, Create text links ,Create e-mail links ,Set anchors and create links to anchors ,Create graphic links (buttons) and navigation bars ,Check web pages for broken or missing links ,Update changed links.

Module 3:
Getting Graphic: Insert and edit graphics ,Investigate image properties ,Align graphics and text, Investigate color tools and uses ,Control images in backgrounds and tables ,Create an image map ,Explore the relationship of Fireworks and Flash to Dream weaver ,Create simple Flash animations.

Module 4:
Tables, Design a page with tables, Insert and edit tables using templates, Insert and align items in a table, Use a table layout to organize a web page.

Module 5:
Libraries, Templates and Snippets ,Define and investigate a template, a library item, a snippet, and a style, Create and edit templates ,Create pages from templates ,Create library items and add them to documents, Create, edit, and use snippets, Create, edit, and apply HTML Styles.

Module 6:
Introduction to multimedia: Typefaces and Graphics: Desktop Publishing: Production Planning and Design, User Interface Design & Graphics, Multimedia Sound, Digital Video, Use the Adobe Photoshop, Effectively apply the fundamentals of multimedia design including the aesthetic and technical aspects. Incorporate all of the various multimedia elements to produce an interactive multimedia product.

Module 7:
Create a variety of original graphics and animation. Understand the roles and responsibility of a multimedia design team. Participate on a design team understanding and applying effective project planning and time management on both an individual and team level. Use effective interpersonal communications skills to enhance clarity of communication, enhance team performance and build effective working relationships. Understand the business process of the multimedia development industry.

Reference Text Books:
1. Matthew MacDonald :Creating Web Sites:The missing manual
2. Jennifer Niederst Robbins and Aaron Gustafson :Learning Web Design:a beginners guide to (X)HTML,stylesheets and web Graphics .
3. Kevin Potts :Web design and marketing solutions for business websites.
4. Jessica Burdman:Collaborative web development:strategies and best practices for web teams
5. Web hosting and web site development:a guide to opportunities: By Matthew Drouin.
6. A simple guide to HTML:Brian Salter Naomi Langford
7. HTML,XHTML and CSS:Elizabeth Castro

MB 748	**SYSTEM ANALYSIS AND DESIGN**	**1.0 UNIT**	**MBA SEM - III/IV**

Module 1:

Introduction to Systems Analysis and Design , Types of information systems and their characteristics, The process of systems development ,System Development Life Cycle, Project Feasibility, System Requirements Analysis, Fact Finding Techniques

Module 2:

The systems analyst and information systems stakeholders - System analyst skills - Information system stakeholders and their roles

Module 3:

Business and information systems,- Understanding information as a resource,- Understanding the structure of organizations,- Understanding the culture of organizations,- Types of information systems

Module 4:

Gathering user requirements and information analysis- Data sampling,- Interviewing techniques,- Creating questionnaires,- Observing stakeholders and their environment(s),- Prototyping,- Joint Application Development (JAD),- Rapid Application Development (RAD)

Module 5:

Data modeling - Entity relationship diagrams, Process modelling, Data flow diagrams,- Structured English,- Decision tables, Decision trees

Module 6:

CRUD synchronization matrices: Data dictionaries and information system metadata, Project management, Gantt charts and PERT diagrams, Feasibility and cost benefit analysis, Economic, technical, schedule, and operational feasibility, Preparing and writing system proposals,- Request for Proposal (RFP),- Request for Comment (RFC),- Working with HW/SW vendors.

Module 7:

Systems design- Building and testing databases and files,- Building and testing network infrastructure. Writing and testing programs,- Installing and testing purchased software, Systems implementation. Testing, Conversion planning, User training ,Module   Systems maintenance, Systems enhancement. Reengineering- Reverse engineering, System failure recovery, Technical support.

Reference Text books:
1. KE Kendall, JE Kendall :Systems Analysis and Design.
2. CP Gane, T Sarson: Structured Systems Analysis: Tools and Techniques.
3. Donald Yeates,tony wakefield:System Analysis and design.
4. E Yourdon, LL Constantine - Prentice-Hall:Structured Design: Fundamentals of a Discipline of Computer Program and Systems Design.
5. R Elmasri, SB Navathe :Fundamentals of database System