

**SCHEME OF MBA E-COMMERCE COURSE**

**FIRST SEMESTER :**

Course No.	Course Name	L	T	P	Theory Marks	Sessional Marks	Practical Marks	Total Marks
101MECOM	Introduction to e-Commerce	3	1	-	80	20	-	100
102MECOM	Introduction to Information Technology	3	1	3	80	20		100
103MECOM	Programming in 'C'	3	1	3	80	20		100
104MECOM	Operating System	3	1	-	80	20	-	100
105MECOM	System Analysis & Design	3	1	-	80	20	50	150
106MECOM	Operations Research	3	1	-	80	20	50	150
107MECOM	Programming Laboratory in C language	-	-	6	-	200	100	300
	Total	18	6	12	480	320	200	1000

**SECOND SEMESTER :**

Course No.	Course Name	L	T	P	Theory Marks	Sessional Marks	Practical Marks	Total Marks
201MECOM	OOPs using 'C++'	3	1	-	80	20	50	150
202MECOM	Software Engineering and Software Project management	3	1	-	80	20	-	100
203MECOM	Database Management System	3	1	-	80	20	50	150
204MECOM	Visual Basic	3	1	3	80	20	-	100
205MECOM	Managerial Economics	3	1	3	80	20	-	100
206MECOM	Networking Concepts & Design	3	1	-	80	20	-	100
207MECOM	Project work(VB)	-	-	6	-	200	100	300
	TOTAL	18	6	12	480	320	200	1000

**THIRD SEMESTER :**

Course No.	Course Name	L	T	P	Theory Marks	Sessional Marks	Practical Marks	Total Marks
301MECOM	E-Marketing	3	1	-	80	20	-	100
302MECOM	Data mining & Data warehousing	3	1	-	80	20		100
303MECOM	Computer Graphics	3	1	-	80	20	50	150
304MECOM	Accounting Management Control	3	1	3	80	20		100
305MECOM	Java Programming	3	1	3	80	20		100
306MECOM	Data structures using C++	3	1	-	80	20	50	150
307MECOM	Project work(JAVA)	-	-	6	-	200	100	300
	<b>TOTAL</b>	<b>18</b>	<b>6</b>	<b>12</b>	<b>480</b>	<b>320</b>	<b>200</b>	<b>1000</b>

**FOURTH SEMESTER :**

Course No.	Course Name	L	T	P	Theory Marks	Sessional Marks	Practical Marks	Total Marks
401MECOM	ERP & BPR Allied concepts	3	1	3	80	20		100
402MECOM	Internet & its Applications	3	1	-	80	20		100
403MECOM	UNIX & Shell Scripting	3	1	-	80	20	50	150
404MECOM	Project Work Equivalent to four credits			6	360	40	250	650
	<b>Total</b>	<b>9</b>	<b>3</b>	<b>9</b>	<b>600</b>	<b>100</b>	<b>300</b>	<b>1000</b>

**101MECOM INTRODUCTION TO E- COMMERCE**

**UNIT 1 : Introduction**

Brief history of e-com ,Types , Advantages & Disadvantages of e-com , Elements of e-com , Principles of e-com , Messaging and Information distribution , Messaging and information distribution , Common service infrastructure , other key support layers .

**UNIT 2 : EDI to e-com**

EDI - Origin , System approach and communication approach , Migration to open EDI-Approach , Benefits , Mechanics , E-com with WWW/Internet. E-Government- Concepts, Applications of G2C, G2B, G2G.

**UNIT 3: Electronic communication**

PC and networking , Network topologies and communication media , E-mail , OSI and TCP/IP Models , LAN, WAN, MAN Internetworking – Bridges and gateways , Internet Vs Online services, Open vs. Closed Architecture , Controlled contained Vs Uncontrolled contained , Metered Pricing Vs Flat pricing , Innovation Vs Control.

**UNIT 4: WWW & Electronic Payment System:**

Applications – what is web , Why is the Web such a hit , The Web and E-Com ,Concepts & Technology –Key concepts , Web Software development Tools. Electronic payment system – Overview , Electronic or digital cash , Electronic Checks , Online credit card based system , other Engineering financial instruments ,Consumer legal and Business issues .

**UNIT 5: Security and Application**

Need of computer security, Specific intruder approaches, Security strategies, Cryptography, Public key encryption, Private key encryption, Digital signatures,Advertising on the internet,Marketing,Creating a website.Electronic publishing issues,EP architecture,EP tools,Web page EP-Baseline issues,Application tools and publishing on the internet.

**REFERENCE BOOKS:**

- 1."Electronic Commerce" By Ravi Kalakota and Andrew B. Whinston.
- 2."Web Commerce Technologies Handbok"By Daniel Minoli & Emma Minoli
- 3."E-Commerce" By Dr.Varinder Bhatia
4. "Promise Of E-Governance" By M P Gupta

**102MECOM -- INTRODUCTION TO INFORMATION TECHNOLOGY**

**UNIT 1-INTRODUCTION:** Basic concepts of information technology, Application of IT in business, education, industry, home and training , entertainment, science and engineering and medicine, multimedia data types(graphics, images, audio, video), virtual reality applications, History of computers , Classification of computers, Organization of computers, Input /Output Devices, Storage Devices, File organization, System software, application software.

**UNIT 2-COMPUTER ORGANIZATION:** Number systems, Boolean Algebra, Gates, Combinational Blocks: Adders, Multiplexer, Demultiplexer, Encoder, Decoder, Sequential Building Blocks: Flip-Flops, Registers,.

**UNIT 3-COMPUTER LANGUAGES :-** Machine Language, Assembly Language, High Level Language, Compiler, Interpreters, General Concepts of OOPS , SQL.

**UNIT 4-OPERATING SYSTEM :-** Introduction to Operating System, Function Provided by O.S, Introduction to Multiprogramming , Timesharing, Real-time, Batchprocessing.  
DOS: Functions of DOS , structure booting, simple internal & external command.  
WINDOWS.

**UNIT 5-COMMUNICATION & N/W TECHNOLOGIES:** Goals & Application, protocol hierarchies, design issues, connection oriented & connectionless services , communication modes( Simplex, Half Duplex, Full Duplex), Switching Techniques(circuit switching and packet switching ), communication media (Twisted pair & Coaxial cables , fiber optics), network topologies, LAN, WAN & MAN.

**References:**

1. Computer Fundamentals by P.K. Sinha
2. Operating System by Silberschatz Galvin
3. Computer Network by A.S Tannenbaum
4. Computer Architecture by Morrismano

**103MECOM : Programming In 'C'**

**UNIT 1**-An Overview : Problem identification, analysis, design, coding, testing & debugging, implementation, modification & maintenance; algorithm & flowcharts; Characteristics of a good program - accuracy simplicity, robustness, portability, minimum resource & time requirement, modularization; Rules/conventions of coding, documentation, naming variables; Top down design ; Bottom up design.

**UNIT 2**-Fundamentals of C Programming : History of C; structure of a C program, Data types, Constants & Variables Operators & expressions; Control Constructs - if-else, for, while, do-while; Case statement; Arrays; Formatted and unformatted I/O; Type modifiers & storage classes; Ternary operator; Type conversion & type casting; Priority & associativity of operators.

**UNIT 3**-Modular Programming: functions; Arguments; Return value; Parameter passing -call by value, call by reference; Return statement; Scope visibility and life-time rules for various types of variable, static variable; Calling a function ; Recursion - basics, comparison with iteration, tail recursion, when to avoid recursion examples.

**UNIT 4**-Advanced Programming techniques : Special constructs- break, continue, exit , goto & level; pointers- & and \* operator , pointer expression , pointer arithmetic, dynamic memory management functions like malloc(), calloc() , free() ;string() ; pointer v/s array ; array of pointer and its limitations ; function returning pointer , function as parameter ; structure-basic, declaration ,pointer to structure , referential operator, self referential structure , array of structure; Union - basic, declaration, enumerated data type; Typedef.

**UNIT 5**-Miscellaneous Features : File handling and related functions , printf and scanf family C preprocessor- basics, #include, #define, #undef.

**References :**

1. The C Programming Language - B.W. Kernighan & D.M. Ritchie
2. The Sprit of C - Cooper, Mullish
3. Kanetkar Y : Let us C
4. Kanetkar Y : Pointers in C

**104MECOM : OPERATING SYSTEMS**

**UNIT 1**-Introduction :Evolution of operating systems, Types of operating systems, Different views of the operating system, operating system Concepts and structure.

Processes : The Process concept, systems programmer's view of processes, operating system services for process management. Scheduling algorithms. Performance evaluation.

**UNIT 2**-Memory Management : Memory management without swapping or paging, swapping, virtual memory, page replacement algorithms, modeling paging algorithms, design issues for paging systems, segmentation.

Inter-process Communication and Synchronization : The need for inter-process synchronization, mutual exclusion, semaphores, hardware sport for mutual exclusion, queuing implementation of semaphores, classical problems, in concurrent programming, critical region and conditional critical region, monitors, messages.

Deadlocks : Deadlock Prevention ,deadlock avoidance.

**UNIT 3**-File Systems :File systems, directories, file system implementation, security protection mechanisms.

Input/output :Principles of I/O Hardware : I/O devices, device controllers, direct memory access.

Principles of I/O Software : Goals, interrupt handlers, device drivers, device independent I/O software. User space I/O Software.

**UNIT 4**-Disks : Disk hardware, scheduling algorithms, RAM Disks.

Processes and Processors in Distributed Systems :

Threads, System models, processor allocation, scheduling.

Distributed File Systems : Design, Implementation, trends.

**UNIT 5**-Performance Measurement, monitoring and evaluation Introduction ,important trends affecting performance issues, why performance monitoring and evaluation are needed, performance measures.

**References :**

1. Deitel, H.M. " An Introduction to Operating Systems". Addison Wesley Publishing Company 1984.
2. Milenkovic M., "Operating Systems - concepts and Design". McGraw Hill International Edition-Computer Science series 1992.
3. Peterson J.L. Abraham Silberschatz. "Operating System Concepts". Addison Wesley Publishing Company, 1989.
4. Tanenbaum, A.S." Modern Operating Systems", Prentice Hall of India Pvt. Ltd. 1995.

**105MECOM : System Analysis And Design**

**UNIT 1- *System Definition And Concept*** : Characteristics and Types of System, System Environment And Boundaries, Role and Need of system Analyst, Qualification and Responsibilities, system analyst as an agent of change , as investigator and Monitor, as Architect, as Psychologist.

**UNIT 2- *System Development Cycle***: Introduction to various phases of system development life cycle (SDLC), Fact Gathering Techniques (Review of literature, Procedure & Forms, On-Site Observation, Interview, Questionnaire), Feasibility study and Feasibility Reports, Prototyping, Cost-Benefit Analysis.

**UNIT 3- *System Analysis***: Structures system analysis, Process Modeling using DFD (Data Flow Diagram), Logic Modeling (structured English, Decision tables, Decision trees), Conceptual data modeling (E-R diagram), Issues in generating Alternative design strategies, selecting the best alternative design strategies.

**UNIT 4- *System Design***: Logical & Physical design, Design Representation, System Flowcharts & structured charts, Designing forms & reports, Designing Interfaces & dialogues, file organization and database design.

**UNIT 5- *System Testing And Quality Assurance***: Need of Testing, Test plan- Activity network for system testing, system testing-Types of system test, Quality Assurance: Goals, Levels of quality assurance.

**Reference :**

1. "System Analysis & Design" by E.M. Awad , Galgotia Pub.
2. "Analysis & Design of Information Systems" by James A. Sen, 2nd edition, McGraw Hill International Editions.
3. "Modern System Analysis & Design" by J.A. Hoffer, J.F. George, J.S. Valacich, Addison Wesley.

**106MECOM: Operation Research**

**UNIT 1**-Overview of Operation Research:Problem formulation; Model Construction; O.R. Techniques.

Introduction to Linear Programming:Construction of the L. P. Model; graphical L. P. solution, simplex method, Big m method; Two phase method; primal & dual problem.

**UNIT 2**-Replacement Problems: Capital equipment; Discounted Cost ; replacement in anticipation of failure; Age replacement,Transportation and Assignment Problems.

**UNIT 3**-Queuing Models; Description of Queues; Arrival and Service Times; Birth & Death queuing system; M/M/1 model.

**UNIT 4**-Game Theory: Pure and Mixed strategy; two person zero sum game ; game with and without saddle points; rule of dominance.

Project Management Techniques;Network representation; CPM and PERT;Determination of Critical Path; optimization of project time and cost; crash cost and crash time

**UNIT 5**-Dynamic Programming:Deterministic and probabilistic dynamic programming, Bellman's Principle.

Integer Programming Problem.Gomory,Branch and Bound techniques

**REFERENCES :**

- 1." Introduction to Operation Research " by F. S Hiter & Liberman
- 2."Operation Research" by H.A. Tara
- 3."Operation Research" by S.D. Sharma

**201MECOM : OOPS USING C++**

UNIT 1-OOPS Fundamental :- OOPS terminology, data abstraction, data hiding, encapsulation, class, object and methods, inheritance, polymorphism, merits & demerits of OO methodology.

UNIT 2-C++ Basic :- Structure of C++ character set, tokens-keywords, variables, constants, special characters, data types & sizes, operators- arithmetic, relational, logical, assignment, increment & decrement, conditional, bitwise, special-extraction & insertion operation, scope resolution, member dereferencing, memory management, operator manipulator, type cast, qualifiers, symbolic constant, operator precedence, reference variable. statements- assignment, if-else, nested if-else, for loop, while, do while, break, switch, continue, goto.

UNIT 3-Functions in C++ :- the main function, function prototype, call by reference, return by reference, inline functions, default argument, friend & virtual functions, introduction to pointers.

UNIT 4-Classes and Objects :- declaration of arrays & structure, specifying class and definition of class, class members, accessing class members, defining member +functions-within class & outside class. Array within class, memory allocating for objects, array of objects, pointer to members.

Constructors & Destructors :- Introduction to constructors, parameterized constructors, multiple constructors in a class, dynamic initialization of objects, copy constructors, destructors.

UNIT 5-Operator overloading & Inheritance :- Defining operator overloading, overloading- unary & binary operator, defining derived classes, inheritance type, this pointer, virtual functions.

File Input / Output : File handling in detail.

Reference :-

1. Object Oriented Programming -Robert Lafore ( Galgotia Publication)
2. Object Oriented Programming- E. Balguruswami
3. Mastering in C++ - K.R. Venugopal, Ravishankar, Rajkumar (Tata McGraw Hill)

**202ME-COM Software Engineering and Software Project management**

**Unit 1 –Introduction to Software Engineering:** Definition to Software Engineering, Software Development life cycle, Project Categories, Software Project teams, Software Development process Models –Linear, Prototype, and Spiral.

**Planning a Software Project:** Project Plan, guidelines for Software planning, planning tasks, CPM/PERT, Gantt chart.

**Unit 2-Software Design:** Fundamental of design concept: Abstraction, structure. Concept of modularity, types of module. Coupling and cohesion , Coupling-content, common ,control ,stamp,data.Cohesion-coincidental,logical,temporal,procedural, communication, functional .Design notation: Bubble chart, structure chart,HIPO diagram. Design Techniques :Stepwise Refinement, structure Design, Integrated top-Down development.

**UNIT 3-Software Quality Assurance and Testing:** Software quality assurance. Factors of software quality. SQA activities,s/w review basics,Documentation & issues.Verification and validation: white box and black box testing, unit testing, acceptance testing, system testing, integration testing.

**Software Configuration Management:** Fundamental of software configuration management (SCM) & its major elements.

**UNIT 4- Estimation of s/w Project Management & Reliability:**Cost Estimation: Issue in software cost estimation, Introduction to Fuzzy-logic method, standard component method, function-point method, Delphi method, COCOMO.

**Software Reliability:** Definition and concept of software reliability, software errors, faults, software reliability metrics, repair and availability.

**UNIT 5 -Software Maintenance:** Fundamental of software maintenance, types of software maintenance, strategies, and maintenance of object oriented system design.

**CASE tools and Environment:** Concept, scope of CASE, classification of CASE tools, categories of CASE environment.

**Communication & Business technical reports** : Role of communication in s/w project management & its types .Various Types of Reports according to different phases of SDLC.

**Reference :**

1. Software Engineering: A Practitioner's Approach, Pressman Roger, Tata Mcgraw hill.
2. An Integrated Approach to Software Engineering, Pankaj Jalote. Narosa Pub.
3. Software Engineering Concepts: Richard Fairly, Tata Mcgraw Hill.
4. Project Management -"Harold Kerznes"

## **203MECOM- DATABASE MANAGEMENT SYSTEM**

**UNIT 1-Introduction** :- Advantages of DBMS approach :Various views of data, data independence, schema & sub-schema; Primary concept of data models; Database languages; Transaction management; Database administration & user; Data dictionary; Overall system architecture.

**ER Model:** - Basic concept; Design issues; Mapping constraints; Keys; ER diagram; Weak & Strong entity-sets; Specialization & generalization, aggregation, inheritance; Design of ER schema; Reduction of ER schema to tables.

**Domains, Relation & Keys:** - Domains; Relations; Kinds of relations; Relational databases; Various types of keys; candidate, primary, alternate & foreign keys.

**UNIT 2-Relation Algebra & SQL:** - The structure; Relational algebra with extended operations; Modification of database; Idea of relational calculus; Basic structure of SQL; Set Operations; Aggregate functions; Null values; Nested sub queries; Derived relations; Views; Modification of database; Join relations; DDL in SQL.**Database Integrity** :- General idea; Integrity rules; Domain rules; Attribute rules; Relation rules; Database rules; assertions; integrity & SQL.

**UNIT 3-Functional Dependencies & Normalization:** - Basic definitions; Trivial & nontrivial dependencies; Closure set of dependencies & of attributes; Irreducible set of dependencies; Introduction to normalization; Nonplus decomposition; FD diagram; First, second & third normal forms; Dependency preservation; BCNF; Multivalued dependencies and fourth normal form; Join dependencies and fifth normal form.

**Transactions, Concurrency & Recovery** :- Basic concept; ACID properties; Transaction state; Implementation of atomicity & durability; Concurrent executions; Basic idea of serializability; Basic idea of concurrency control; Basic idea of deadlock; Failure classification; Storage structure-types, stable storage implementation, data access; Recovery & Atomicity- log based recovery, deferred database modification, immediate database modification, checkpoints.

**Distributed Databases** :- Basic idea; distributed data storage; Data replication; Data fragmentation- horizontal, vertical & mixed fragmentation.

**UNIT 4- PL/SQL** :- Features of PL/sql:Block Structure,Variables and Types, PL/Sql Types:Scalar Type definition of composite and reference type,using % type ,user defined subtype,Expressions and operators,PL-sql Control structures.

**SQL within PL/SQL** (SQL statements,DML in PL/SQL :SELECT,INSERT,UPDATE,DELETE, WHERE,GRANT,REVOKE AND Privileges,Transaction control:COMMIT Vs.ROLLBACK,Savepoints), Procedure,Triggers.

**UNIT 5-Storage Structure & File Organization:** - Overview of physical storage media; Magnetic disk- performance & optimization; Basic idea of RAID; Organization of records in files; Basic concepts of indexing; Ordered indices; Basic idea of B-tree & B+ tree organization

**Network & Hierarchical Models:** - Basic idea; Data structure diagram; DBTG model; implementation; Tree structure diagram; Implementation techniques; Comparison of the three models.

### **Reference :**

1. Database System Concepts : A.Silberschatz, H.F. Korth, S. Sudarshan ( 3<sup>rd</sup> Ed.)(MC Graw Hill Publication)
2. An Introduction to Database System : C.J. Date (6<sup>th</sup> Ed.) ( Addison Wesley)
3. Fundamentals of Database Systems : Elmasri & Navathe (3<sup>rd</sup> Ed.)(A/W)
4. An Introduction to Database Systems : B.C. Desai ( Galgotia Publishers)
5. Oracle 8 – PL/SQL programming by TMH/urman

**204MECOM-- Visual Basic**

**UNIT 1-**A profile of VB - Menus, Tool bar Buttons , Tool box, Form , Project, controls, Properties, Program window.

Programming Essentials- General Procedures, Sub Procedures and function-designing,. Calling & passing controls as arguments , Constant & variable : Declaration, Scope and types.

**UNIT 2-**Designing a project :- start up form , Properties and Program design , Managing multiple forms.

Flow of control - decisions - if statement , Else if clause ,Select case structure, Nested decisions. Loops :- Do loops , For loops

**UNIT 3-**Arrays ,Declarings arrays ,Multidimensional & dynamic arrays , User defined types :- Recorded structures, With statement array of records .

**UNIT 4-**Input & Out put Procedures - Defining a Menu , Control Arrays , Input Techniches - Validating & Formatting the Input , Moving the focus , Menu choices out put techniques - Calculation & Display , Drawing chart .

**UNIT 5-**Visual basic controls:- Intrinsic Controls, Custom control, Common dialog control , Printer object. Object, Classes and Collections :- Developing classes & collection MDI form , OLE controls . Data base connections. Data manager programme , Data control ,Bound controls.

**Reference:**

1. Foundation of Visual Basic - Douglas Hergert.
2. Visual Basic Programming Explorer- Peter G. Aitken.
3. visual Basic complete reference – Tata Mcgraw Hill
4. Visual Basic Programming by Content development group , Tata McGraw Hill Publication

**205MECOM : MANAGERIAL ECONOMICS**

**UNIT 1**-Nature and scope of managerial economics. Objectives of the firm. Managerial and behavioral theories of the firm.

**UNIT 2**-Concepts of opportunity cost, incremental, time perspective. Principles of discounting and equimargins. Demand analysis - purposes and concepts. Elasticity of demand. Methods of demand forecasting.

**UNIT 3**-Product and cost analysis : short run and long run average cost curves. Law of supply. Economies and diseconomies of scale. Law of variable proportions.

**UNIT 4**-Production function - single output isoquants. Pricing prescriptive approach, Price determination under perfect competition. Monopoly, oligopoly and monopolistic competition. Full cost pricing, product line pricing. Pricing strategies.

**UNIT 5**-Profits: Nature and measurement policy. Break-even analysis. Case study.

**Referencs:**

1. Dean.J., "Management Economics". Prentice Hall of India, New Delhi. 1982.
2. Mote, V.L., et. al. " Managerial Economics: concepts and Cases", Tata McGraw Hill. New Delhi. 1980.

**206ME-COM-NETWORKING CONCEPTS & DESIGN**

UNIT 1-The need of networks and interconnection of networks, Layered communication architecture, ISO & ISO model, Physical layer- Maximum data rate of channel, Transmission media, physical layer devices & interfaces like RS232C, X.21 etc, ISDN, Terminal handling.

UNIT 2-The medium access sublayer - ALOHA- pure aloha ,slotted aloha, LAN protocols (CSMA, collision free etc.), LAN standards- comparison if Token bus, Token ring & CSMA/CD.

UNIT 3-Network Layer :- Functions , Internal Organisation, Topological Design- Local Access & Broad Access, Selecting terminal concentrators, Minimum spanning tree, Routing Algorithms, Congestion control.

UNIT 4-Internetworking :- Bridges & Gateways, Remote Procedure Call(RPC), Client-server Model.

Network Security :- Cryptography, Secret Key Algorithm, Public Key Algorithm, Data Encryption standard DES, Authentication protocol, Digital signatures, Secret Key signatures, Public Key signatures.

UNIT 5-Concepts in protocol design, Network architecture & protocols, state diagrams, petrinets, flow control techniques such as centralized flow control, distributed flow control, comparison, of flow control techniques, Deadlocks such as Protocol deadlocks and Buffer deadlocks.

References:

1. Computer Networks- by Andrew S. Tannenbaum (3<sup>rd</sup> edition)- PHI publications
2. Data Communication & Networking by Behrouz A. Forouzan.
3. Computer Networks by Ahuja.

**301ME-COM e-Marketing**

**UNIT 1- Introduction to e- Marketing** : E- business, e- Marketing, e- Marketing challenges & Opportunities, marketing vs e- Marketing, e business models.

**UNIT 2- Marketing knowledge** : the electronic marketing information system, marketing knowledge, source 1: Internal records , Source 2 : Secondary data, Source 3 : Primary data, Marketing databases & warehouse, data analysis & distribution.

**UNIT 3- e Marketing strategies**: online benefits, online costs , new product strategies for e Marketing , new product trends : value chain automation, outsourcing , multimedia. Pricing, price dispersion, factors putting upwards pressure on internet pricing. Pricing strategies.

**UNIT 4- e Marketing communication** : integrated marketing communication, marketing communication strategies ; internet advertising, public relation activities on net, sales promotion on the internet, CRM : CRM process, CRM-SCM integration, CRM Benefits.

**UNIT 5- Ethics & Laws**: Introduction, privacy, digital property ; copyright , trademarks, patents, licenses, trade secrets, data ownership. Emerging Issues: online governance & ICANN , jurisdiction , fraud.

**References :**

1. " e- Marketing" by Judy Strauss & Raymond Frost { PHI publications).
2. " Marketing.com " by Lyndon Cerejo & Sonal Kotecha.

**302ME-COM Data Mining & Data Warehouse**

**UNIT 1- Introduction to Data Mining** :Data Mining , features, business context, technical context, approaches to data mining. Types of Data Mining : Direct & Undirected, Virturous Cycle.

**UNIT 2- Data Mining Process & Technique** : Data Mining Techniques: automatic, cluster detection, Decision trees, Neural Networks, Data Mining Methodologies: Conventional System Development :waterfall process,Rapid Prototyping.

**UNIT 3-Introduction to Datawarehouse** : Data warehousing concepts, Goals & objectives, Issues involved in Data Warehousing, The three C's of Data Warehousing : Commitment,Completeness & Connectivity, OLAP,Types of Data Warehous.

**Contracting a Data Warehouse System:**

**UNIT 4- Stages of the project** : Planning stage : Justifying the datawarehouse, obtaining user buy-in, overcoming Resistance to the Data Warehouse, Developing a project plan; Data Warehouse Design approaches. Architectural stage : Process architecture, Introduction, Load manager, Query manager, Detailed Information, Summary Information, Metadata, Data Marting.

**UNIT 5- Testing the Data Warehouse**: Introduction ,developing the test plan, testing backup recovery, testing the operational environment, testing the database, testing the application, Logistics of the text, Security : Requirements, performance, impact of security, security impact on design.

**References:**

1. "Data Warehousing" by Amitesh Sinha.
2. "Data Warehousin in the real world " by Sam Anahory & Dennis Murray.
3. " Decision Support System & Data Warehouse Systems " by Efreem G. Mallach.

**303MECOM : COMPUTER GRAPHICS**

**UNIT 1**-Graphics Devices :Display Systems : Raster scan displays: refresh CRT, Gray Shades, Look-up tables, Interlacing Color Monitors: RGB, Shadow Masks, Look-up tables  
Flat Panel Displays : Plasma panels, liquid crystal displays  
Input Devices : Digitizing tables, mouse, touch panels, Image scanners.

**UNIT 2**-Drawing Geometry:Line drawing and 2D Transformations: A simple line drawing algorithm, use of homogeneous coordinate systems, translation, scaling ,rotation, mirror reflection, rotation about an arbitrary point, zooming and panning, parametric representation of a line segment.  
Curve Drawing :Parametric representation, cube Bezier and B- Spline curves ( no derivation), conditions for smoothly joining curve segments.

**UNIT 3**-Graphic Operations:

Clipping : Window port and view port, elimination of totally visible and totally invisible lines with respect to rectangular window using line end-point codes, Explicit line clipping algorithm, Sutherland Cohen algorithm, Mid-point subdivision algorithm. Filling : Stack based and queue-based seed fill algorithms, scan line seed-fill algorithm.

**UNIT 4**-3D Graphics:

Transformations : Right Handed coordinate system with vertical y-axis, transformation matrices for translation, scaling, rotation around axis.

Parallel projection : multi views front, top and side views, oblique view.

Perspective projection: Transformation matrix to yield one vanishing point perspective view with viewpoint lying on z-axis, effects of translating the object.

Hidden Surface Removal: Back face removal, painter's algorithm.

**UNIT 5**-Multimedia:

Concept of hypertext/hypermedia, applications ( Education, video conferencing, training, entertainment, electronic encyclopedias) multimedia hardware(CD-Rom, Audio speakers, sound cards, video cameras, scanners, MIDI ), Introduction to image formats ( Gif, Tif, Jpeg, BMP etc.), Introduction to sound formats (wav, au etc ), video formats (MPEG, AVI).

**References:**

- 1."Computer Graphics ": D. Hearn & P.M. Baker, PHI
- 2."Computer Graphics Principles and Practice": Foley Van Dam, Feiner Huges, Addison-Wesley Publishing Company
- 3."Procedural Elements for Computer Graphics":D.F.Rogers, McGrawHill,International Ed.

**304MECOM : ACCOUNTING AND MANAGEMENT CONTROL**

**UNIT 1**-Meaning & Objects of Accounting Concepts & Conventions, Accounting Equation, Rules Of Journalizing.Cash Book, Ledger Posting , Preparation Of Trial Balance

**UNIT 2**-Trading And P/L Account,Balance Sheet With Adjustments Relating to Closing Stock, Out Standing Expenses, Prepaid Expenses, Accrued Income, Depreciation, Bad Debt, Provision For Bad Debt, Provision for Discount on Debtors & Creditors, Provision for Tax

**UNIT 3**- Inventory Pricing, FIFO & LIFO Methods.Simple Problem of Fund Flow Statements, Cost-Volume Profit Analysis

**UNIT 4**- Standard Costing, Computation of Material & Labor Variances, Budgetary Control, Preparation of Cash Budget & Flexible Budget.

**UNIT 5**-Management Control & its Characteristics, Goals and its Strategies, Structure and control. Responsibility Centres & Control Centres; Concept of Responsibility Centres, Revenue Center, Profit Center and Investment Center, Transfer Pricing & Responsibility Reporting.

**References :**

1. Bhattacharya S.K. And Dearden. John, Accounting for Management” Prentice Hall of India, New Delhi.
- 2.Chadwick.“The Essence of Financial Accounting” Prentice Hall of India Pvt. New Delhi.
3. Chandwick “The Essence of Management Accounting” Prentice Hall of India Pvt. Ltd. New Delhi.
4. Horngren. Sundem and Selto (9<sup>th</sup> ed.). “Introduction to Management Accounting “ Prentice Hall of India Pvt. Ltd.
- 5.Welch. Hilton and Gordon (5<sup>th</sup> ed.; “Budgeting; Profit Planning and Control” Prentice Hall of India Pvt. Ltd. New Delhi.
6. “Introduction to Book Keeping” Grewal.

### **305MECOM -- JAVA PROGRAMMING**

#### **UNIT 1-Overview of JAVA Programming :**

History of JAVA , features of java , how it is differ from C & C++ , java program structure , java Statements , JVM, command line arguments

#### **Expression & Operator :**

Data types , literals , variables , declaring a variable , dynamic initialization . Arrays, Operators - relational , Arithmetic, logical , assignment , increment & decrement , conditional operator , Bitwise operator , special operator, arithmetic expression , evaluation of expression .

#### **Decision making & Branching :**

Control Statements--IF , Switch ,Loops , Break , Continue , Return.

#### **UNIT 2-Basic concept of OOPS :**

Classes , methods , creating instance & class variable , accessing class member , Constructor , Methods overloading , Method overriding , Static member , final classes , finalizer method, Abstract method & classes , visibility control , Interfaces :Defining interfaces , extending interfaces , implementing interfaces , accessing interfaces ,Variables , Package - system package , using system package , creating package , accessing a package, adding a class to a package , Hiding classes .

#### **UNIT 3-Exception Handling & Multithreaded Programming:**

**Exception Handling-** Fundamental, types, uncaught exception, using try and catch, multiple catch, nested try, throw, throws,finally,**Java thread model**, creating threads, extending thread class, stopping & blocking a thread, Life cycle of thread, thread exception, thread priority, synchronization- implementing and runnable interface, inter thread communication, multithreading.

#### **UNIT 4-Developing web-based program :-**

What is an applet, applet architecture, applet life cycle, a simple applet program, AWT-Working with Graphics; line, rectangles, ellipses, circles, arcs, polygons Working with colors; Working with fonts.

#### **UNIT 5 Advance Java**

Stream and Files. JDBC: JDBC architecture, JDBC Basics, establishing a connection, JDBC Statements.

#### **Reference:**

1. **Programming with java . A preimer by “ E. Balaguruswamy “.**
2. **“Advence programming in Java by V.K.Jain & Hemlata**
3. **JAVA 2 platform in 21 DAYS by “Lemay and Cadenhead” by Techmedia pub.**
4. **The complete reference JAVA 2 by “ Patrick Naughton & Herbert Schidt” .**

**306 ME-COM--Data Structure Using C++**

**UNIT 1- Introduction:** Data & Data Structure, Primitive & Non-Primitive data type, types of data structure, Basics of C++, Algorithm, Specification.

**UNIT 2- Arrays:** Abstract data types & the C++ class, Types of array: One-dimensional, two-dimensional, representation of arrays in memory, various operation performed on array; Matrix: addition, multiplication, transpose; definition of sparse matrix.

**UNIT 3- Stacks & Queues:**

Stack :Definition, its representation, implementation of stacks using arrays : Push, Pop; Polish Notation : Prefix, Postfix, Infix.

Queues : Definition, Implementation of queues , circular queues, double-ended queues , priority queues.

**UNIT 4- Linked List, Searching & Sorting :**

Linked List : Definition, Memory representation of linked list, operation : traversing, insertion, deletion; doubly linked list, various operations on it, Header linked list : Grounded & Circular.

Searching & Sorting : Linear & Binary Search, Bubble sort, Quick Sort, Selection Sort, Insertion Sort, Merge Sort.

**UNIT 5- Trees & Graphs:**

Trees: Terminology : height, depth, order, degree, parent, sibling, forest; Representation of trees, Binary trees, Representation of binary tree, traversal : Preorder, Postorder, Inorder ; Complete Binary tree.

Graph : related definition, graph representation- adjacency matrix, adjacency list, adjacency multilist, Types of graph, graph traversal : Depth-First –Search, Breadth-First-Search; Shortest path algorithm : Kruskal, Dijkstra algorithm.

**Reference :**

- 1."Expert Data Structures with C++" : R.B Patel & M M S Rauthan.
2. "Fundamentals of Data Structures in C++" : Ellis Horowitz, Sartaj Sahni , Dinesh Mehta.

**401MECOM -- ERP AND BPR ALLIED CONCEPTS**

UNIT 1-Introduction to ERP :- Evolution of ERP, Growth of ERP Market , advantages of ERP, ERP & Related technologies : BPR ,MIS , DSS,EIS, Data Warehousing & Data Mining , OLAP, Supply Chain Management.

UNIT 2-Business Functions, Processes, & Data Requirements: - Functional Areas of operation: Marketing & sales, Production & Materials Management, Accounting & Finance , Human Resources.

Marketing Information System & Sales Order Process: - Sales Quotations & Orders, Order Filling, Accounting & Invoicing, Payment & Returns,Sales & Distribution in ERP: Pre-sales activities, sales order processing, Inventory Sourcing, Delivery, Billing, Payment, CRM (Customer Relationship Management).

UNIT 3-Production & Materials Management Information System: - Materials Requirement Planning (MRP), Manufacturing Resource Planning (MRP-II), Bill of Materials (BOM), JIT & Kanban, CAD/CAM, Product Data Management, Make-to-Order (MTO), Make-to-Stock (MTS), Assemble-to-Order (ATO), Engineer-to-Order (ETO), Configure-to-Order (CTO).

Accounting & Finance: - Accounting & finance activities: creating financial statements, Operational Decision Making Problem: Credit Management, Product Profitability Analysis, ERP & Inventory Cost Accounting Activity, Activity based costing & ERP.

UNIT 4-ERP Implementation Life Cycle: - Pre-evaluation screening, Package evaluation, Project Planning phase, Gap Analysis, Reengineering, Configuration, Implementation team training, Testing, Going live, End user training. Post- implementation, Role of vendors & consultants.

UNIT 5-Business Process Reengineering (BPR) & its Implementation:BPR, five step methodology to implement BPR, Development process vision & determining process objectives, defining the processes to be reengineered, understanding & measuring the existing processes, identifying the IT levels, designing the prototype & implementing it.

**BOOKS :**

1. Concepts in Enterprise Resource Planning : Bready, Monk ,Wagner
2. Buisness Process Reengineering : Jayaraman Natarajan & Rangramanujan
3. ERP Concepts & Practice V.K Garg & Venkitakrishan.
4. Enterprise Resource Planning : Alexis Leon

**402MECOM -Internet and its Application**

**unit 1 Introduction of Networking**

TCP/IP internet, internet services, protocol, standardization, Ethernet, FDDI, LAN, WAN, MAN, ATM, HTTP . Properties of internet, internet architecture, Internet addresses, routers, bridges.

**Unit 2 Introduction of Browser and WebPage**

Browser, Features of browser, types of browser, use of browser .  
About IE and its versions, Mozilla, AOL .  
What is webpage and it uses, structure of webpage.

**Unit 3 HTML**

What is HTML and it use, HTML TAGS , URL ,head, body, anchor link, tables, frameset, span, div , image, audio, buttons, submit, reset, cancel, lists, font, .

**Unit 4 HTML FORMS**

What is Forms. Use of forms, method, action, POST , GET etc. Events mouse over, click, mouse down . Form Designing. Introduction of DHTML

**Unit 5:**

Good web design, the process of web publishing, document overview, header elements, website hosting, HTTP & URL, search engines, FTP , downloading ad uploading FTP, site promotions. .

References:

- 1) Thomas A .powell "The complete reference HTML", TMH.
- 2) Douglas Corner "The Internet Book " pearson Education, Asia.
- 3) Jeol sklar "Principles of Web design" , Vikash publication
- 4) K.Kalata "Internet programming Thomson learning" .

## **403 MECOM UNIX & Shell Scripting**

### **UNIT 1 : Overview UNIX & LINUX**

Structure of UNIX , evolution of UNIX ,Kernel and shell , features of UNIX ,UNIX: Installation and booting.

### **UNIT 2 : File System**

Unix file system ,types of Unix files ,Login Directory, Inode-User Identification. file system hierarchy , working directories & pathnames ,pwd. Basic command for file manipulation like :ls, cat , cp, rm, mv, ln ,touch , cd,mkdir,rmdir,file access permission , types of permissions , determining & changing permission , Umask, chown,chgrp,newgroup, changing your password :passwd.

### **UNIT 3 : Advanced features**

**Multi user communication &Scheduling:**who,write,mesg,wall,mail,at,lp,lpstat,pr,news,motd, Multiple commands on command line , redirecting : standard output to a file , standard input from a file and both , pipelines and filter:herad,tail,paste,sort,uniq,grep,egrep,fgrep,awk,nl, The Process:running a process in the background , process status , terminating a process , delay process. General purpose utilities:more,file,wc,od,cal,banner,cmp,ty,sty,date etc.

### **UNIT 4 : Introduction To Shell Script:**

Unix editors:vi,ex.Bourn Shell,C Shell, advance features of shell. Shell variable – system shell variables , local & global variables . Shell meta characters and environment ,if and case statements, for ,while and until loops. Shell Programming.

**UNIT 5: : Introduction to Linux:** History and features of Linux, Linux structure, Various flavors of Linux,Installing Linux .

**System Administration:** Understanding System Administration,Managing user accounts,backing up data,system security.

### **Reference:**

- 1 UNIX System – Rebecca Thomas (McGraw- Hill)
- 2 Advanced UNIX – Stephen Prata (BPB Publication)
- 3 UNIX System –Sumitabha Das