

M. C. A. DEPARTMENT TIME TABLE FOR THE YEAR 2008-2009

Day		1	2	3	4	5	6	
I	I MCA	CO Y	OA X	C Y	MD/Y ←-----	MD/Y C LAB	MD ----→	
	II MCA	DBMS TRA	VB EVK	OS MD	GRAPH KAD	MATHS II GDB	KAD	
	III MCA	KAD ←-----	KAD .NET LAB	KAD ---→	ECOM TRA	PCM EVK	X	
II	I MCA	CO Y	MATHS I GDB	C Y	MATHS I GDB	OA X	Y	
	II MCA	TRA/GDB ←-----	EVK/KAD ORACLE LAB	TRA/GDB ---→	VB EVK	OS MD	TRA	
	III MCA	PCM EVK	ECOM TRA	NWS X	EVK ←-- PROJECT	TRA LAB	MD --→	
III	I MCA	X/Y ←-----	MD/X OA LAB	MD/Y ---→	MATHS I GDB	DIGITAL X	X	
	II MCA	GRAPH KAD	DBMS TRA	VB EVK	EVK/X ←-----	EVK/GDB VB LAB	EVK ---→	
	III MCA	NWS EVK	MIS Y	.NET KAD	MIS MD	ECOM TRA	Y	
IV	I MCA	C Y	DIGITAL X	CO Y	DIGITAL X	MATHS I GDB	Y	
	II MCA	MATHS II GDB	GRAPH KAD	OS MD	TRA/GDB ←-----	TRA/GDB ORACLE LAB	GDB ---→	
	III MCAS	KAD ←-----	GDB PROJECT LAB	GDB --→	.NET KAD	PCM EVK	GDB	
V	I MCA	Y/X ←-----	MD/Y C LAB	MD/X ---→	CO Y	OA X	X	
	II MCA	GRAPH KAD	OS GDB	DBMS TRA	MATHS II GDB	VB EVK	EVK	
	III MCA	NWS TRA	MIS MD	.NET KAD	KAD ←-----	KAD .NET LAB	KAD ---→	
VI	I MCA	OA X	C Y	DIGITAL X	X/Y ←-----	X/Y OA LAB	TRA ---→	
	II MCA	TRA/ EVK ←-----	EVK/X VB LAB	TRA/EVK ---→	DBMS TRA	MATHS II GDB	GDB	
	III MCA	NWS KAD	ECOM TRA	.NET KAD	PCM EVK	MIS MD	KAD	

From

R/BOS/M.C.A/2007

Date :.....

Dr. P. CHELLATHURAI,
REGISTRAR.

To

The Principals of affiliated Colleges
offering MCA.

Sir/Madam,

Sub : M.C.A., - new syllabus – 2007 – 2008 – sending – reg.

I am by direction sending herewith the new syllabus for M.C.A., course
for those who join the course from the academic year 2007-2008.

Yours faithfully,

Encl.: as above

REGISTRAR

Copy to:

The Controller of Examinations,
Confidential Section,
PG Section,
SCAA file.

M.C.A. Syllabus with effect from the Academic Year 2007 – 2008

Semester/Title of the papers	Exam Hours	Maximum Marks	Passing Minimum
<u>First Semester:</u>			
1. Mathematics I	3	100	50
2. Fundamentals of Digital Computers	3	100	50
3. Office Automation	3	100	50
4. Programming 'C'	3	100	50
5. Computer Organization	3	100	50
<u>Lab :</u>			
1. Office Automation	3	100	50
2. 'C' programming	3	100	50
<u>Second Semester:</u>			
1. Mathematics II	3	100	50
2. Data Structures & Algorithms	3	100	50
3. Object Oriented Programming	3	100	50
4. Internet Programming I	3	100	50
5. Computer Networks	3	100	50
<u>Lab:</u>			
1. Data Structure using C++	3	100	50
2. Internet Programming	3	100	50
<u>Third Semester:</u>			
1. Mathematics III	3	100	50
2. Computer Graphics	3	100	50
3. Database Management Systems	3	100	50
4. Visual Programming I	3	100	50
5. Operating Systems	3	100	50
<u>Lab :</u>			
1. RDBMS Lab using Oracle	3	100	50
2. Visual Programming Lab (Visual Basic)	3	100	50
<u>Fourth Semester :</u>			
1. Financial Management & Accountancy	3	100	50
2. Java Programming	3	100	50
3. Visual Programming II	3	100	50
4. Elective I	3	100	50
5. Elective II	3	100	50
<u>Lab:</u>			
1. Visual Programming Lab (VC++)	3	100	50
2. Java Programming	3	100	50

<u>Fifth Semester</u>			
1. Software Engineering	3	100	50
2. Advanced Java Programming	3	100	50
3. Internet Programming II	3	100	50
4. Elective III	3	100	50
5. Elective IV	3	100	50
<u>Lab</u>			
1. Advanced Java Programming Lab	3	100	50
2. Mini Projects (Using A.S.P. Net, VB. Net, PHP, Animation Packages)	3	100	50
<u>Sixth Semester</u>			
Project Work & Viva Voce	3	100	50
<u>Elective I & II</u>			
1. Data Mining			
2. Neural Networks			
3. Image Processing			
4. Fuzzy Logic			
5. Multimedia			
6. Distributed Operating Systems			
7. Network Security			
<u>Elective III & IV</u>			
1. Software Quality Assurance			
2. Software Project Management			
3. Mobile Computing			
4. Genetic Algorithms			
5. Bio-Informatics			
6. E-Commerce			
7. Object Oriented Analysis & Design			

M.C.A. Syllabus with effect from the Academic Year 2007 0 '08

First Semester:

1. Mathematics I
2. Fundamentals of Digital computers
3. Office Automation
4. Programming in 'C'
5. Computer Organization

Lab:

1. Office Automation
2. 'C' programming

Second Semester:

1. Mathematics II
2. Data Structures & Algorithms
3. Object Oriented Programming
4. Internet Programming I
5. Computer Networks

Lab:

1. Data Structure using C++
2. Internet Programming

Third Semester:

1. Mathematics III
2. Computer Graphics
3. Database Management Systems
4. Visual Programming I
5. Operating Systems

Lab :

1. RDBMS Lab using Oracle
2. Visual Programming Lab (Visual Basic)

Fourth Semester:

1. Financial Management & Accountancy
2. Java Programming
3. Visual Programming II
4. Elective I
5. Elective II

Lab:

1. Visual Programming Lab (VC++)
2. Java Programming

Fifth Semester:

1. Software Engineering
2. Advanced Java Programming
3. Internet Programming II
4. Elective III
5. Elective IV

Lab:

1. Advanced Java Programming Lab
2. Mini Projects (Using A.S.P. Net, VB. Net, PHP, Animation Packages)

Sixth Semester:

Project Work & Viva Voce

Elective I & II:

1. Data Mining
2. Neural Networks
3. Image Processing
4. Fuzzy Logic
5. Multimedia
6. Distributed Operating Systems
7. Network Security

Elective III & IV:

1. Software Quality Assurance
2. Software Project Management
3. Mobile Computing
4. Genetic Algorithms
5. Bio-Informatics
6. E-Commerce
7. Object Oriented Analysis & Design

SYLABUS FOR M.C.A. – I SEMESTER

Paper : **Mathematics I – Discrete Structures and Graph Theory**

Unit – I: Logic – Statement – Proposition and its types – Negation, Disjunction, Conjunction and connectives – Truth table construction – Tautology and contradictions bi-conditional propositions- Logical equivalence – Logical implications – Principle disjunctive and conjunctive normal forms – Theory of inference – predicate calculus.

Unit – II: Set theory and relations: Basic operations on sets – Power set – Properties of set operations – Properties of subsets – Basic set identities – Functions – Inverse functions – composition of functions – Relations on sets – Properties of relations – Equivalence relations – Matrices of relations.

Unit – III: Algebraic structures: Algebraic systems – Properties – Semi groups Monoids – Homomorphism – Substructures of semi groups and monoids - Groups – Subgroups – Homomorphisms – Cosets – Lagrange’s theorem – Normal subgroups – Fundamental Homomorphism theorem – Rings and basic properties.

Unit – IV : Lattices and Boolean Algebra : Partial order relations – Posets – Hassae diagram – Lattices – Sublattices – Modular lattices – distributive lattices – Bollean albegra – Direct product and homomorphism – Finite Boolean algebra.

Unit – V : Graph theory: Definition – Connectedness – path – cycle – components – Matric representation of graphs – Trees and basic properties – Rooted and binary trees – Spanning trees – Eulerian and Hamiltonian graphs.

Reference Books:

1. J.P. Trembley and R. Manokar, Discrete Mathematical Structure with Applications to Computer Science, Tata MCHraw Hill Publications.
2. Narasingh Deo, Graph Theory and its Applications, Tata Mc Graw Hill Publications.
3. Kenneth H. Rosen, Discrete Mathematics and its Applications, Tata Mc Graw Hill Publications
4. Brickhoff and Barte, Modern Applied Algebra, John-Wiley Ltd.

Fundamentals of Digital Computers

Unit I :

Digital Logic – The basic gates, Universal Logic Gates, And – OR invert gates, Positive and negative logic, Introduction to HDL. Combinational logic circuits – Boolean, laws and theorems. Sum-of-products method, Truth table is Karnaugh Map, Pairs, Quads and Octets, Karnaugh simplifications. Don't Care conditions, Product of sums method, Product of sums simplification, simplification by Quire-Mc clusky method, Hazards and Hazard covers, HDL implementations models.

Unit II:

Data Processing Circuits – Multiplexers, 1 of 16 Decoder, BCD to decimal Decoders, Seven segment Decoders, Encoders, Exclusive-or gates, Parity Generators and Checkers, Magnitude Comparator, Read only memory, Programmable array logic, Programmable Logic, Trouble shooting with a logic probe, HDL implementation of Data Processing Circuits. Number systems and codes – Binary number system, Binary to decimal conversion, Decimal to Binary conversion, Octal numbers, hexadecimal numbers, The ASCII code, The excess-3 code, The Gray code, Trouble shooting with a logic pulser.

Unit III:

Arithmetic circuits – Binary addition, Binary subtraction, Unsigned binary numbers, sign-magnitude numbers, 2's Complement representation, 2's Complement Arithmetic, Arithmetic building blocks, The adder subtractor, Fast adder, Arithmetic Logic unit, Binary multiplication and division. Arithmetic circuits using HDL. Flip-Flops-RD flip flops, Gated flips, Edge triggered RS flip flops, Edge triggered D flops, Edge triggered JK flip flops, Flip flop Timing, JK master slave flip flops, Various representation of flip flops, Analysis of sequential circuits, Conversion of flip flops, HDL implementation of flip flop.

Unit IV:

Counters – Asynchnronous circuits. Decoding Gates, Synchronous counters, Changing the counter modules. Decade counters, Presetable counters, Counter Design as a synthesis problem. A digital clock, counter design using HDL.

Registers – Types of Registers, Serial-In-Serial Out, Serial – In – Parallel Out, Patalle –In-Serial Out, Paralle – In – Paallel Out, Application of shift registrars, Register Implementation of HDL.

Unit V:

Design of sequential circuit – Model selection, State Transition diagram, State synthesis Table. Design equations and circuit diagram. Implementation using Read only memory. Algorithmic state machine, state reduction technique, Analysis of asynchronous sequential circuit, Design of asynchronous sequential circuit, FSM implementation in HDL.

A simple computer design – Building Blocks, Register transfer language, Macro and Micro operations, Design of Control unit, Programming counter.

Books:

Donald Plcach, Albert Paul Malvino, Goutam saha – Digital Principles and Applications VI Edition. Tata Mc Graw Hill Publishing Company Ltd, New Delhi, 2006.

Donald D. Givone – Digital Principles and Design - Data Mc Graw Hill Publishing Company Ltd, 2006.

V. Rajaraman, T. Radhakrishnan – Digital Logic and Computer Organization, Prentice Hall of India Private Ltd, 2006.

OFFICE AUTOMATION (OR) PC SOFTWARE (48 Hours)

Objectives:

1. To enable them to work with Windows OS.
2. To gain the knowledge of creating & formatting documents in MS-WORD.
3. To get an idea about spreadsheet & its operations in MS-EXCEL.
4. To know to create Presentations using POWERPOINT.
5. To get basic knowledge of memory concepts.

UNIT – I

Microsoft Office basis – Creating documents – Entering text – selecting text – giving instructions using toolbars – menu commands & keyboard shortcuts – saving files – opening documents – manipulating windows – simple editing – printing files – getting help.

UNIT – II

WORD basics – using auto text – using auto correct – word editing techniques – finding and replacing text – checking spelling – using templates – formatting – formatting with style – creating tables – Mail Merge.

UNIT – III

Excel basics – entering data – selecting range – editing entries – formatting entries – simple calculations – naming cells ranges – data display – printing worksheet – copying entries between workbooks – moving sheets between workbooks – deleting sheets – creating Charts.

UNIT – IV

PowerPoint basics – editing text – adding subordinate points – deleting slides – working in outline view – using design template – merging presentation in slide – sorted view – applying templates adding graph – adding organization charts – running an electronic slide show – adding spiral effect.

UNIT – V

Access basics – creating a table – entering and adding record – changing a structure – working with records – creating one table based on another – creating forms –establishing table relationship using queries to extract information – using reports to create information.

Text book:

“Quick course in Microsoft Office 2000” Galgotia Publications Pvt Ltd, 200.

Reference Book : (Unit I, II, III, IV, V)

Reference book:

R.K. Taxalli “PC Software for Windows Made Simple”, Tata McGraw Hill Publisher Pvt Ltd 2000.

MCA – PROGRAMMING IN C

Unit I:

Overview of C: History of C- Importance of C- Basic structure of C – Programming style – Constants, variables and Data types – declaration of variables, storage class – defining symbolic constants – declaring a variable as constant, volatile – overflow and underflow of data. Operators and expressions: arithmetic, relational, logical, assignment operators – increment and decrement operators, conditional operators, bitwise operators, special operators – arithmetic expression – evaluation of expressions precedence of arithmetic expression – evaluation of expressions – precedence of arithmetic operators – type conversions in expression – operator precedence and associativity – mathematical functions – managing I/O operations: reading and writing a character – formatted input, output. Decision making and branching: if statement, if else statement – nesting of if else statement – Else if Ladder – Switch statement – the ? : Operator – go to statement.

Unit II:

The while statement – do statement – The for statement – jump in loops

Unit III:

Arrays: one dimensional array – declaration, initialization – two dimensional array – multi dimensional array – dynamic arrays – initializations. Strings: declaration, initialization of string variables – reading and writing string – arithmetic operations on strings together – comparison – string handling function – table of string handling function - table of strings features of string.

Unit IV:

User defined functions: need – multi function program – elements of user defined function – definition – return values and their types – function calls, declaration, category – all types of arguments and return values – nesting of functions – recursion – passing arrays, strings to functions – scope visibility and life time of variables – multi file programs. Structures and unions: defining a structure – declaring structure variables – accessing structure members – initialization – copying and comparing – operations on individual members – arrays of structures – arrays within structures – structures within structures – structures and functions – Unions –size of structures – bit fields.

Unit V:

Pointers: accessing the address of a variable – declaring, initialization of pointer variables – accessing a variable through its pointer – chain of pointers – pointer expressions – pointer increment and scale factors – pointers and arrays – pointers and character strings – array of pointers – pointers as function arguments – function returning pointers – pointers to functions – pointers and structures. Files: defining, opening, closing a file. I/O operations on files – error handling error handling during I/O operations – random access to file- command line arguments.

Text Book:

1. E. Balagurusamy, “Programming in ANSI C”, Edition3, Tata McGraw Hill Publishing Company, 2005.

Reference Book:

1. Programming with C (Schaum’s outline series), Gottfried, Tata McGraw Hill,.
2. The Complete Reference C-Herbert Schildt, Tata McGraw Hill, 2006.

MCA – COMPUTER ORGANIZATION

Unit I: Basic Structure of Computers and Machine Instructions

Computer Types – Functional Units – Basic Operational Concepts – Bus Structures – Software – Multiprocessors and Multicomputers – Numbers, Arithmetic Operations, and Characters – Memory Locations and Addresses – Memory Operations – Instruction Sequencing – Addressing modes.

Unit II: I/O Organization and Peripherals

Accessing I/O Devices – Interrupts – DMA – Buses – Interface Circuits – Standard I/O Interfaces – Input Devices – Output Devices – Serial Communication Links.

Unit III: Memory System and Storage Devices

Basic Concepts – Semiconductor RAM Memories – Read Only Memories – Cache Memories – Speed, Size and Cost – Virtual Memories – Memory Management – Secondary Storage Devices.

Unit IV: Arithmetic and Processing Unit

Addition and Subtraction of Signed Numbers – Multiplication of Positive numbers – Signed Operand Multiplication – Integer Division – Floating Point Numbers – Execution of Complete Instruction – Some Fundamental Concepts – Multiple Bus Organization – Hardwired Control – Micropogrammed Control.

Unit V : Pipelining and Parallel Processing

Pipelining basic Concepts – Data Hazards – Instruction Hazards – Forms of Parallel Processing – Array Processors – Structure of General Purpose Multiprocessors – Interconnection Networks – Memory Organization in Multiprocessors – MultiComputers.

Text Book:

1. Computer Organization – Carl Hamacher, Zvonko Vranesic, Safwat Zaky, The Mc Graw Hill, Fifth Ed, 2002.

Reference Book:

1. Computer System Architecture – M. Morris Mano, Prentice Hall of India, Third Edition, 2005.
2. Digital Computer Fundamentals, Thomas C Bartee, Tata McGraw Hill, 2005
3. Computer Architecture and Organization – John P Hayes, Tata McGraw Hill, 1998.

MATHEMATICS II – STATISTICAL AND NUMERICAL METHODS

Paper

Statistics

Unit –I: Basics of statistics – Measures of central tendency – Measures of dispersion – Movements – skewness and kurtosis – Probability- Addition and multiplication theorems – Conditional Probabilities – Bayes theorem – Mathematical Expectation.

Unit – II: Theoretical Distributions: Distribution function – Binomial, Poisson, Normal distributions – basic properties and application problems on these distributions. Sampling – Testing of Hypothesis – Null hypothesis – Types of errors – Levels of significance – confidence intervals.

Unit –III: Correlation – Rank correlation – Fittings of curves – Regression coefficients – Regression lines – forecasting through regression lines.

Numerical Methods

Unit - IV: Numerical computation – types of errors – Roots of algebraic and transcendental equations: Bisection method – Secant Method – Newton Raphson Method – Graffe's roots square method- Numerical Interpolation: Newton's formulae – Lagrange's interpolation.

Unit – V: Numerical Differentiation and Integration: Numerical differentiation – First and second order derivatives. Numerical integration : Simpson's rule – Trapezoidal rule – Runga – Kutta second and fourth order methods – Milne Predictor – correctors method.

Reference Books:

1. Trivedi. K.S., Probability and Statistics with Reliability, Queuing and Computer Science Applications, Prentice Hall of India.
2. S.S. Sastry, Introductory Numerical Analysis, Prentice Hall of India (Fourth Edition).

DATA STRUCTURES AND ALGORITHMS C++

Unit I:

Program Performance : Introduction – Space Complexity – Time Complexity – Asymptotic Notations – Practical Complexities – Performance Measurement.

Concept, Overview and Implementation of Data Structures.

Arrays : One-dimensional Arrays – Multidimensional Arrays – Pointe Arrays.
Linked Lists: Singly Linked List – Circular Linked Lists (Polynomial Representation)

Unit II:

Stacks : Representations of Stack (Array and Linked List) – Operations on Stacks – Application of Stacks (Evaluation of Arithmetic Expression)

Queues: Representations of Queues (Arrays and Linked List) – Circular Queue – Application of Queues (Round Robin Algorithm).

Unit III:

Trees : Basic Terminologies – Definition and Concepts (Binary Trees and Properties of Binary Tree) – Representation of Binary Tree (Linear, Linked Representation. Physical Implementation of Binary Tree in Memory) – Operations on Binary Tree – Types of Binary Trees (Expression Tree & Binary Search Tree).

Unit IV:

Graphs: Graph Terminologies – Representation of Graphs – Operations on Graphs – Application of Graph Structures (Shortest Path Problem. Minimum Spanning Trees – Euler's and Hamiltonian Circuits)

Unit V:

Algorithm-Design Methods : The Greedy Method – Divide and Conquer Method- Dynamic Programming – Backtracking – Branch and Bound.

Applications :The Greedy Method (Container Loading) – Divide and Conquer Method (Merge Sort) – Dynamic Programming (0/1 Knapsack Problem) – Backtracking (Traveling Sales person).

Text and References:

1. Data structures, Algorithms and Applications in C++ - Sartaj Sahni – McGraw – Hill International Edition, 2000.
2. Classic Data Structures – D.Samantha – Prentice Hall of India Pvt. Ltd, 2002.
3. Data Structures with C++ - John R. Hubbard- Tata McGraw Hill Edition – (Schaum's Outines)-2004.
4. Data Structures & Algorithm Analysis in C++, Mark Allen Wesis, Pearson, Education – 2002.
5. Data Structures, Algorithms & Applications in C++ - Sartaj sahani, University Press – 2005.

OBJECT ORIENTED PROGRAMMING WITH C++

Unit I:

Classes and Objects:

Introduction - structures in C – structures in C++ - classes in C++ - declaring objects- the public keyword – the private keyword – the protected keyword – defining member functions – characteristics of member functions – outside member function inline – rules for inline function – data hiding or encapsulation – classes, objects and memory – static member variables and functions – static object – array of objects- objects as function arguments – friend function – the const member function - local classes –empty, static and const classes – member functions and non-member functions – the main () as a member function – overloading member functions – overloading main() function – the main (), member function and indirect recursion – bit fields and classes.

Unit II:

Constructors and destructors:

Introduction – constructors and destructors – characteristics of constructors and destructors – applications with constructors – constructors with arguments – overloading constructors – constructors with default arguments – copy constructors- the const object – destructors – calling constructors and destructors – qualifier and nested classes – anonymous objects – private constructors and destructors – dynamic initialization using constructors – dynamic operators and constructors – the main () as a constructor and destructor – recursive constructor – program execution before main() – constructor and destructor with static members – local vs.global object.

Unit III:

Operator overloading and type conversion:

Introduction – the keyword operator – overloading unary operator – operator return type – constraint on increment and decrement operators – overloading binary operators – overloading with friend function – type conversion – rules for overloading operators.

Inheritance:

Introduction – access specifiers and simple inheritance – protected data with private inheritance – types of inheritance – single inheritance – multilevel inheritance – multiple inheritance – hierarchical inheritance – hybrid inheritance – multipath inheritance.

Unit IV:

Pointers and Arrays:

Introduction – pointer declaration – void pointers – Wild pointers – pointer to class – pointer to object – the this pointer – pointer to derived classes and base classes – pointer to members – accessing private members with pointers – arrays – characteristics of arrays – initialization of arrays using functions – arrays of classes – binding in C++ - pointer to derived class objects.

Unit V:**Virtual functions and Files:**

Virtual functions – rules for virtual functions – arrays of pointers pure virtual functions
abstract classes – working of virtual functions – virtual functions in derived classes – file
stream classes - steps of file operations – checking for errors – finding end of a file – file
opening modes – file pointers and manipulators – manipulators with arguments – sequential
read and write operations – binary and ASCII files – random access operation.

Text Book:

Object – Oriented Programming with ANSI & Turbo C++, Ashok N. Kamthane, Pearson
Education.

Reference Books:

1. Object oriented programming C++, E. Balagurusamy 3rd Edition., Tata McGraw Hill.
2. Programming with C++, D. Ravichandran 2nd Edition., Tata McGraw-Hill.
3. Mastering C++, y Venugopal Rajkumar Ravishankar., Tata McGraw-Hill.
4. C++ and object oriented programming paradigm, Debasish Jana 2nd Edition., PHI publication.

INTERNET PROGRAMMING

Objective: To impart knowledge of Internet and to develop skills in programming the Internet.

UNIT – I **(6 hours)**

Basics of Internet communication – Hardware elements associated with internet – Internet Services – Internet Protocols – TCP/IP, UDP, HTTP – Other Protocols – Telnet – Gopher – Mail and its types – FTP – Remote access and Transaction – Web Indexes – Search Engines.

UNIT – II **(10 hours)**

Introduction to HTML – Tags and Documents – Link documents using Anchor Tags – Images and Pictures – Tables – HTML Forms – Frames – Framesets.

UNIT – III **(12 hours)**

Introduction to Scripting – Java Script – Data types – Operators – Variables – Conditional Statements – Functions – Objects – Document object – Image Object – Event Handling – Introduction to VBS Script and Perl Script.

UNIT – IV **(15 hours)**

Introduction to XML – Well formed XML – CSS- XSL – Valid XML – DTD – XSD – Introduction to DOM and SAX.

UNIT – V **(17 hours)**

Introduction to Dynamic web applications – Active Server Page Basics – ASP Object Model – Collections – Introductions – Introduction to PHP.

TEXT BOOK(S)

1. Deitel & Deitel “Internet and www – How do program? Prentice Hall 2000.
2. Beginning XML, David Hunter et.a;., Wrox publications 2000.

REFERENCE BOOK(S)

1. Daniel C. Lynch, Marehall T. Rose. Internet systems Handbook”, Addison Wesley 1993.

MCA – COMPUTER NETWORKS

Unit I:

Introduction: Fundamental Concepts – Data Communications – Protocols – Standards – Standard Organizations – Signal Propagation – Analog and Digital Signals- Bandwidth Basics and more details - Amplitude, Period. Frequency and Phase modulation. Modes of Data Transmission and Multiplexing: Introduction – Parallel and Serial Communication – Simplex, Half Duplex and Full Duplex Communication – Multiplexing – types of Multiplexing – FDM Vs TDM. Transmission Errors Detection and Correction Introduction – Error Classification – Types of errors – Error detection – Error correction using Hamming code. Transmission media: Introduction – Guided, Unguided Media – Shanon Capacity – DSL.

Unit II:

Network Topologies Switching and Routing Algorithms: Introduction – Mesh, Star, Tree. Bus, Hybrid topology – Switching Basics – Circuit, Packet, and Message Switching – Routers and Routing – Factors affecting routing algorithms – Routing algorithms – Approaches to Routing. Networking Protocols and OSI Model: Introduction – Protocols in computer communications – OSI Model – OSI Layer functions – Data link layer – Data link layer issues – Flow control – Error Control – Data link layer protocols.

Unit III:

LAN, MAN, WAN: Introduction – LAN – Ethernet – Token ring – FDDI – Comparison of Ethernet, Token ring and FDDI – Token Bus –ALOHA – MAN – DQDB – SMDS – WAN – WAN Architecture – Transmission Mechanism - Addressing – Packet forwarding – Next Hop tables and Routing. ISDN: Introduction – Background of ISDN – ISDN Architecture, Interface – Functional grouping – Reference points – ISDN Protocol Architecture – Broadband ISDN.

Unit IV:

X.25 Protocol: Introduction – How X.25 works? - Characteristics of X.25 – Packet format – X.25 Operation. Frame Relay: Introduction – Need for frame relay – How Frame Relay works? - Frame format – Congestion control – Traffic Control – FRAD – Features. ATM: Introduction – Overview – Packet size – Virtual Circuits – ATM cells – Switching – ATM Layers. Internetworking Concepts and Device: Introduction- Why Internetworking? – Problems in Internetworking – Dealing with Incompatibility Issues – Virtual Network – Internetworking Devices – Repeaters – Bridges – Routers – Gateways – Introduction to TCP/IP.

Unit V:

Transport layer: Introduction – TCP – UDP – Difference between TCP and UDP, Session and Presentation layers: Session Layer – Presentation layer. Application Layer: Electronic Mail (Email)- File Transfer Protocol(FTP) – Remote Login (Telnet) – Remote login and Telnet – Common Management Information Protocol (CMIP).

Text Book:

1. Computer Communication Networks – Achyut S Godbole, Atul Kahate, Tata McGraw Hill, 2004.

Reference Book:

1. Computer Networks, Andrew S. Tanenbaum, 4th Ed, Prentice Hall of India, 2006.
2. Data Communications and Computer Networks – Prakash C. Gupta, Prentice Hall o India, 2005.
3. Data Communication and Networking – Behrouz A. Forouzan, Tata McGraw Hill, 2005.

MATHEMATICS III – OPERATIONS RESEARCH

Paper

Operations Research

Unit I: OR methodology – Modeling through OR methodology – History of OR – Linear Programming – problem formulation – Graphical method – Simplex method – Big Method – Duality – Dual simplex method.

Unit II: Transportation problem – Formulation – Methods to find initial basic feasible solutions – North West corner rule – Least Cost method – Penalty method – Modi method to find optimal solution – Degeneracy – Unbalanced transportation. Assignment problem: Formulation – Hungarian method – Unbalanced assignment problem – Traveling salesman problem.

Unit III: Sequencing problem – Johnson’s method – Graphical method. Scheduling through CPM and PERT – Network formulation – Floats – Critical Path Method – Probability of completing the project – Cost considerations.

Unit IV: Game theory : Two person zero sum game – saddle points and value of the game – Games without saddle points – Mixed strategies – Algebraic method for 2 x 2 Graphical method to 2 x n and m x 2 game – Method of domination – Linear programming method.

Unit V: Queuing theory: Notation and preliminaries about the model – Poisson arrival and exponential service distributions – Queuing models: (M/M/1: ∞ /FCFS), (M/M/1: N/FCFS), (M/M/m: ∞ /FCFS) and (M/M/m: ∞ /FCFS) – Birth and deal model.

Reference Books:

1. H.A. Taha Operations Research. Fifth Edition, Prentice Hall of India.
2. Sharma, J.K. Mathematical Models in Operations Research, Tata McGraw Hill Publications of India.
3. Kanti Swarup Gupta, P.K., and Man Mohan, Operations Research, Sultan Chand & Sons.

INTERNET PROGRAMMING

OBJECTIVES:-

1. To know the fundamental and practical concepts in computer graphics including interactive graphics, visual realism, graphics hardware, scene rendering, graphics primitives, geometric transformations,
2. To understand 2D and 3D graphics systems
3. To understand the rendering and viewing techniques of 3D objects
4. To be capable of modeling and animating 3D objects
5. To be capable of using graphics libraries in programming

UNIT – I

A Survey of Computers Graphics – Overview of Graphics Systems – Output Primitives: Points and Lines, DDA, Bresenham’s Algorithm, Properties of Circles & Ellipse, Pixel Addressing.

UNIT – II

Two Dimensional Geometric Transformations: Basic Transformations, Matrix Representations, Composite Transformations – Line Clipping – Two Dimensional Viewing – Graphical User Interfaces and Interactive Import Methods.

UNIT – III

Three Dimensional Concepts – Three Dimensional Object Representations: Polygon Surfaces – Curved Lines and Surfaces - Quadric Surfaces – Super Quadrics Blobby objects – Spline Representations – Cubic Spline Interpolation.

UNIT – IV

Three Dimensional Geometric and Modeling Transformations – Three Dimensional Viewing, Viewing Pipeline, Viewing Co-Ordinates, Projections Clipping.

UNIT – V

Visible – Surface Detection Methods: Classification of Visible – Surface Detection Algorithms, Back face Detection, Depth – Buffer Method, A-Buffer Method, Scanline Method, BSP – Tree Method.

Illumination Models and Surface – Rendering Methods : Basic Illumination Models – Polygon Rendering Methods – Color Models and Color Applications – Computer Animation.

TEXT BOOK(S)

1. Donald Hearn, M.Pauline Baker, “Computer Graphics C Version” Second Edition, Pearson Education, 2000 (Unit I- V)

REFERENCE BOOK(S)

1. Zhigangxiang, Roy Phastock, “Computer Graphics”, 2nd Edition, TMCH.

DATABASE MANAGEMENT SYSTEMS

Unit I:

Database Concepts : A Relational Approach – Database – Relationships – DBMS – The Relational Database Model – Integrity Rules – Theoretical Relation Languages (Relational Algebra, Applications of Relational Algebra, Relational Calculus)

Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal Forms (Anomalies, First, Second, Third Normal Forms) – Dependency Diagrams (Conversion from 1NF to 2NF, Conversion from 2NF to 3NF) – Demoralization.

Unit II:

Oracle 8 : An Overview: Personal Databases – Client/Server Databases – Oracle 8: An introduction – The SQL* Plus Environment – Structured Query Language – SQL* Plus Commands – Sample Databases.

Oracle Tables: Creation and Modification: Naming Conventions – Data Types – Constraints – Creating an Oracle table – Displaying Table Information – Altering an Existing Table – Dropping a Table – Renaming a Table – Truncating a Table – Spooling.

Working with tables: Data management and Retrieval: Adding a new Row/Record – Customized Prompts – Updating Existing Records – Deleting Existing Records – Dropping a Constraint – Disabling/Enabling Constraints – Retrieving Data from a Table – Arithmetic Operations – Restricting Data with a WHERE Clause – Sorting – Built-in functions (Single-row, Group Functions) – Grouping Data – Nesting Group Functions – Revisiting Substitution Variables – DEFINE Command.

Unit III:

Multiple Tables: Joins and Sub-Queries: Joint (Product, Equijoin, Table Aliases, Additional conditions, Nonequijoin, Outer Join, Self-Join) – Set Operators (Union, Union All, Intersect, Minus)- Sub Query – Top-N Analysis.

Advanced Features: Objects, Transactions and Control: Views (Creating a View, Removing a View) – Sequences (Modifying a Sequence, Dropping a Sequence) – Synonyms – Index – Transactions – Locking Rows for Update – Controlling Access User, Role and System Privileges, Object Privileges).

Unit IV:

PL/SQL : Programming Language Basics: A Brief History of PL/SQL – Fundamentals of PL/SQL (Reserved Words, User-defined Words, Literals) – PL/SQL Block Structure – Comments – Data Types – Other Scalar Data Types (NLS, LOB) – Variable Declaration – Anchored Declaration – Assignment Operation – Bind Variables – Substitution Variables – Printing in PL/SL – Arithmetic Operators. SQL and Control.

Structures in PL/SQL: Control Structures (Selection and Looping) – Nested Blocks – SQL in PL/SQL (SELECT) – Data Manipulation in PL/SQL (INSERT, DELETE and UPDATE Statements).

Unit V:

Cursors & Exceptions: Composite Data Types: Records & Tables, Procedures, Functions & Packages.

Cursors & Exceptions: Cursors (Implicit, Explicit) – Explicit Cursor Attributes – Implicit cursor Attributes – Cursor for Loops – SELECT, FOR UPDATE Cursor – Where Current of Clause – Cursor with parameters – Cursor Variables: An Introduction – Exceptions – Types of Exceptions - Sample Programs.

Composite Data Types : Records & Tables: Composite Data Types – PL/SQL Records – PL/SQL Tables – Sample Programs. Procedures, Functions & Packages.

Oracle 8i: An Overview and Web Tools: Oracle 8i Core package – An Object – SQL Queries for objects – Internet Computing & Oracle 8i, WebDB, J. Developer.

Text and References:

1. Database Systems using Oracle – Nitesh Shah – PHI 2002.
2. Oracle 9i – Complete Reference – Loney Koch – Tata McGraw Hill 2005.
3. Fundamentals of Database Systems – Elmasri, Navathe, Pearson Edu. 2005.
4. Database Systems – Rob & Cornel – Thomson Course Technology – 2002.
5. Database System Concepts, Silpersehatz, Korth & Sudarshan – Mc Graw Hill International Edition – 2005.

VISUAL PROGRAMMING -1

Unit 1:

Introduction: The Initial VB Screen – The Single Document Interface Environment. The Help System- Toolbars – The Toolbox and Custom Controls and Components – Using the File Menu-Editing- Using the view Menu-Using the Project Menu-Format Menu-The Run and Debug Menu-Using the Tools Menu-Using the Add-Ins Menu-Using the Windows Menu.

Customizing f Form and Writing Simple Programs: Starting a New Project. The Window-Common Form Properties – Scale Properties – Color Properties – Making a form Responsive – Printing a Visual Representation of a Form- Types – Saving your Work – Creating Stand – Alone Windows Programs.

Unit 2 :

First Steps in Building the User Interface: The Toolbox – The Control Name Property – Simple Event Procedures for Command Buttons – Access Keys – Image Controls – Text Boxes – Labels – navigating Between Controls – Message Boxes – The Grid – The Display in VB.

First Steps in Programming: The code Window – VB's Editing Tools – Statement in VB-Variables- Setting Properties with Code-Data Types – More or Strings – More on Numbers-Constants – Input Boxes.

Displaying Information: Displaying Information on a Form - The Format Function – Picture Boxes – Rich Text Boxes – The Printer Object.

Unit 3:

Controlling Program Flow: Determinate Loops – Indeterminate Loops – Making Decisions – Select Case – Nested If – Then's The GOTO

Build-In Functions: String Functions – The Like Function and Fuzzy Searching – the Rnd Function – Bit – Twiddling Functions – Numeric Functions – Date and Time Functions – Final Functions.

Writing your own Functions and Procedures: Function Procedures – Sub Procedures – Advanced uses of Procedures and Functions – Object Browser.

Unit 4:

Organizing Information via Code: Lists: One-Dimensional Arrays – Arrays with More than one dimension – Using List and Arrays with Functions and Procedures – The New Array – Based String Handling Functions – Sorting and Searching – Records – The with Statement – Enums.

Organizing Information Via Controls: Control Arrays – List and Combo Boxes – The Microsoft Windows Common Controls 6.0 – Menus – MDI Forms.

Basic File Handling: File Commands – Sequential Files – Random Access Files – Binary Files – Sharing Files – File System Controls.

Unit 5:

A Survey of Database Development Using VB: Using the Data Control – SQL Basics – An introduction to Programming with DB objects – other Useful Methods and Events for the Data Control.

Building Your Own Active X Controls: First Steps – Testing the Control – Polishing the Presentation of Your Control – Adding the functionality – The Life Cycle of a Control.

An Introduction to Graphics: Fundamental of Graphics – Screen Scales – The Line and Shape Controls – Graphics Via Code – Line and Boxes – Circles, Ellipses and Pie Charts-Curves – The Paint Picture Method.

Text & Ref. Books:

1. Visual Basic 6 from the Ground Up-Gary Cornell – Tata McGraw Hill Edition 2002.

MCA – OPERATING SYSTEM

Unit I:

Introduction – Definition – History – sample operating systems – protection mechanisms – operating system services, calls, structure of operating systems – virtual machines – system design, implementation. Overview of system programs – Assembler – linker and loader. Process Management: Process concepts, operation on process – process states transitions – cooperative process – inter process communication – threads and multi threading models.

Unit II:

CPU scheduling: Process scheduling – basic concepts – scheduling algorithms – multiprocessor scheduling – real time scheduling – evaluation of scheduling algorithms. Process Synchronization – semaphores – classical synchronization problems – IPC mechanisms. Deadlock: what is? – System model – deadlock characterization – prevent a dead lock – dead lock avoidance, detection – recover from a deadlock.

Unit III:

Memory management – requirements- memory partitioning – paging segmentation – virtual memory system – virtual memory basics – hardware and control structures – operating systems softwares.

Unit IV:

I/O systems: I/O devices – concepts – organization of the I/O function – I/O design issues, buffering - input and output mechanisms – File Systems: concepts – descriptors – Access methods – directory structures – file systems – UNIX file systems – file handling in windows systems – file system mounting – file sharing – protection – file system structures – recovery – disc formatting. Secondary storage managements: allocation methods – directory implementation- free space managements – disc structure – access – space managements – device driver- disc controller – scheduling.

Unit V:

Linux : main difference between unix and linux – process management, scheduling – memory, file management – device drivers – security – CASE STUDY: Windows NT – process management, synchronization – memory management – wnn32, application programming interface – windows registry Distributed Operating System: process migration – remote procedure call – distributed process, file management – issues in distributed database systems – distributed mutual exclusion – deadlock in distributed systems.

Text Book:

1. Operating Systems, Achyut S.Godbole, Atul Kahate, Tata McGraw Hill, 2005.

Reference Book:

1. Operating system principles, Abraham Silverschatz, Peter Galvin, Greek Gagne, John Wiley Eastern Publication, 2006.
2. Operating Systems – William Stallings, Prentice Hall of India 2005.
3. An Introduction to Operating system concepts and practice, Pramod Chandra P. Bhatt, Prentice Hall of India, 2006.

Financial Management and Accounting

Unit I

Financial Accounting – Need for accounting – Definition – Objectives and Advantage
Branches of Accounting – Types of Accounts – Accounting rules – Accounting cycle –
Journal Ledger – Trial Balance – Trading & Profit and loss account and Balance sheet.

Unit II

Financial Management – nature, scope and objectives – Finance functions – Profit
maximization vs Wealth maximization – Role and Responsibilities of a financial manager in
the changing scenario – Methods of Financial management – Importance of Financial
management.

Unit III

Financial Statement Analysis and interpretation – Meaning and types of financial
statement – Types of financial analysis – Steps in Financial statement analysis – Methodical
Classification – Techniques of financial analysis – Limitations of financial analysis –
Practical problems.

Unit IV

Ratio Analysis – Meaning – Classification – Liquidity, solvency, profitability and
turnover ratios – Advantages and limitations – Practical problems. Funds Flow analysis –
meaning – uses – Preparation of funds flow statement. Cash flow analysis – Meaning –
Preparation – Difference between fund flow and cash flow analysis – Utility and limitations
of cash flow analysis – Practical problems.

Unit V

Mechanized Accounting – Electronic Data processing – Computer Applications
Accounting – MIS – Computer – Information technology & MIS.

Reference Books:

1. S.P. Jain and K.L. Narang- Advanced Accounting, Kalyani publishers, New Delhi.
2. S.P. Iyengar – Advanced Accounting, Sultan Chand and Sons, New Delhi.
3. R.L. Gupta and M. Radhaswamy – Advanced Accounting, Sultan Chand and Sons,
New Delhi.
4. S.N. Maheswari and C.B. Gupta, Financial Management, Sultan Chand and Sons,
New Delhi.
5. S.N. Maheswari, Management Accounting – Sultan Chand and Sons, New Delhi.

JAVA PROGRAMMING

Unit I:

OPP and Java : Introduction – Objects & classes – Java Language – Creating and Executing a Java application.

The Primaries : Introduction - Character Set – Tokens – Constants – Variables – Operator & Expressions – Library Methods – Strings – I/O Statements – Simple Programs – Formatting the O/P values.

Control Statements: Introduction – if statement – switch – while – do while – for statements. Arrays and Methods: Introduction – One dimensional arrays – two dimensional arrays – Methods – Method overloading – Recursion.

Classes & Objects: Introduction – General form of a class – creation of objects – Usage of Constructors – ‘this’ keyword – Constructor overloading – Copy Constructors – Static Data Members – Static methods – Finalize () method – inner Classes and Anonymous Inner Classes.

Unit II:

Inheritance & Polymorphism: Introduction – Inheriting the variables in a class – Inheriting the methods in a class – Inheritance and Constructors – Abstract Classes – Final Classes.

Interfaces & Packages: Introduction – Interfaces – Structures of an interface – Implementation of an interface – Interface Inheritance – Packages – The Package Statement – Placing the classes in a Package – Package Hierarchy – Import Statement – Hiding the classes in a Package Access Control Modifiers.

Applets: Introduction – The Life Cycle of Applet – The Applet Class – Development and Execution of a simple Applet – Syntax of Applet Tag – Methods in the Graphics Class.

Unit III:

Abstract Windowing Toolkit- I: Introduction – Events – Listeners – Event Handling Methods – Inheritance Hierarchy of Control Classes – Labels – Button Control – Check Box – Radio Button, Choice, List Scroll Bars Control – Flow Layout – Border Layout – Grid Layout – Gridbag Layout – Panels.

Abstract Windowing Toolkit – II: Introduction – Windows and frames – Menus – Dialogs – Mouse events and their listeners – Adapter classes – Inner classes – Anonymous Inner classes.

Swing: Introduction – JApplet Class- Icons – JLabel Control – Joption Pane Class – Jtextfield Control – Jbutton. Jcheckbox, JRadiobutton Controls – Menus – Jslider, JCombobox, JTabbed Pane. JScrollpane controls – Tables.

Unit IV:

Exception Handling: Introduction – Default Exception Handling – User defined Exception Handling mechanism – Exception and Error Classes – Catch Block Searching Pattern – ‘throw’ Statement - - ‘throw’ Clause – Custom exceptions.

Multithreading: Introduction – Life Cycle of a Thread – Creating and Running Threads – Methods in the Thread Class – Setting the priority of a Thread – Synchronization – Deadlock – Inter Thread Communication – Applets involving Threads.

Networking : Introduction – Networks, Domain Names and Protocols – Layers in Network Communication Ports – TCP – UDP Approach – Accessing Resources on the Internet.

Unit V:

Java Database Connectivity : Introduction – Establishing a connection – Creation of data tables – Entering data into the tables – Table updating – Use of Prepared statement – Obtaining Meta data – Using Transactions – Scrollable Result sets – Stored Procedures.

Servlets: Introduction – Servlets and Dynamic Web Pages – Life Cycle of a Servlet – Constituents of javax.servlet Package – Retrieving the values of parameters – Retrieving the values of Initialization parameters – The javax.servlet.http package – cookies – Creating a cookie and sending it to the client – Retrieving the stored cookies – Session Tracking.

Remote Method Invocation: Introduction – Remote Interface – java.rmi.server package – The Naming class – RMI Security Manager Class – RMI exceptions – Steps involved in creating RMI client and server classes.

Java Beans: Introduction – Procedure for running the Juggler Bean – Creating our own Bean – Concentric Circles Bean, Message Bean, Maths Bean.

Text & Reference Books:

1. Programming java – Decker & Hirshfield - Thomson Learning & Vikas Publishing House, 2000.
2. Programming with java – C. Muthu, Thomson Learning Series, 2004.
3. Programming with java 2-C. Xavier, SCITECH, 2000.
4. Java 2 – The Complete Reference, Schildt – Tata McGraw Hill, 2005.
5. Java & Object Oriented Programming Paradigm – Debasish jana, PHI, 2005.

VISUAL PROGRAMMING – II

Unit I:

Introduction, Creating Visual C++ applications – Designing and creating a visual C++ program – understanding the development environment. Crating and designing dialog boxes.

Unit II:

Using Button controls. Using Text controls. Using List controls. Responding to Mouse events. Using Active X controls.

Unit III:

Using progress, Scrollbar, Slider and Date time controls. Responding to Mouse events. Using Active X controls.

Unit IV:

Working with Images, Bit maps and Icons, Using Documents, Views and Frames. Working with Menus.

Unit V:

Sizing and Scrolling views. Saving, Loading and transferring Data. Using Database and record views, Understanding OLE and Com Programming.

Text Books:

1. Practical Visual C++ - John Bates and Tim Tompkins – Prentice Hall of India, 2000.
2. Gary J Bronson – A first book of Visual C++ - Vikas Publishing House – 2001.

SOFTWARE ENGINEERING

Unit I:

The scope of software engineering – Software Life – cycle models – The Software Process – Objectives, The Unified process, Iteration and Incrementation with in the object – oriented paradigm. The requirements workflow, The analysis workflow, The design workflow, The implementation workflow, The test workflow, Post delivery maintenance, Retirement, The phases of the Unified process, One-versus – two dimensional life-cycle models, Improving the software process, Capability Maturity models, Other software process improvement initiatives, Cost benefits of software.

Unit II:

The tools of the Trade – Objectives, Stepwise refinement, Cost benefit analysis, Software metrics, CASE, Taxonomy of CASE, Software versions, Configuration control, Build tools, Productivity gains with CASE technology. Testing – objectives, Quality issues, Non-execution based testing, Execution based testing, what should be tested?, Testing versus correctness proofs, Who should perform execution based testing? When testing stops.

Unit III:

From modules to objects – Objectives, What is a module?, Cohesion, Coupling, Data Encapsulation, Abstract data types, Information Hiding, Objects, Inheritance, Polymorphism and Dynamic Binding, The object oriented paradigm. Reusability and portability – Objectives, Reuse concepts, Impediments to reuse, Reuse case studies, Objects and Reuse. Reuse during design and implementation, Reuse and Post delivery maintenance, Portability, Why Portability?, Techniques for achieving Portability, Planning and Estimating.

Unit IV:

Requirements – Objectives, Determining what the Client needs, Overview of the requirements work flow, Understanding the domain, the Business model, Initial requirements, Initial understanding of the Domain, Initial Business model, Initial requirements, Continuing the requirements workflow, Revising the requirements, The test workflow, The classical requirements phase, Rapid prototyping, Human factors, Reusing and Rapid prototype, CASE tools for the requirements workflow, Challenges of the requirements, Classical analysis, - objectives, The specification document, Informal specifications, Structures systems analysis, Other semiformal techniques, Entity relationship modeling, Finite state machine, PetriNets.Z, other formal techniques, Comparison of Classical analysis techniques, Testing during classical analysis, CASE tools for classical analysis, Challenges of classical analysis.

Unit V:

Design – Objectives, Design and Abstraction, Operation oriented design, Data flow analysis, Transaction analysis, Data oriented design, Object oriented design, The design workflow, The test workflow, Formal techniques for detailed design, Real time design techniques, CASE tools for design, Challenges of the design workflow, Implementation – objectives, Choice of Programming languages, Fourth generation languages, Good programming practice, coding statements, code reuse, Integration, The implementation workflow, The test workflow, The black box unit testing techniques, Glass-box unit testing techniques, Code walk through and inspections, Comparison of Unit-testing, Clean room, Potential problems when testing objects, Management objects of unit testing, Integration testing, Product testing, Acceptance testing, CASE tools for implementation. Post delivery maintenance.

Books:

Stephen schach – Software Engineering Tata McGraw Hill Publishing Company Ltd., Seventh Edition, 2007.

ADVANCED JAVA

Course Objectives: To impart knowledge about Advanced Java concepts

UNIT I	:	CFA
UNIT II	:	IO – JDBC
UNIT III	:	Networking – RMI – PROTOCOL HANDLERS
UNIT IV	:	JAVA BEANS, Inner classes, Reflection
UNIT V	:	XML Parsers – SAX & DOM

Reference:

1. Partrick Naughton, Herbert Schildt, 2006, Java 2: The Complete Reference, Third Edition.
2. S. Horstmann and Gary Cornell, Core Java : Volume II Sun Microsystems Press, Java.

DATA MINING

Unit I :

Basic Data Mining tasks – Data mining versus knowledge discovery in data bases – Data Mining issues – Data Mining Metrics. Social implications of data mining - Data Mining from a database perspective.

Unit II :

Data mining techniques – Introduction – A statistical perspective on Data mining - Similarity measures – Decision trees – Neural networks – Genetic algorithms.

Unit III:

Classification – Introduction – statistical based algorithms – Distance based algorithms – Decision tree based algorithms – neural network – based algorithms – Rule based algorithms – Combining Techniques.

Unit IV:

Clustering – Introduction – Similarity and distance measures – outliers – Hierarchical algorithms – Partitional algorithms – clustering large data bases – clustering with categorical attributes. Association Rules – Introduction – Large Itemsets – Basic Algorithms.

Unit V:

Web Mining – Introduction – Web content Mining – Web structure mining – Web usage mining. Spatial Mining – Introduction – spatial data overview - spatial data Mining primitives – Generalization and specialisation – Spatial Rules – Spatial classification algorithm – spatial clustering Algorithms. Temporal mining – Introduction Modeling temporal events.

Text & Reference Books:

1. Margaret H. Dunham – Data Mining Introductory and Advanced Topics – Pearson Education – 2003.
2. George M. Marakas – Modern Data Warehousing, Mining and Visualization – Pearson Education – 2003.
3. Alex Berson and Stephen J. Smith – Data warehousing, Data mining and OLAP – McGraw Hill Book Company, 2001.

MCA – ELECTIVE I & II

Neural Networks

Unit I:

Brain Style Computing : Origins and Issues – Lessons from Neuroscience – Artificial Neurons, Neural Networks and Architectures – Geometry of Binary Threshold Neurons and their Networks – Pattern Recognition and Data Classification – Convex Sets, Convex Hulls & Linear Reparability – Space of Boolean functions – Binary Neurons are Pattern Dichotomizers – Non linearly Separable Problems – Capacity of a Simple Threshold Logic Neuron – Revisiting the XOR Problem – Multilayer Networks – How many hidden nodes are enough?

Unit II:

Supervised Learning I: Perceptrons and LMS – Learning and Memory – From Synapses to Behavior : The case of Aplysia – Learning Algorithms – Error Correction and Gradient Descent Rules – Learning Objective for TLMs – Pattern space and Weight Space – Perceptron Learning Algorithm – Perceptron Convergence theorem – A Hand worked example and MATLAB Simulation – Perceptron Learning and Non Separable Sets – Handling linearly Non Separable Sets - α - Least Mean square learning – MSE Error Surface and its Geometry – Steepest Descent Search with extract Gradient Information - μ - LMS Approximate Gradient Descent – Application of LKS to noise Cancellation.

Supervised Learning II : Back propagation and Beyond – Multilayered Network Architecture – Back Propagation Learning Algorithm – Example – Practical Considerations in Implementing the BP Algorithm – Structure Growing Algorithms – Structure Growing Algorithms – Fast Relatives of Backpropagation – Universal function approximation and Neural Networks – Application of Feed forward Neural Networks – Reinforcement Learning : A brief Overview.

Unit III:

Neural Networks : A Statistical Pattern Recognition Perspective- Introduction Baye's Theorem – Two Instructive MATAALB Simulations – Implementing Classification Decision with Baye's Theorem – Probabilistic Interpretation of a Neuron Discriminant Function – MATLAB Simulation – Interpreting Neuron Signals as Probabilities – Multilayered Networks. Error functions and Posterior probabilities

Focussing on Generalization: Support vector machines and Radial Basis Function Networks – Learning from Examples – Radial Basis Function Networks – Regulatization Theory Route to RBFNs – Generalized Radial Basis Function Network – Learning in RBFN's – Image Classification Application – Other Models for Valid Generalizaiton.

Unit IV:

Dynamical Systems Overview: States, state vectors and Dynamics – State Equations – Attractors and Stability – Linear Dynamical Systems – Non Linear Dynamical Systems - Lyapunov Stability – Neuro Dynamical Systems – The Cohen – Crossberg Theorem.

Attractor Neural Networks: Introduction – Associative Learning – Attractor Neural Network Associative Memory – Linear Associative Memory – Hopfield Network – Content

Addressable memory – Examples – Spurious Attractors – Error Correction with Bipolar Encoding – Error performance of Hopfield Networks – Applications – Brain –State-in-a-box Neural Network – Simulated Annealing – Boltzman machine – Bidirectional Associative Memory – Example – BAM Stability Analysis – Error Correction in BAMs – Memory annihilation of Structured maps in BAMs – Continuous BAMs – Adaptive BAMs – Application.

Unit V:

Adaptive Resonance Theory: Noise Saturation Dilemma and Solving – Recurrent On Center – Off Surround Networks – Building blocks of Adaptive Resonance – Substrate of Resonance – Structural Details of the Resonance Model – ART 1 – Example

Self Organizing Feature Map: Self Organization – Maximal Eigen Vector Filtering – extracting Principle Components: Sanger’s Rule – Generalized Learning Loss – Competitive Learning Revisited – Vector Quantization – Mexican Hat Networks – self Organizing Feature Maps – Applications.

Text Book:

1. Neural Networks – A Classroom Approach, Satish Kumar, Tata McGraw Hill, 2005.

Reference Book:

1. James A. Freeman & David M. Slapura, “Neural Network Algorithms, Application Programming Techniques”. Addison Wasley Publishing Company 1991.
2. Introduction to Neural Networks using MATLAB 6.0, S.N. Sivanandam , S. Sumathi, S.N. Deepa, Tata Mc Graw Hill, 2006.

MCA – IMAGE PROCESSING

Unit I:

Background and Applications – Elements of Digital Image Processing System – Elements of Visual Perception – Brightness – Adaption and Discrimination – Color Representation – Statistical Background – Image Representation the Need – The BMP format. Different Image Transforms: Discrete Fourier Transform (DFT) – Properties on 2D DFT – Hadamard Transform – Walsh Transform – Discrete Cosine Transform – KL Transform – Wavelet Transform – Implementing the DCT-DST – Wavelet functions – Wavelet Compression.

Unit II:

Image Enhancement: Introduction – Point Operations – Histogram Modeling. Image Smoothing – Magnification & Interpolation – Transform Operations. Multispectral Image Enhancement – False Color, True Color and Pseudo Color – Color Image Enhancement. Restoration : Introduction – Convolution Techniques – Formulation of Discrete Linear operator – Inverse and Wiener Filtering – Maximum Entropy Restoration – Coordinate Transformation and Geometric Correction – Splines and their role in Image Restoration – Fourier Descriptors.

Unit III:

Image Analysis : Edge Detection – Segmentation – Texture – Texture Segmentation – Image Feature and its Extraction – Motion Detection – Image Motion Feature Extraction for different Images. Computer Tomography: Computer generation Projections of a Phantom – Transmission, Reflection, Emission Tomography – Random Transform – Back projection Operator – Projection Theorem – Inverse Radon Transform algorithm – Filter back projection algorithm – Aliasing Artifacts in the Reconstructed Image – Reconstruction from blurred noisy projection measurement model – Focals Reconstruction Method – 3Dimensional Tomography.

Unit IV:

Applications of Image Processing: Finger Prints – Face Recognition – Method for Computerized Face Recognition – Experimental Results and Comparison Methods Application of Face Recognition Methods – Speech Recognition – Speaker Recognition Finger print Classification- Digital Watermarking for Images – Medical Image Processing – Industrial Machine Vision Application – Machine Vision System – Case study – Remote Sensing – Image processing for remotely sensed data – Artificial Neural Networks.

Unit V:

Image Coding and Compression: Source Encoder and Decoder – Method putting data on a diet – Trie based Codes – WAN Applications – Multi spectral Image Compression – Bit plane Encoding – Differential Pulse Code Modulation – Picture Quality and its Measurements – Fractal Image Coding – Sub band coding of Images Interframe predictive coding – Vector Quantization – JPEG Algorithm and Standard Still Picture (JPEG) Coding Standard – Sequential frame monochrome and color Compression.

Text Book:

1. Digital Image Processing An Algorithmic Approach, Madhuri A Joshi – PHI, 2006.

Reference Book:

1. B. Chanda and D. Dutta Majdumder, “Digital Image Processing and Analysis” Prentice – Hall of India, 2001.
2. Rafael C. Gonzalez, Richard E. Woods, Steven L. Eddins, “Digital Image Processing using MATLAB” Pearson Education of India, 2004.

MCA ELECTIVE I & II

FUZZY LOGIC

Unit I:

Introduction: Crisp Sets (An Overview) – Fuzzy Sets (Basic Types) – Fuzzy Sets (Basic Concepts). Operations on Fuzzy Sets: Types of Operations – Fuzzy Complements – Fuzzy Intersections: t-Norms – Fuzzy Unions: t-Conorms – Combinations of Operations Aggregation Operations (Note: Related Theorems only).

Unit II:

Fuzzy Arithmetic: Fuzzy numbers- Linguistic Variables – Arithmetic Operations on Intervals – Arithmetic Operations of Fuzzy Numbers – Lattice of fuzzy numbers – Fuzzy equations. Fuzzy Relations: Crisp and Fuzzy Relations – Projections and Cylindric Extensions – Binary fuzzy relations – Binary Relations on a Single Set – Relations Fuzzy Morphisms.

Unit III:

Fuzzy Logic: Classical Logic: An Overview – Multivalued Logics – Fuzzy Propositions – Fuzzy Quantifiers – Linguistic Hedges – Inference ITom Conditional Fuzzy propositions – Inference ITom conditional and qualified propositions – Inference ITom quantified propositions.
Applications

Unit IV:

Approximate Reasoning: Fuzzy Expert Systems: An Overview – Fuzzy Implications – Selection of Fuzzy Implications – Multiconditional Approximate Reasoning – Interval – valued approximate reasoning.

Unit V:

Fuzzy Systems : General Discussion – Fuzzy Controllers: An Overview – Fuzzy Controllers – An Example – Fuzzy Neural Networks – Fuzzy Automata – Fuzzy Dynamic Systems.

Reference Books:

1. “Fuzzy Sets and Fuzzy Logic” Theory and applications – George J. Klir/Bo Yuan, Printice – Hall of India. 2001.
2. Neural Networks, Fuzzy Logic & Genetic Algorithms – S. Rajasekaran, G.H. Vijayalakshmi, PHI-2005.
3. Fuzzy Logic with Engineering Applications – Timothy J. Ross, McGraw Hill Edition, 1997.

MULTIMEDIA

Unit I:

Introduction – Branch – Overlapping aspects of Multimedia, Content, Global structure, Multimedia literature, Multimedia: Media and Data streams – medium, Main properties of a multimedia system, Multimedia, Traditional Data streams characteristics, Data stream characteristics for continuous media. Sound/Audio- Basic sound concepts, Music, Speech. Images and Graphics – Basic concept, Computer Image Processing.

Unit II:

Video and Animation – Basic concepts, Television, Computer based Animation. Data compression – Storage space, Coding requirements, source, Entropy and hybrid coding, some basic compression techniques. JPEG, H.261, MPEG.DVI.

Unit III:

Optical storage media – History, basic terminology, Video disks and other WORMS, Compact disk digital audio, Compact disk read only memory, CD-ROM extended Architecture, further CD-ROM based developments, Compact Disk write once, Compact Disk magneto Optical, The prospects of CD technologies. Communication Architecture, Multimedia workstation.

Unit IV:

Multimedia Operating Systems – Introduction, Real time, Resource Management, Process Management, file systems, Additional Operating System issues, System Architecture, Multimedia database Management system, Characteristics of MDBMS, Data analysis, Data structure.

Unit V:

Multimedia Communication systems – Application subsystem, Transport subsystem, Basic concepts of Quality of service and Resource Management. Multimedia Applications – Introduction, media preparation, media composition, media consumption, media entertainment.

Books:

Ralf Sleinmetz and Klara Nahrstedt – Multimedia Computing, Communications and Applications, Pearson Education, 2004.

M.C.A. ELECTIVE I & II

DISTRIBUTED OPERATING SYSTEMS

Unit I:

Fundamentals – What is distributed computing system, Evolution of Distributed Computing systems, Distributed computing system models, why are distributed computing systems gaining popularity?, What is distributed Operating Systems?, Introduction to distributed computing environment, computer networks.

Unit II:

Message passing – Introduction, Desirable features of a good message passing system, Issues in IPC be message passing, synchronization, Buffering, multidiagram messages, Encoding and Decoding of message data, Process addressing, Failure handling, Group communication, Remote procedure calls – Introduction, The RPC model, Transparency of RPC, Implementing RPC mechanism, Stub generation, RPC messages, Communication protocols for RPC's Complicated RPC, Some special types of RPC's. Distributed shared memory – Introduction, general structure, Design and Implementation issues, Granularity, Structure of shared memory space, Consistency models, Heterogeneous distributed shared memory, Advantages.

Unit III:

Synchronizaion – Introduction, Clock synchronization, Event ordering, Mutual exclusion, Deadlock, Election Algorithms, Resource Management, Process Management.

Unit IV:

Distributed file systems – Introduction, Desirable features of a good distributed file system, File models, File accessing models, File sharing semantics, File caching schemes, File replication, Fault Tolerance, Atomic Transactions.

Unit V:

Security – Introduction, Potential attacks to computer systems, Cryptography, Authentication, Access control, Digital signatures, Design principles.

Books:

Pradeep K. Sinha – Distributed Operating Systems – Concepts and Design Prentice Hall of India, 1998.

ELECTIVE I & II

M.C.A. NETWORK SECURITY

Unit I:

Need for security – security approaches – Security principles – types of attacks – Plain Text and Cipher Text – Substitution Techniques – Transposition Techniques – Encryption and Decryption – Symmetric & Asymmetric Key Cryptography – Steganography – Key Range 0 Key size – Possible types of Attacks.

Unit II:

Algorithm Types and modes – Overview of Symmetric Key Cryptography – Data Encryption Standards (DES) – International Data Encryption Algorithm (IDEA) – RC5 – Blow fish – advanced Encryption Standard (AES) – Differential and Linear Cryptanalysis.

Unit III:

History and Overview of Asymmetric Cryptography – RSA Algorithm – Symmetric & Asymmetric Key Cryptography together – Digital Signatures – Knapsack Algorithm – Other Algorithms.

Unit IV:

Digital Certificates – Private Key Management – The PKIX Model – Public Key Cryptography Standards (PKCS) – XML, PKI and Security – Authentication Basics – Passwords and Tokens – Certificate based Authentication – Biometric Authentication – Kerberos.

Unit V:

Introduction to TCP/IP – Firewalls – IP Security – Virtual Private Networks – E-money Security – Email Security – WAP Security in GSM.

Text Book:

1. Cryptography and Network Security – Atul Kahate, Tata McGraw Hill, 2006.

Reference Book:

1. Cryptography and Network Security, Principles and Practices, Fourth Edition William Stallings, Prentice Hall of India, 2006.
2. Security in Computing, Charles P Fleeger, Lawrence P Fleeger, Prentice Hall of India, 2003.

ELECTIVE III & IV

SOFTWARE QUALITY ASSURANCE - MCA

Unit I

Theory of software quality : introduction to quality: what is it? What is quality, software quality, views of quality – hierarchical models of quality – what is a hierarchical model? The hierarchical models of Boehm and mc Call, how the quality criteria interrelate, an over all measure of quality, measuring software quality-measuring quality, software metrics, metrics cited in the literature, the problems with metrics.

Unit II

Developments in measuring Quality – the work of Gilk, the COQUAMO project, the Japanese perspective, recent works on metrics, Local defined quality modeling – LOQUM another quality model? LOQUM procedures: LOCRT, LOCREL and LOCPRO, some results using LOQUM, Aconsensus model of Quality.

Unit III

The management of quality: the CASE for tools and methodologies – the growth of software engineering methodologies, CASE tools, development: an alternative toCASE? Quality management systems – the Quality management systems: a historical perspective, the key to quality management: a human quality culture, quality in software: the current situation, the problem of user requirements, AQMS for software.

Unit IV

Quality standards – the purpose of standards, the ISO 9000 series: a generic quality management standard, recent developments, other software standards. Case studies – A Software house: she wood computer services.

Unit V

Trends quality three critical areas – three key issues in quality, are Case tools addressing the right issues? Is TQM appropriate for software development? What is the likely impact of standards? Beyond Software quality: IT effectiveness – a strategic view of quality, IT effectiveness : example of an individual the corporate IT effectiveness approaches, the challenges of the future.

Text Book: Software Quality – theory and management “Alan C Gillies, Chapman & Hall 1993.

M.C.A. ELECTIVE III & IV
SOFTWARE PROJECT MANAGEMENT

Unit I:

Introduction to Project Management – Introduction, Why is software project management important?, What is a project, software projects versus types of project, Contract management and technical project management, Activities covered by software project management, plans, methods and methodologies. Some ways of categorizing software projects, What is Management?, Problems with software projects, setting objectives, stakeholders, The business case, Requirements specification, Management control. Stepwise: An overview of project planning. Programme management and Project evaluation.

Unit II:

Selection of an appropriate project approach – Introduction, Choosing technologies, Technical plan contents list, Choice of process models, Structure versus speed of delivery, The waterfall model, The V-process model, The spiral model, Software Prototyping, Other ways of categorizing prototypes, Incremental delivery, Dynamic systems development method, Extreme programming, Managing Iterative processes, Selecting the most appropriate process model. Software effort estimation – Introduction, Where are estimates done?, Problems with over-and under-estimates, The basis for software estimating. Software effort estimation techniques, expert judgment, estimating by analogy, Albrecht function point analysis, Function points Mark III, COSMIC full function points, A procedural code-oriented approach, COCOMO : A parametric model. Activity Planning.

Unit III:

Risk Management- Introduction Risk, Categories of Risk, A framework for dealing with risk, Risk identification, Risk assessment, Risk Planning, Risk Management, Evaluating risks to the schedule, Applying the PERT technique, Monto Carlo simulation, Critical chain concepts. Resource allocation – Introduction, The nature of resources, Identifying resource requirements, scheduling resources, creating critical paths, Counting the cost, Being specific, Publishing the resource schedule, Cost schedules, The scheduling sequence.

Unit IV:

Monitoring and Control – Introduction, Creating the Framework, Collecting the data, Visualizing progress, Cost Monitoring, Earned value analysis, Prioritizing monitoring, Getting the project back to target, Change control, Managing contracts – Introduction, The ISO 12207 approach to the acquisition and supply of software, The supply process, Types of Contract, Stages in Contract Placement, Typical terms of Contract, Contract Management, Acceptance.

Unit V:

Managing people and organizing teams – Introduction, Understanding behavior, Organizational behavior : A background, Selecting the right person for the job, Instruction in the best methods, Motivation, The Oldham – Hackman job characteristics model, working in groups, Becoming a team, Decision Making, Leadership, Organizational structures, Dispersed and virtual teams, The influence of culture, stress, Health and safety, software quality- Introduction, The place of software quality in Project planning, The importance of software quality, Defining software quality, ISO 9126, Practical software quality measures, Product versus process quality Management, External standards, Techniques to help enhance software quality, Quality plans.

Books:

Bob Hughes & Mike Cotterell – Software Project Management, Fourth Edition, Tata Mc Graw Hill Publishing Company Ltd., 2006.

M.C.A - ELECTIVE III & IV

MOBILE COMPUTING

Unit I:

Introduction – Transmission Fundamentals – Analog and Digital Data Transmission – Transmission Media – Communication Networks – LANS, MANS, and WANS – WIRELESS communication technology – Antennas and Propagation – Antennas - Propagation Modes – Line-of-Sight Transmission – Fading in the Mobile Environment.

Unit II:

Satellite Communications – Satellite Parameters and Configurations – Capacity Allocation- Frequency Division – Capacity Allocation – Time Division- Cellular Wireless Networks – Principles of cellular Networks – First Generation Analog – Second Generation IDMA – Second Generation CDMA – Third Generation Systems.

Unit III:

Wireless LAN technology: Wireless LAN application, Requirements and technology. Infrared LAN, Spread spectrum LAN, Basic methods of Spread spectrum, FHSS & DSSS, basic method of CDMA. Narrow band Microwave LAN. Cordless Systems and Wireless Local Loop – Cordless Systems – Wireless Local Loop – IEEE 8092.16 Fixed Broadband Wireless Access Standard.

Unit IV:

Mobile IP and Wireless Access Protocol – Mobile IP, basic operation, discovery, registration and tunneling – Wireless Application Protocol: architecture overview, Wireless markup language (WML) – WML script, WAE, Wireless Transaction protocol, Wireless Datagram Protocol. Internet Control Message Protocol.

Unit V:

WIRELESS LANS – Wireless LAN Technology – Overview – Infrared LANs – Spread Spectrum LANs – Narrowband Microwave LANs – IEEE 802. 11 Wireless LAN Standard – IEEE 802 Protocol Architecture – IEEE 802.11 Architecture and Services – IEEE 802.11 Medium Access Control – IEEE 802.11 Physical Layer, Introduction to Bluetooth.

Text & Ref. Books:

1. Wireless Communication and Networks, William Stallings – Pearson Education Asia – 2004.
2. Mobile Communications, Jochen Schiller, Pearson Education Asia – 2005.
3. Mobile Computing – Asoke K. Dalukder & Roopa R. Yavagal, Tata Mc-Graw Hill Edition – 2007.
4. Wireless Networks – Jim Aspinwall, McGraw Hill Edition – 2003.
5. Fundamentals of Mobile & Pervasive Computing, Tata Mc-Graw Hill Edition – 2005.

M.C.A. ELECTIVE III & IV

GENETIC ALGORITHMS

Unit I:

Introduction – Introduction to Genetic Algorithm Technology, The simple Genetic Algorithm, The steady state algorithm, Genetic operators, Genetic algorithm example, partitioning – Problem Description, Circuit Partitioning by genetic algorithm, Hybrid genetic algorithm for Ratio –cut partitioning.

Unit II:

Standard cell and Micro cell Placement – Standard Cell Placement, Macrocell Placement.

Unit III:

Macro cell Routing – The steiner problem in a graph, Macro cell Global Routing.

Unit IV:

Automatic Test Generation – Problem Description – Test generation in a genetic algorithm framework, Test generation for test application time reduction, terministic /Genetic test generator Hybrids, Use of finite state machine sequences, anemic test sequence compaction.

Unit V:

Back power Estimation – Problem Description, Application of Genetic algorithms to peak power estimation, Estimation of Peak – Cycle and n-cycle powers, peak sustainable power estimation, Parallel Genetic algorithms for Automatic test generation.

Books:

Pinaki Mazumder & Elizabeth M. Rudnick – Algorithms for VLSI design out and Test Automation, Pearson Education – 2003.

ELECTIVE III & IV

BIO – INFORMATICS - MCA

Unit I:

The central dogma – The Killer application, parallel universes, Watson’s definition, top down versus Bottom-up, information flow, convergence database – definition, data management, data life cycle, database technology, interfaces implementation.

Unit II

Networks – Geographical scope, communication models, transmission – technology, protocols, bandwidth, topology, hardware, security, ownership, implementation, management, search engines – the search process, search engine terminology, searching and information theory, computational methods, search engine and knowledge management.

Unit III

Data visualization – sequence visualization, structure visualization, user interface, animation versus simulation, general purpose terminologies.

Statistics – statistical concepts, micro array, imperfect data, basics, quantifying randomness, data analysis tool selection, statistics of alignment, clustering and classification.

Unit IV

Determining – methods, technology overview, infrastructure, pattern recognition and discovery, machine learning, text mining, tools, pattern matching – fundamentals, dot matrix analysis, substitution matrices, dynamic programming, word methods, Bayesian methods, multiple sequence alignment, tools.

Unit V

Drug Discovery, Fundamentals, protein structure, systems biology, tools collaboration and communication.

Text Book:

Bio- Informatics Computing “Bryan Bergeron” Prentice hall of India - 2005.

M.C.A. ELECTIVE III & IV

E- COMMERCE

Unit I:

Story of E-Commerce – Advantages of E-Commerce – Disadvantages of E-Commerce
Transition to E-Commerce in India –Some pioneering Indian case studies. Business models
for E-Commerce: E-Business model based on Relationship of Transaction parties business
model based on the Relationship of Transaction types.

Unit II:

Marketing: Traditional Marketing – Identifying Web presence Goals – The Browsing
behavior model – Online Marketing – E-Advertising –Internet Marketing Trends – target
Markets – Marketing Strategies.

Unit III:

Payment Systems: Digital Payment Requirements – Digital Token – based E-Payment
systems. Classification of New Payment systems – Properties of Electronic Cash – cheque
payment systems on the Internet – Risk and E-payment systems – Designing E- payment
systems – Digital signature.

Unit IV:

Customer Relationship Management: Customer Relationship Management. E-Supply in
Management: E-Supply chain (Benefits, E-Supply chain components, E-Supply in
Architecture, Major Trends in E-SCM).

Unit V:

Mobile Commerce: Growth of Mobile Commerce- Technologies for Mobile Commerce
wireless Technologies – Mobile Commerce.
Intelligent Web Design: Requirements of Intelligent Web sites – Setting Web sites Goals
Objectives – Anand's online and offline Business models.

Text & Reference Books:

1. E-Commerce – A Managerial Perspective – P.T. Joseph, Prentice Hall of India (P) Ltd., 2002.
2. E-Commerce – David Whitley, Tata McGraw Hill Edition, 2005.
3. Frontiers of Electronic Commerce – Kalakota & Whinston, Pearson Education, 2004.
4. Electronic Commerce – Gray P. Schneider, Thomson Course Technology – 2004.

M.C.A. ELECTIVE III & IV

OBJECT ORIENTED ANALYSIS AND DESIGN

Unit I:

Information Systems, Problems in Information Systems Development. Analyzing the problems. Object Orientation – Introduction, Basic Concepts, The Origins of Object Orientation. Object – Oriented languages today.

Unit II:

Modeling Concepts – Introduction, Models and Diagrams, Drawing Activity Diagrams, A Development process. Requirements capture – Introduction, User requirements, Fact finding techniques, User involvement, Documenting requirements, Use cases, Requirement capture and modeling, Requirement Analysis – Introduction, What must a requirements model do?, Use case realization, The class diagram, Drawing a class diagram, Class, Responsibility collaboration cards, Assembling the Analysis class diagram.

Unit III:

Refining the requirements model – Introduction, Component based development, Adding further structure, Software development patterns. Object interaction and collaboration, Interaction sequence diagrams, Collaboration diagrams, Model consistency. Specifying Operations – Introduction, The role of Operation specifications, Contracts, Describing Operation Logic. Object constrain language, Creating an operation specification, Specifying Control – Introduction, States and Events, Basic Notation, Further Notation, Preparing a state chart. Consistency checking, Quality guidelines.

Unit IV:

Moving into design – Introduction, Difference between design and analysis, Logical and Physical design, System design and detailed design, Qualities and objectives of analysis and design, Measurable objectives in design, Planning for design, System design, Object design, Data Management design.

Unit : V

Implementation – Introduction, Software Implementation, Component Diagrams, Development diagrams, Software testing, Data Conversion, User Documentation and Training, Implementation Strategies, Review and Maintenance, Reusable components, Managing object oriented projects – Introduction, Resource allocation and planning, Managing Iteration, Dynamic systems, Development method, Extreme Programming, Software Metrics. Process Patterns, Legacy Systems, Systems Development Methodologies.

Books:

Simon Bennett, Steve Mcroble and Ray Farmer – Object Oriented Systems Analysis and Design using UML – Second Edition, Tata McGraw Hill Publishing Company Ltd., 2006.