DETAILED SYLLABUS
MASTER OF COMPUTER APPLICATIONS
(MCA)
(EFFECTIVE FROM JULY 2011)

Department of Computer Applications

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SCHEME FOR
MASTER OF COMPUTER APPLICATIONS
(MCA)
(Effective From July 2011 Session)

SEMESTER -I

Subject Code	Subject Name	Scheme			Theory Paper	Internal Evaluation	Practical Exams	Total Marks
		L	T	P				
1MCA1	Fundamentals of Computer and Information Technology	4			80	20	25	125
1MCA2	Digital Electronics Design	4	1	3	80	20		100
1MCA3	Programming with C	4		3	80	20	25	125
1MCA4	Principles of Management	4	1		80	20		100
1MCA5	Discrete Mathematics	4			80	20		100
							Semester Total	550

(**L-Lecture, T-Tutorial, P-Practical)*

SEMESTER -II

Subject Code	Subject Name	Scheme			Theory Paper	Internal Evaluation	Practical Exams	Total Marks
		L	T	P				
2MCA1	Computer Architecture	4			80	20		100
2MCA2	OOPS with C++	4	1	3	80	20	25	125
2MCA3	Data Structure & Algorithms using C	4		3	80	20	25	125
2MCA4	Database Management System	4	1		80	20		100
2MCA5	Communicative English	4			80	20		100
							Semester Total	550

SEMESTER -III

Subject Code	Subject Name	Scheme			Theory Paper	Internal Evaluation	Practical Exams	Total Marks
		L	T	P				
3MCA1	Microprocessor and Assembly Language Programming	4			80	20		100
3MCA2	RDBMS with Oracle	4	1	3	80	20	25	125
3MCA3	Programming with VB.Net	4		3	80	20	25	125
3MCA4	Computer Networks	4	1		80	20		100
3MCA5	Operating System	4			80	20		100
							Semester Total	550

SEMESTER –IV

Subject Code	Subject Name	Scheme			Theory Paper	Internal Evaluation	Practical Exams	Total Marks
		L	T	P				
4MCA1	Programming with Java	4			80	20	25	125
4MCA2	Server Administration (Case Study of Linux and Windows)	4	1	3	80	20	25	125
4MCA3	Software Engineering	4		3	80	20		100
4MCA4	Business& Technical Communication	4	1		80	20		100
4MCA5(A) 4MCA5(B) 4MCA5(C)	Elective I Enterprise Resource Planning Data Warehousing and Mining Theory of Computation	4			80	20		100
							Semester Total	550

SEMESTER -V

Subject Code	Subject Name	Scheme			Theory Paper	Internal Evaluation	Practical Exams	Total Marks
		L	T	P				
5MCA1	Computer Graphics	4			80	20		100
5MCA2	Advanced .Net Programming	4	1	3	80	20	25	125
5MCA3	Advanced Java	4		3	80	20	25	125
5MCA4(A) 5MCA4(B) 5MCA4(C)	Elective II Soft Computing Information Network Security Advanced Database	4	1		80	20		100
5MCA5(A) 5MCA5(B) 5MCA5(C) 5MCA5(D)	Elective-III Principles of Compiler Designing Software Project Management & Testing Multimedia and Virtual Reality PHP Programming	4			80	20		100
							Semester Total	550

SEMESTER-VI

		Internal Evaluation	Report Evaluation	Presentation & Viva
6MCA1	MAJOR PROJECT	200	150	200
				Semester Total marks =550

General Instructions:

1. For passing the subject examination minimum 40% marks must be separately scored in Theory Paper, Practical Exams and Internal Evaluation in the subject.
2. For passing the semester, minimum aggregate marks must be 45% in the semester.

Course: MCA **Semester: I**
Sub Code: 1MCA1 **Subject Name: Fundamentals of Computer and Information Technology**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT–I Computer System Concept, Computer System Characteristics, Capabilities And Limitations, Generations of Computers, Personal Computer (PC) - IBM PC, Types of PC- Desktop, Laptop, Notebook, Palmtop, Workstations etc, Their Characteristics, Basic Components of A Computer System - Control Unit, ALU, Input, Output, Memory – RAM, ROM, EPROM, PROM and other types of Memory.	8					8	
UNIT–II Input devices-Keyboard, Mouse, Trackball, Joystick, Digitizing Tablet, Scanners, Digital Camera, MICR, OCR, OMR, Light Pen, Touch Screen ,Monitors, Types of Monitor, Resolution, Refresh Rate, Dot Pitch, Video Standard – VGA, SVGA, XGA etc. Printers - Daisy Wheel, Dot Matrix, Inkjet, Laser, Plotter. Storage Devices –Fundamentals, Primary Vs Secondary, Various Storage Devices - Magnetic Tape, Magnetic Disks, Floppy Disks, Optical Disks, Pen Drive.	8					8	
UNIT–III Need, Types of Software - System Software, Application Software, System Software - Operating System, Utility Program, Programming Languages - Machine, Assembly, High Level, 4GLs,, Assemblers, Compilers and Interpreter, Application Software – Word Processing, Spreadsheet, Presentation Graphics, Data Base Management Software.	8	6				14	
UNIT–IV Various Applications of Computer, Programming Techniques Various Stages of Program Development . Algorithms, Flow Charts - Symbols, Rules for Making Flow Chart, Types of Flow-Chart, Advantage & Disadvantage, Pseudo Codes, Programming , Various Looping Statements, Various Branching Statements, Decision Tree, Decision Table, Dry Running of Program.	8	6				14	
UNIT–V **Ms-Word :** Features , Toolbar and Buttons, Text Editing, Bullets And Numbering , Auto Formatting , Spell Checking, Thesaurus, Find And Replace, Mail –Merge , Tab & Indents , Headers, **Ms-Excel**: Workbook And Worksheets, Using Different Features, Using Wizards , Using Graphs, Cell Formatting, Inserting Formulas. Introduction to Power Point.	8	6		2		16	
TEXT & REFERENCE BOOKS : • *COMPUTERS TODAY BY S.K.BASANDRA, GALGOTIA PUBLICATIONS.* • *FUNDAMENTALS OF INFORMATION TECHNOLOGY BY ALEXIS LEON & MATHEWS LEON, VIKAS PUBLISHING HOUSE, NEW DELHI.* • *MS-OFFICE COMPLETE REFERENCE BPB PUBLICATION*							

Course: MCA **Semester: I**
Sub Code: 1MCA2 **Subject Name: Digital Electronics Design**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT-I Data representation Data Types and Number Systems, Binary Number System, Octal & Hexa-Decimal Number System, Fixed Point Representation, 1's & 2's Complement, Binary Fixed- Point Representation, Arithmetic Operation on Binary Numbers, Overflow & Underflow, Floating Point Representation, Codes, ASCII, EBCDIC Codes, Gray Code, Excess-3 & BCD, Error Detection & Correcting Codes Binary Storage and Registers.	8					8	
UNIT–II Boolean algebra and digital logic circuits -Logic Gates, AND, OR, NOT Gates and their Truth Tables, NOR, NAND & XOR Gates, Boolean Algebra, Basic Definition and Properties, Basic Boolean Law's, Demorgan's Theorem, Minimization Techniques, K Map – Two, Three and More variables maps, Sum of Product & Product of Sums, Don't care conditions,	8					8	
UNIT–III Combination Circuits - Half adder & Full adder, Full subtractor, Full subtractor and decimal adder, Code Conversion, Multilevel NAND and NOR Circuits, Decimal adder, decoders, Multiplexers and Demultiplexers, ROM, PLA	8					8	
UNIT–IV Sequential logic- Flip-Flops - RS, D, JK & T Flip-Flop, Triggering in flip flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment, flip flop excitation tables, Design procedure and design of counters. Design with equations.	8					8	
UNIT–V Registers, Counters and the memory unit, Shift registers, Ripple counters and Synchronous counters, Inter-register Transfer, Arithmetic Logic and Shift Micro Operation, Conditional Control Statement, Instruction Codes, Processor organization, design of a simple computer.	8					8	
TEXT & REFERENCE BOOKS : • *DIGITAL LOGIC AND COMPUTER DESIGN BY MORRIS MANO* • *COMPUTER SYSTEM ARCHITECTURE BY MORRIS MANO*							

Course:- **MCA** **Semeste**r: I

Sub Code: 1MCA3 **Subject Name: Programming with C**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT–I Overview of C, Features of C, IDE of C, Structure of C Program, Compilation & Execution of C Program., Identifiers, Variables, Expression, Keywords, Data Types, Constants, Scope and Life of Variables - Local and Global Variable, Operators: Arithmetic, Logical, Relational, Conditional and Bitwise Operators, Precedence and Associatively of Operators, Types Conversion in Expression, Basic Input/Output And Library Functions Single Character Input/Output i.e. getch(), getchar(), getche(), putchar(), Formatted Input/Output i.e. printf() and scanf(), Library Functions – Concepts, Mathematical and Character Functions, Control Structures - if Statement, if…….else Statement, Nesting of if ……..else statement, else if ladder, ? : Operator, switch Statement, Compound Statement Loop Controls – for, while, do-while Loops, break, continue, exit, goto Statement.	8	6		2		16	
UNIT–II The Need of a Function, User Defined and Library Function, Prototype of a Function, Calling of a Function, Function Argument, Passing Arguments to Function, Return Values, Nesting of Function, main(),Command Line Argument, Recursion.	8	6		2		16	
UNIT–III Arrays - Single and Multidimensional Arrays, Array Declaration and Initialization of Arrays, Array as Function Arguments, String : Declaration, Initialization, String Functions, Structure - Defining Structure, Declaration of Structure Variable, Accessing Structure Members, Nested Structures, Array of Structures, Structure Assignment, Structure as Function Argument, Function That Return Structure, Union.	8	6		2		16	
UNIT-IV Pointers- The & and * Operators, Pointers Expressions, Pointers v/s Arrays, Pointer to Functions, Static and Dynamic Memory Allocation in C, DMA Functions: malloc(), calloc(), sizeof(), free(), relloc().	8	6		2		16	
UNIT–V File Management - Defining, Opening a File & Closing a File, Text File, Binary File, Functions for File Handling: fopen, fclose, getc, fgetc, putc, fputc, getw, putw, gets, puts, fgets, fputs, fprint, fscanf, fread, fwrite, Random Access to Files : fseek, ftell, rewind, File Name as Command Line Argument.	8	6		2		16	
TEXT & REFERENCE BOOKS : • *Programming in C By E. Balaguruswami, Tmh Publications* • *Programming with C By Gottfried, Schaums Outlie Series, Tmh Publications* • *Thinking in C By Mahapatra, Phi Publications* • *Graphics Programming in C By Stevens, Bpb Publication* • *Programming in C By R Subburaj, Vikas Publishing*							

Course: MCA **Semester: I**
Sub Code: 1MCA4 **Subject Name: Principles of Management**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT–I Management practices- Meaning and Functions, Development of Management Thought, F. W. Taylor And Herry Fayol's Theories of Management, Qualities of an Efficient Management, Management Principles Of Modern Times (Empowerment, Kaizen, Quality Circles, Total Quality Management	8					8	
UNIT–II Planning -Plan, policies, strategies and programs, steps in planning & decision making, forecasting , qualities of an effective planner, relevant case study	8					8	
UNIT–III Organizing-Organizational Design, Organizational Structure, Centralization & Decentralization, Delegation, Gantt chart and PERT/CPM, Relevant Case Study	8					8	
UNIT–IV Directing-Motivation and team building, theories of motivation, factors affecting motivation. Leadership, leadership styles, theories of leadership, qualities of a effective leader, effective communication and presentation skills, relevant case studies.	8					8	
UNIT-V Controlling Meaning and basic principles, types of controls, budget and budgetary control, inventory control and quality control, relevant case studies.	8					8	
TEXT & REFERENCE BOOKS : • *ESSENTIALS OF MANAGEMENT BY H. KOONZ & H. WEIHRICH TMH PUBLICATION,* • *PRINCIPLES OF MANAGEMENT BY O.P. KHANNA .*							

Course: MCA **Semester: I**
Sub Code: 1MCA5 **Subject Name: Discrete Mathematics**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT- I Sets & preposition - Introduction, combinations of sets, finite and infinite sets, unacceptable indefinite sets, principles of inclusion and exclusion, propositions. Relations and functions– introduction, a relation model for database . Properties of binary relations. Equivalence relations and lattices, partial ordering relations and lattices . Chain and ant chains, a job scheduling problems and the pigeonhole principles.	9					9	
UNIT- II Recurrence relations and recursive algorithm-Introduction, Recurrence, Relations, Linear Recurrence with Coefficient Solutions, particular solutions, Total Solutions	9					9	
UNIT-III Groups and ring-Groups and Subgroups, Generators and Evaluations of Powers, Cosets and Lagrange Theorem, Permutation, Groups and Codes, Isomorphism and Automorphisms, Homomorphism and Normal Groups, Rings, Integral Domains and Fields, Polynomial Ring and Cyclic Codes.	9					9	
UNIT- IV Boolean algebra's-Lattices and Algebraic System, Principles of Duality, Basic Properties of Algebra's of System, Defined by Lattices, Distributive and Complemented Lattices, Boolean Lattices and Boolean Algebra's . Uniqueness Finite Boolean Algebra's . Boolean Functions and Boolean Expressions, Prepositional Calculus.	9					9	
UNIT-V Finite state machines-Introduction, Finite State Machines, Finite State Machine as Model of Physical System, Equivalent Machines, Finite State Machine as Language Recognizers.	9					9	
TEXT & REFERENCE BOOKS : • ELEMENTS OF DISCRETE MATHEMATICS BY C.L.LIU–MCGRAW–HILLS PUB. • APPLIED DISCRETE STRUCTURE FOR COMPUTER SCIENCE BY ALAN DOERR AND KENNETH LEVASSUR-GALGOTIA PUBLICATION							

Course: MCA **Semester: II**
Sub Code: 2MCA1 **Subject Name: Computer Architecture**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT–I Introduction to organization and architecture: Computer Components, Computer Function, Interconnection Structures, Bus Interconnection, PCI. Input/Output - External Devices, I/O Modules, Programmed I/O, Interrupt-Driven I/O, Direct Memory Access, I/O Channels and Processors, The External Interface. Integer Representation, Integer Arithmetic, Floating Point Representation, Floating-Point Arithmetic.	8					8	
UNIT-II Computer memory organization - Computer Memory System Overview, Semiconductor Main Memory, Advanced DRAM Organization. Cache Memory, Hit ratio, Mapping techniques, Writing into cache, Magnetic Disk, RAID, Optical Memory, Magnetic Tape. Auxiliary Memory, memory Hierarchy, Associative memory, Virtual memory, Address space & memory space, Address mapping, page table, Page replacement, segmentation.	8					8	
UNIT-III Computer Instructions - The Arithmetic and Logic Unit (ALU), Instruction sets - Machine Instruction Characteristics, Types of Operands, Types of Operations, Assembly Language. Addressing Modes and Formats, Addressing, Instruction Formats	8					8	
UNIT–IV CPU structure and function: Processor Organization, Register Organization, The Instruction Cycle, Instruction Pipelining, The Pentium Processor.	8					8	
UNIT-V Control Unit Operation - Micro - operations, Control of the CPU, Hardwired Implementation. Basic concepts of Micro programmed Control.	8					8	
TEXT & REFERENCE BOOKS : • *COMPUTER ORGANIZATION AND ARCHITECTURE BY WILLIAM STALLINGS TMH PUBLICATION* • *COMPUTER SYSTEM ARCHITECTURE: BY M. MORRIS MANO* • *DIGITAL LOGIC AND COMPUTER DESIGN BY M. MORRIS MANO*							

Course: MCA **Semester: II**
Sub Code: 2MCA2 **Subject Name: Object Oriented Programming with C++**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT–I Overview of C++: Object oriented programming, Concepts, Advantages, Usage. C++ Environment: Program development environment, the language and the C++ language standards. Introduction to various C++ compilers, C++ standard libraries, Prototype of main() function, Data types. C++ as a superset of C, New style comments, main function in C++, meaning of empty argument list, function prototyping, default arguments and argument matching. User defined data types: enumerated types, use of tag names, anonymous unions, scope of tag names Classes & Objects : Classes, Structure & Classes, Union & Classes, Inline Function, Scope Resolution operator, Static Class Members: Static Data Member, Static Member Function, Passing Objects to Function, Returning Objects, Object Assignment. Friend Function, Friend Classes.	8	4		2		14	
UNIT–II Array, Pointers References & The Dynamic Allocation Operators: Array of Objects, Pointers to Object, Type Checking C++ Pointers, The This Pointer, Pointer to Derived Types, Pointer to Class Members, References: Reference Parameter, call by reference and return by reference Passing References to Objects, Returning Reference, Independent Reference, C++'S Dynamic Allocation Operators, Initializing Allocated Memory, Allocating Array, Allocating Objects. Constructor & Destructor : Introduction, Constructor, access specifiers for constructors, and instantiation, Parameterized Constructor, Multiple Constructor in A Class, Constructor with Default Argument, Copy Constructor, Destructor.	8	6		2		16	
UNIT–III Overloading as polymorphism: Function & Operator Overloading : Function Overloading, Overloading Constructor Function Finding the Address of an Overloaded Function, Operator Overloading: Creating A Member Operator Function, Creating Prefix & Postfix Forms of the Increment & Decrement Operation, Overloading The Shorthand Operation (I.E. +=,-= Etc), Operator Overloading Restrictions, Operator Overloading Using Friend Function, Overloading New & Delete, Overloading Some Special Operators, Overloading [ ], ( ), -, Comma Operator, Overloading << And . Namespaces: global namespace and namespace std, nested namespaces.	8	6		2		16	
UNIT–IV Inheritance : Base Class Access Control, C, Protected Base Class Inheritance, Inheriting Multiple Base Classes, Constructors, Destructors & Inheritance, When Constructor & Destructor Function are Executed, Passing Parameters to Base Class Constructors, Granting Access, Virtual Base Classes. Virtual Functions & Polymorphism : Virtual Function, Pure Virtual Functions, Early Vs. Late Binding.	8	6		2		16	
UNIT–V Exception Handling, Exception handling in C++, try, throw, catch sequence, multiple catch blocks, uncaught exceptions, catch-all exception handler, The C++ I/O System Basics : C++ Streams, The Basic Stream Classes C++ Predefined Streams, Formatted I/O: Formatting Using The Ios Members, Setting The Formal Flags, Clearing Format Flags, An Overloaded Form Of Setf ( ), Using Width() Precision() and Fill(), Using Manipulators to Format I/O, Creating Your own Manipulators.	8	6		2		16	
TEXT & REFERENCE BOOKS : • *HERBERT SCHILDT, "C++ THE COMPLETE REFERENCE " - TMH PUBLICATION* • *E. BALGURUSWAMY, "C++ ", TMH PUBLICATION ISBN 0-07-462038-X* • *M KUMAR "PROGRAMMING IN C++", TMH PUBLICATIONS*							

Course: MCA **Semester: II**
Sub Code : 2MCA3 **Subject Name: Data Structure and Algorithms Using C**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT-I Introduction to Data Structures, Abstract Data Types Stacks - Introduction to Stack & Primitive Operation on Stack, Stack's Applications - Infix, Postfix & Prefix Expressions, Recursion, Multiple Stacks Queues -Introduction to Queues, Primitive Operations on Queues, Circular Queue, Dequeue, Priority Queue.	8	4		2		14	
UNIT-II Linked List - Introduction to Linked List, Memory Representation of Linked List, Operations on Linked List, Linked List Representation of Stack and Queue, Header Nodes. Types of Linked List - Doubly Linked List, Circular Linked List, Application of Linked List.	8	6		2		16	
UNIT-III Trees - Basic Terminology of Trees, Binary Trees, Tree Representations as Array & Linked List. Binary Tree Representation. Traversal of Binary trees - Inorder, Preorder & Postorder, Application of Binary Tree, Threaded Binary Tree, Balanced tree, AVL tree, B-tree	8	6		2		16	
UNIT-IV Analysis of Algorithm, Complexity with Big'O' Notation. Searching - Sequential Search, Binary Search and their Comparison. Sorting - External & Internal Sorting, Insertion Sort, Selection Sort, Quick Sort, Bubble Sort, Heap Sort, Comparison of Sorting Methods. Hashing, Collision Resolution Techniques.	8	6		2		16	
UNIT–V Graphs - Introduction to Graphs, Basic Terminology, Directed, Undirected & Weighted Graph, Representation of Graphs, Warshall's Algorithem for Path Matrix, Graph Traversals - Depth First & Breadth First Search. Spanning Trees, Minimum Spanning Tree, The Basic Greedy Strategy for Computing, Algorithm of Kruskal and Prim. Applications of Graphs : Shortest Path Problem using Dijkstra Method.	8	2		0		10	
TEXT & REFERENCE BOOKS : • *FUNDAMENTALS OF DATA STRUCTURE, BY S. SAWHNEV & E. HOROWITZ* • *DATA STRUCTURE: BY T REMBLEY & SORRENSON* • *DATA STRUCTURE: BY LIPSCHUISTS (SCHAUM 'S OUTLINE SERIES MCGRAW HILL PUBLICATION)* • *FUNDAMENTALS OF COMPUTER ALGORITHM: BY ELLIS HOROWITZ AND SARTAJ SAWHNEY*							

Course: MCA **Semester: II**

Sub Code: 2MCA4 **Subject Name: Database Management System**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT- I Introduction to database systems Purpose of Database system, View of data, characteristics of Database approach, Architecture for a Database System, Advantages and Disadvantages of DBMS, Database Users and Administrator, Database design and ER model Data Model Classification	9					9	
UNIT-II Structure of relational database, database schema, key, relational operations, formal relational query languages	9					9	
UNIT-III Features of good Database design, Universal Relation, Anomalies in a Database, Atomic Domain and 1NF, Functional Dependency Theory, Decomposition Using Functional Dependency, Algotithm For Decomposition, ,Decomposition Using Multivalue Dependency More Normal Forms, Database Design Process	9					9	
UNIT-IV Basic Concepts of Indexing and Hashing , Query Processing , Measures of Query cost , Query processing for select, Sort Join operations. Basics of Query optimization, Transformation of Relational expression, Estimating Statistics of Expression, Choice of evaluation plan	9					9	
UNIT-V Transaction Concepts, Features of database transaction, Concurrency control in database Lock base,Time stamp base, validation base Protocols, Database Recovery system .	9					9	
TEXT & REFERENCE BOOKS : • *SILVERSCHATZ KORTH AND SUDARSHAN-DATABASE SYSTEM CONCEPTS, 6TH ED. TATA MC-GRAW HILL.* • *RAGHU RAMA KRISHNAN-DATABASE MANAGEMENT SYSTEMS, 2ND ED. TATA MC-GRAW HILL* • *RAJESH NARANG – DATABASE MANAGEMENT SYSTEM,2ND ED.PHI* • *R. ELMASRI ET. AL "FUNDAMENTALS OF DATABASE SYSTEMS". 3RD EDITION – ADDISON WESLEY, (INDIAN REPRINT), NEW DELHI.* • *C.J.DATE, DATA BASE SYSTEMS, VOL I & II*							

Course: MCA **Semester: II**
Sub Code: 2MCA5 **Subject Name: Communicative English**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT-I Sentences : Simple, Compound, Complex, Assertive, Interrogative,Imperative, Exclamatory. Clauses : Co-ordinate, Sub-ordinate, Relative, Adverb, Comparative (Adverb + Adjective) Articles : usage of 'A', 'An', 'THE' Preposition : Position of Prepositions, Place Relations Time Relations and other relations.	8					8	
UNIT-II Functional Grammar Tenses : Simple Present, Progressive Perfect, Present Perfect Progressive along-with Past Tense and indications of futurity. Reported speech Modals : Will, Shall Should, Would and others Voice : Active and Passive	8					8	
UNIT-III Reading & Writing, Comprehension of unseen passage and grasp of general language skills and issues with reference words & usage within passages.	8					8	
UNIT-IV Paragraph writing, expansion of given ideas Listening Note taking/Note making	8					8	
UNIT-V Vocabulary : making sentences with idioms & phrases Words Commonly Misspelled/confused Words formation by prefix suffix	8					8	
TEXT & REFERENCE BOOKS : • *A PRACTICAL ENGLISH GRAMMAR BY THOMSON AND MARTINET* • *ENGLISH GRAMMAR BY W.S.ALLEN* • *INTERMEDIATE ENGLISH GRAMMAR BY RAYMOND WILLIAMS* • *VOCABULARY BY MICHAEL MC CARTHU AND FELICITY O'DELL* • *ENGLISH GRAMMER BY JAYANTHI DAKSHINA MURTH*							

Course: MCA **Semester: III**

Sub Code: 3MCA1 **Subject Name: Microprocessor and Assembly Language Programming**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT-I Microprocessors, Microcomputers, and Assembly Language, The 8085 Programming Model, Instruction, Data Format, and Storage, 8085 Microprocessor Architecture and its operation, Microprocessor initiated operation, Bus organization of 8085, Registers, Memory unit of 8085, Instruction decoding & execution, 8085-Based single board Microcomputer, Pin out Diagram of 8085, Bus timings, ALU of 8085 and its flags.	8			2		10	
UNIT-II Instruction set of 8085, Classification of Instructions, Addressing Modes, Data transfer operation commands, Arithmetic operation commands, Logic operation commands, Branch operation commands, Writing and debugging simple assembly Language Program, developing assembly Language Program, Writing programs using an assembler, Branching looping and Indexing. Programming Techniques, Looping, Counting and Indexing, Additional Data Transfer and 16-Bit Arithmetic Instructions, Arithmetic Operations Related to Memory, Logic Operations: Rotate, Logic Operations: Compare, Dynamic Debugging	8			2		10	
UNIT-III Counters and Time Delays, Stack, Subroutine, Restart, Conditional Call, and Return Instructions, Advanced instructions - LHLD, SHLD, XCHG, PUSH, POP, XTHL, PCHL, Assembly Programs of addition, subtraction, multiplication and division of multi byte signed and unsigned numbers, Interrupts, Microprocessor-Based Software Development Systems, Operating Systems and Programming Tools, Assemblers and Cross-Assemblers, Writing Programs Using a Cross-Assembler.	8			2		10	
UNIT – IV I/O device, Interfacing devices, I/O ports, 8255 programmable peripherals interfacing, Basic Interfacing concepts, Interfacing output display, Interfacing input key board, Memory mapped I/O, I/O mapped I/O, Data Transfer (synchronize and asynchronies), 8085 Interrupts (Hardware and Software), 8085 Vectored Interrupts,	8			2		10	
UNIT-V Basic Concepts in Programmable Devices, 8253 programmable interfacing timer, DMA (Direct memory Access), DMA Controller, Extending 8-Bit Microprocessor Concepts to Higher Level Processors and Microcontrollers, 16-Bit Microprocessors, BASICS OF 8086, High-End-High-Performance Processors, Single-Chip Microcontrollers	8			2		10	
TEXT & REFERENCE BOOKS : • *MICROPROCESSOR ARCHITECTURE, PROGRAMMING & APPLICATIONS WITH 8085. RAMESH GAONKAR, PENRAM PUBLISHING LTD.* • *MICROPROCESSORS AND INTERFACING BY D.V. HALL TMH, 2ND EDITION.* • *IBM PC ASSEMBLY LANGUAGE PROGRAMMING BY PETER ABLE, PHI* • *FUNDAMENTALS OF MICROPROCESSORS AND MICROCOMPUTERS BY B. RAM, DHANPAT RAI PUBLICATIONS. 5TH EDN.*							

Course: MCA **Semester: III**
Sub Code: 3MCA2 **Subject Name: RDBMS with Oracle**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT-I Oracle Product Details, RDBMS Components, Client/Server Computing and Oracle, Oracle Architecture, Oracle Data Types, Working With Tables. Data Constraints, Column Level & Table Level Constraints Defining Constraint on tables	8	4				12	
UNIT-II Select Command, Oracle Operators, Range Searching, Pattern Matching, ORACLE FUNCTION, Grouping Data From Tables In SQl, Manipulation Data In Sql ,Joining Multiple Tables (Equi Joins),Joining A Table To Itself (Self Joins),Sub Queries Union, Intersects & Minus Clause, Dynamic SQL, Oracle Functions.	6	6				12	
UNIT- III Creating View, Working with View, Materialized View, Creating Indexes. Creating and Managing User, Introducing PL/SQL, Using Cursor	6	6				12	
UNIT-IV Procedures & Functions Concept, Creation, Execution, Triggers Concept, Use, How To Apply Database Triggers, Type Of Triggers	6	6				12	
UNIT–V Oracle DBA. Create Database, Create Table Space. Oracle Backup & Recovery, Oracle Utilities SQL Loader, Export and Import, Feature Of Oracle Internet Database, Oracle 9i Application Server. Planning Oracle Applications.	8	8				16	
TEXT & REFERENCE BOOKS : • *ORACLE 9I ORACLE A BEGINNERS GUIDE BY MICHAEL ABBEY & MICHAEL J. COREY TMH PUBLICATIONS* • *UNLEASHED ORACLE* • *THE ORACLE COOK BOOK BY LIEBSCHUTY, BPB PUBLICATIONS* • *ORACLE DATABASE 11G BY SATISH ASNANI PHI PUBLICATION* • *SQL,PL/SQL THE PROGRAMMING LANGUAGE OF ORACLE IVAN BAYROSS BPB PUBLICATIONS.*							

Course: MCA **Semester: III**
Sub Code: 3MCA3 **Subject Name: Programming with VB.NET**

Unit C	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT–I Introduction to .NET, .NET Framework features & architecture, CLR, Common Type System, MSIL, Assemblies: types of assemblies, class libraries. Introduction to visual studio, Project basics, types of project in .Net, IDE of VB.NET- Menu bar, Toolbar, Project Explorer, Toolbox, Properties Window, form designer, form layout, immediate window. Event driven Programming - Methods and events related with mouse and keyboard.	8	6				14	
UNIT–II The VB.NET Language- Console Programming, Declaring variables, Data Types, Scope & lifetime of a variable, Arrays, types of array, control array Subroutine, Functions, Passing argument to functions, Optional Argument, Returning value from function. Control flow statements: Decisions and Conditional statement, Loop statement. Exceptions Working with Forms: Creating Forms, Building User Interface Web Forms, Loading, showing and hiding forms, working with multiple forms, controlling One form within another.	8	6				14	
UNIT – III GUI Programing with windows form: VB.Net Controls, Text box control, label control, button control, Listbox, Combo box, checked box, Picture box, Radio button, Pannel, scroll bar, Timer control , there Properties, Methods and events, adding controls at runtime. ,Dialog Boxes - Common dialog control: File, save, Print, Help. Designing menues : Creating Menu and Menu Items, access & shorcut keys. MDI forms : Properties of Parent & child form, working with parent and child menus.	8	6				14	
UNIT–IV Object oriented Programming: Classes & Namespaces, objects, data members, Properties, Methods, raising and handling Events, constructors. Inheritance, Access Specifies: Public Private, Protected, overloading, overriding, Creating Interfaces, multiple interfaces, My Base & My Class keywords. Concept of OLE, The COM technology, Advantages of COM+, COM & .NET, Create User control, register user control, access com component in .net application. Deployment of .NET application.	8	6				14	
UNIT–V Accessing Database with ADO.NET (visually): Create connection with sever explorer, Creating data connection using data Connection, Command, Adapter, Dataset and DataReader controls. Data binding with data grid and basic controls. The Data Form wizard. Accessing Database using ADO.NET Object model (through code): create Connection object, Command object, DataAdapter object, DataSet object. Add, delete, move & update records to dataset. Executing SQL query, operation on data rows and columns.	8	6				14	
TEXT & REFERENCE BOOKS : • *VB.NET PROGRAMMING BLACK BOOK BY STEVEN HOLZNER –DREAMTECH PUBLICATIONS* • *MASTERING VB.NET BY EVANGELOS PETROUTSOS- BPB PUBLICATIONS* • *INTRODUCTION TO .NET FRAMEWORK-WORX PUBLICATION* • *MSDN.MICROSOFT.COM/NET/* • *WWW.GOTDOTNET.COM*							

Course: MCA **Semester: III**
Sub Code: 3MCA4 **Subject Name: Computer Networks**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT-I Use of communication and IT , Communication Mode- Simplex, Half Duplex, Full Duplex, Communication Channels - Twisted, Coaxial, Fiber Optic, Serial and Parallel Communication, Types of Network - LAN, WAN, MAN ,Internet etc., Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies, World Wide Web Internet Services, Analog & Digital Signal.	8					8	
UNIT-II Base Band , Broad Band, Multiplexer FDM, TDM, Modulation AM, FM, PM, Transmission Media ,Modem. OSI Reference Model , Switching Technique, Message Switching, Circuit Switching, Packet Switching, Virtual Circuit, , IEEE Standards, 802.3, 802.4, 802.5.	8					8	
UNIT-III Fast Ethernet, FDDI Token Ring, Wireless LAN, Inter-Networking Devices, Bridge, Routers Gateways, Repeater, Rooting Algorithms, Distance Vector Routing, Shortest Path Routing, Broadcast Routing, Multicast Routing, TCP/IP Protocol, IPV4 Addressing, Congestion Control, Traffic Shaping.	8					8	
UNIT-IV Comparison Between OSI and TCP/IP Models, TELNET, FTP, SMTP, MINE, UDP, URL (Uniform Resource Locater) HTTP , ISDN Channel, ISDN Services, Base Band ISDN, Broadband ISDN.	8					8	
UNIT-V Network Security : Network Security Issues, Firewalls – Need and Features of Firewalls, Types of Firewall Technology- Network Level and Application Level, IP Packets Filter Screening Routers, Limitations of Firewalls.	8					8	
TEXT & REFERENCE BOOKS : • *COMPUTER NETWORKING BY ANDREWS TANANBAUM* • *UNDERSTANDING DATA COMMUNICATION OF NETWORKING BY WILLIAM A SHAY* • *COMMUNICATION AND NETWORK BY LEWIS MACHENZIE* • *DATA COMMUNICATION BY PRAKASH C GPTA* • *DATA AND COMPUTER COMMUNICATION: BY WILLIAM STALLINGS*							

Course: MCA **Semester: III**
Sub Code: 3MCA5 **Subject Name: Operating System**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT– I Definitions, Components and types of Operating system,Operating System Services, System Calls, System Programs, System Structure, System Design and Implementation, System Generations. I/O subsystem Overview, I/O hardware, Application I/O interface, Kernel I/O Subsystem.	8					8	
UNIT–II Process Concepts, Process State & Process Control Block, Process Scheduling, Scheduling Criteria, Scheduling Algorithms, Multiple-Processor Scheduling, Real-Time Scheduling, Threads Introduction	8					8	
UNIT–III The Critical Sections Problem, Semaphores, Classical Problem of Synchronization, Deadlock Characterizations, Method for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Combined Approach to Deadlock.	8					8	
UNIT–IV Storage management Logical Versus Physical Address Space, Swapping, Contiguous Allocating, Paging, Segmentation, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement, Page Replacement Algorithms, Thrashing, Demand Segmentation.	8					8	
UNIT–V Disk Scheduling, Disk Management, Swap Space Management, Disk Reliability, Stable Storage Implementation, File Concepts, Directory Structure, Protecting , File system in Linux & Windows NT	8					8	
TEXT & REFERENCE BOOKS : • *OPERATING SYSTEM CONCEPTS By SILBERSCHATZ & GALVIN, ADDISON WESLEY PUBLICATION 6th Edition.* • *OPERATING SYSTEM CONCEPTS & DESIGN By MILAN MILEN KOVIC, TMH PUBLICATION* • *. OPERATING SYSTEMS By WILLIAM STALLINGS*							

Course: MCA **Semester: IV**
Sub Code: 4MCA1 **Subject Name: Programming with Java**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT-I History and design features of JAVA, how java works, basics of JAVA, Applications and Applets, using the tools in JDK, javadoc, java, jdb etc. Applet Programming - Creating and executing Java applets, inserting applets in a web page, Java security. JAVA Language- Keywords, Constants, Variables, and Data Types. Operators and Expressions, Decision making, Branching and Looping, Labeled Loops Statement, Jump statements: Break, Continue, and Return. Arrays and Strings- Creating an Arrays, one and two Dimension Arrays, String Array, String and String Buffer Classes.	8	6				14	
UNIT-II Classes,Objects and Methods Defining a class, adding variables and Methods, creating objects constructors, Wrapper Classes. Inheritance, Basics types, using super, multi level hierarchy, abstract and final classes, object class, packages and interfaces, Access protection, Extending interfaces, packages.	8	6				14	
UNIT-III Exception Handling, Fundamentals exception types, uncaught exceptions, throws, throw, try - catch, final, built in exceptions, creating your own exceptions. Multithreading Fundamentals, Java Thread model : priorities, synchronization, messaging, thread class, Runnable interface, Interthread communication, suspending, resuming and stopping threads.	8	6				14	
UNIT–IV Input/Output -Basics, Streams, Byte and Character streams, predefined streams, reading and writing from console and files .Using standard Java Packages (lang,util,io) Networking -Basics, networking classes and interfaces, using java.net package, doing TCP/IP and Datagram programming.	8	6				14	
UNIT-V AWT Classes, Event Handling and Swing classes, AWT Programming, Working with windows, Graphics and Text, using AWT controls, Layout managers and menus, Handling image, animation, sound and video. Event Handling-Different mechanism, the Delegation Event Model, Event Classes, Event Listener interfaces, Adapter and Inner Classes.Java Swing -Japplet, Icons and Labels, Text fields, Buttons, Combo Boxes, Tabbed and Scroll Panes, Trees, Tables.	8	6				14	
TEXT & REFERENCE BOOKS : • *JAVA THE COMPLETE REFERENCE BY PATRICK NAUGHTON AND HERBERT SCHILDT. TMH PUBLICATION ISBN 0-07-463769-X* • *PROGRAMMING WITH JAVA BY E. BALAGURUSWAMY TMH PUBLICATIONS ISBN 0-07-463542-5* • *USING JAVA 1.2 BY JOSEPH WEBER. PHI – ISBN-81-203-1558-8*							

Course: MCA **Semester: IV**

Sub Code: 4MCA2 **Subject Name: Server Administration (Case Study Of Linux and Windows)**

Unit	Lectures	Practical	Worksh	Demo	Field	Total	Remark
UNIT – I Linux introduction and file system - Basic Features, Different flavors of Linux. Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell. Linux File system- Boot block, super block, Inode table, data blocks, How Linux access files, storage files, Linux standard directories. Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp & comm, View files, disk related commands, checking disk free spaces. Partitioning the Hard drive for Linux, Installing the Linux system, System startup and shut-down process.	8	6				14	
UNIT–II Essential linux commands Understanding shells, Processes in linux - process fundamentals, connecting processes with pipes, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron commands, kill, ps, who, sleep, Printing commands, touch, file related commands - wc, cut, dd, etc. Mathematical commands- bc, expr. Creating and editing files with vi & vim editor	8	6				14	
UNIT–III System administration: Common administrative tasks, configuration and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, file security & Permissions, becoming super user using su. Getting system information with uname, host name, disk partitions & sizes, users, kernel. Backup and restore files, installing and removing packages with rpm command. KDE & Gnome graphical interfaces.	8	6				14	
UNIT-IV Basic networking administration: Setting up a LAN using Linux, choosing peer to peer vs client/server model, setting up an Ethernet Lan, configuring host computers, checking Ethernet connecting, connecting to Internet, common networking administrative tasks, configuring Ethernet, initializing Ethernet Interface, ifconfig, netstat and netconfig commands, TCP/IP network, DNS services, routing using Linux Installation & Administration of mail server, ftp server and Apache web server.	8	6				14	
UNIT–V Window 2000 professional, Window 2000 server, 2000 Advance Server, Installing Windows 2000 sever, configuring DNS, Services implementing Active Directory, Directory services, Administrating Active Directory, Managing Desktop Environments with group policy, Managing file resources, Configuring Remote Access, DHCP and WINS.	8	2				10	
TEXT & REFERENCE BOOKS : • *UNIX - CONCEPTS & APPLICATIONS (THIRD ED.) - SUMITABHA DAS, T ATA MCGRAW HILL PUBLICATIONS.* • *UNIX FOR PROGRAMMERS AND USERS (THIRD ED.) - GRAHAM GLASS & KING ABLES, PEARSON EDUCATION INDIA.(LOW PRICES EDITION).*							

Course: MCA **Semester: IV**
Sub Code: 4MCA3 **Subject Name: Software Engineering**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT - I Software **:** Software Characteristics and Applications, Software Engineering - A Layered Technology, Software Process Models - Linear Sequential Model, Prototype & RAD Model, Incremental Model and Spiral Model. Project Metrics : Software Measurement–Size Oriented, Function Oriented Metrics, Extended Function Point Metrics.	8					8	
UNIT - II Software Project Planning: Objectives, Decomposition Techniques, and Empirical Estimation Models. Analysis Concept and Principles: Requirement Analysis, Analysis Principles.	8					8	
UNIT – III Design Concepts and Principles: Design Process, Design Concepts, Design Principles, Effective Modular Design, Human Computer Interface Design, Interface Design Guidelines.	8					8	
UNIT - IV S/W Quality Assurance : Quality Concepts, Reliability S/W Testing Models : S/W Testing Fundamentals, White and Black Box Testing, Basic Path Testing, Testing Strategies : Strategic Approach to S/W Testing, Unit Testing, Integration Testing, Validation Testing, System Testing,	8					8	
UNIT - V S/W Reuse : Reuse Process, Classification and Retrieving Components, Economics of S/W Reuse CASE : Introducing to CASE, Taxonomy of Case Tools,	8					8	
TEXT & REFERENCE BOOKS : • *SOFTWARE ENGINEERING BY R.S.PRESSMAN* • *AN INTEGRATED APPROACH TO SOFTWARE ENGINEERING BY PANKAJ JALOTE*							

Course: MCA **Semester: IV**
Sub Code: 4MCA4 **Subject Name: Business and Technical Communication**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT I **Elements of Communication** The importance of communication through English at the present time, The process and factors of communication : sender, receiver, channel, code, topic, message, context, feedback, 'noise', filters and barriers , information loss and overload ,audience and purpose, Comparing general communication and professional communication	9					9	
UNIT II **Sounds of English** Vowels, Diphthongs, Consonants, Consonant clusters, The International Phonetic Alphabet (IPA) ; Phonemic transcription , Problem sounds, Stress and Intonation	9					9	
UNIT III **Value Based Reading and Writing.** The importance of developing reading skills, The sub-skills of reading, The importance of writing skills, The differences between speech and writing, The qualities of effective writing : coherence, cohesion, logical structuring and organization, clarity of language, stylistic variation. The writing Process: pre-writing, drafting, re-writing	9					9	
UNIT IV **Soft Skills Practice**. Personality development, Participating in Group Discussion and Job Interviews, Time management Presentation skills,Leadership skills, Assertiveness,Lateral thinking,Team work and Interpersonal skills, Emotional Intelligence, Self confidence and Courage, Attitude.	9					9	
UNIT V **Self Presentation** Dress code, Business Card, Handshake, Telephone Etiquette, Email Etiquette, Dining Etiquette, Office Etiquette, International Business Etiquette, Approches to Professional Writing ,Writing a C.V,Resume, Applications, Reports, Business and social letters , Notices, Circulars and Memos.	9					9	
TEXT & REFERENCE BOOKS : • *AN INTRODUCTION TO PROFESSIONAL ENGLISH AND SOFT SKILLS BY B.K.DAS ET AL., CAMBRIDGE UNIVERSITY PRESS.* • *.BUSINESS COMMUNICATION TODAY BY BOVEE ET AL (PEARSON)* • *.BUSINESS COMMUNICATION BY MEENAKSHI RAMAN AND PRAKASH SINGH (OXFORD)* • *CRASH COURSE IN PERSONAL DEVELOPMENT BY BRIAN CLEGG (KOGAN PAGE)* • *ACTIVITIES FOR DEVELOPING EMOTIONAL INTELLIGENCE BY ADELE B.LYNN (HRD PRESS)* • *LATERAL THINKING BY EDWARD DE BONO (PENGUIN) 16* • *SOFT SKILLS BY DR K ALEX (S.CHAND)* • *PERSONALITY DEVELOPMENT AND SOFT SKILLS BY BARUN K.MITRA(OXFORD)*							

Course: MCA **Semester: IV**
Sub Code: 4MCA5 (A) **Subject Name: Enterprise Resource Planning**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
Unit-I ERP Overview, Benefit, Common myths and evolving realities, Business Process Reengineering, Data ware Housing, Data Mining, LAP, Supply chain Management, ERP Drivers, Decision support system.	8					8	
Unit-II ERP Domain, Present global and Indian market scenario, milestones and pitfalls, Forecast, Market players and profiles, Evaluation criterion for ERP product, ERP Life Cycle: Adoption decision, Acquisition, Implementation, Use & Maintenance, Evolution and Retirement phases	8					8	
Unit-III ERP -A Manufacturing Perspective, ERP Module, ERP Market, ERP implementation life cycle, Options of various paradigms, Identification of suitable platforms, Role of SDLC/SSAD, Object Oriented architecture. Framework for evaluating ERP acquisition, Analytical Hierarchy Processes (AHP), Applications of AHP in evaluating ERP, Selection of Weights, Role of consultants, vendors and users in ERP implementation; Implementation vendors evaluation criterion, ERP Implementation approaches and methodology, ERP implementation strategies, ERP Customization.	8					8	
Unit-IV Critical success and failure factors for implementation, Model for improving ERP effectiveness, ERP implementation, Hidden costs, ERP success inhibitors and accelerators, Management concern for ERP success, Strategic Grid: Useful guidelines for ERP Implementations	8					8	
Unit-V Technologies in ERP Systems and Extended ERP, Case Studies Development and Analysis of ERP Implementations in focusing the various issues discussed in above units through Soft System approaches or qualitative Analysis tools, Learning and Emerging Issues, ERP and E-Commerce.	8					8	
TEXT & REFERENCE BOOKS : • *LEXIS LEON, "ENTERPRISE RESOURCE PLANNING", TMH* • *.BRADY, MANU, WEGNER, "ENTERPRISE RESOURCE PLANNING", TMH*							

Course: MCA **Semester: IV**
Sub Code: 4MCA5 (B) **Subject Name: Data Warehousing and Mining**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT-I Data ware housing Definition, usage and trends, DBMS vs. data warehouse, Data marts, Metadata Data mining definition & application, DBMS vs. data mining, KDD versus data mining, data mining techniques ,Data Preprocessing: need, data cleaning, integration & Transformation	8					8	
UNIT-II Multidimensional data mode, Data cubes, Schemas for Multidimensional Database: stars, snowflakes and fact constellations. Data warehouse process & architecture, OLTP vs. OLAP, types of OLAP, ROLAP vs. MOLAP, 3 – Tier data warehouse architecture.	8					8	
UNIT-III Association Rule Mining, Single-Dimensional Boolean Association Rules Apoiri algorithm, FP growth, Multi-Level Association Rules from Transaction Databases	8					8	
UNIT-IV Classification and Prediction, Concepts of Decision Tree Induction and Bayesian Classification Cluster Analysis, Categorisation of methods, Partitioning methods, K-Means algorithm, Outlier Analysis ,Hierarchical Methods	8					8	
UNIT-V Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Databases, Multimedia Databases, Time Series and Sequence Data, Text Databases, Web Mining concepts	8					8	
TEXT & REFERENCE BOOKS : • *DATA MINING – CONCEPTS & TECHNIQUES; JIAWEI HAN & MICHELINE KAMBER – ELSEVIER* • *DATA WAREHOUSING FUNDAMENTALS; PAULRAJ PONNIAH, WILEY* • *DATA MINING TECHNIQUES; ARUN PUJAR; 2001, UNIVERSITY PRESS; HYDERBAD.* • *INTRODUCTION TO DATA MINING WITH CASE STUDIES; G.K. GUPTA, PHI*							

Course: **MCA** **Semeste**r: **IV**
Sub Code: 4MCA5(C) **Subject Name: Theory of Computation**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT-I Introduction to theory of Computation , Regular languages and sets, Regular expression, building regular expression laws for regular expression, applications of regular expression.	8					8	
UNIT-II Deterministic Finite Automaton (DFA), Non-deterministic Finite Automation (NFA). FA with epsilon-moves, Equivalence of DFA and NFA, Minimizing the number of states of a DFA.	8					8	
UNIT-III Pushdown Automaton (PDA), Deterministic PushDown Automaton (DPDA), Non-equivalence of PDA & DPDA. PDA and RE.	8					8	
UNIT-IV Context free grammars, Greibach Normal Form (GNF) and Chomsky Normal Form (CNF), Ambiguity, Parse tree representation of Derivations.	8					8	
UNIT-V Turing machine(TM): One tape, Multi-tape ,Construction of TM for simple problems. Computational complexity. Chomsky Hierarchy of language : Recursive and Recursively – enumerable languages.	8					8	
TEXT & REFERENCE BOOKS : • *INTRODUCTION TO AUTOMATION THEORY, LANGUAGES & COMPUTATION BY JOHN E HOPCROFT, RAJEEV MOTWANI, JEFFREY D. ULLMAN.* • *THEORY OF COMPUTER SCIENCE (AUTOMATA, LANGUAGES AND COMPUTATION BY MISHRA & CHANDRASEKARAN (2^{ND} EDITION) PHI ISBN-81-203-1271-6* • *ELEMENTS OF THE THEORY OF COMPUTATION BY LEWIS & PAPADIMITRIOU , PHI ISBN 81-203-1016-0* • *INTRODUCTION TO LANGUAGES AND THEORY OF COMPUTATION BY JOHN C. MARTIN (2^{ND} EDN)ISBN- 0-07-463722-3* • *THEORY OF COMPUTATION BY BERNARD M. MORET PEARSON ISBN-81-7808-550* • *FUNDAMENTALS OF THEORY OF COMPUTATION BY RAYMOND GREENLAW & H. JAMES HOOVER (HARCOUNT) ISBN : 81-7867-036-4* • *ELEMENTS OF DISERETE MATHS BY C.L.LIU TMH 2^{ND} EDN ISBN-0-07-043476-X*							

Course: MCA **Semester : V**
Sub Code: 5MCA1 **Subject Name: Computer Graphics**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT – I What is Graphics, Application of Graphics, Elements of Graphics Workstation, Graphics I/P Devices-Keyboard, Trackball, Joystick, Light Pen, Digitizing Tables, Mouse, Touch Panels, Image Scanners . Graphics Display Devices-Raster Scan System, Random Scan System, Arch Of Vector and Raster Scan Display, Refresh CRT, Gray S Hade	8					8	
UNIT–II DRAWING GEOMETRY: Point – Plotting, Coordinate System, Point Plotting, Line Drawing – Line Segments, Line Drawing Algo : DDA Algo, Bresenham's Line Algorithm.Circle Drawing Polygon Representation Ellipse, Rectangle, Filling – Filled Area Primitives, Scan Line Polygon Fill Algo, Flood Fill Algo, Boundary Fill Algorithm	8					8	
UNIT–III 2D Geometric Transformation : Translation, Rotation, Scaling, Geometric Transformation, Coordinate Transform and Composite Transformation, 2D Viewing Transformation & Clipping : World Coordinate System (WCS), Normalized Device Coordinate System , Windows Viewing View Ports Viewing, Point Clipping, Line Segment Clipping, Coahen – Sutherland, Line Clipping, Polygon Clipping.	8					8	
UNIT–IV 3D Geometric Transformation 3D Geometric Transformation : Translation, Rotation, Scaling, Coordinate Transform Geometric Transformation Composite Transformation, 3D Display Methods – Parallel Projection, Perspective Projection 3D Viewing & Clipping .	8					8	
UNIT – V Segment, Segment Table, Segment Creation, Deletion, Closing, Renaming, Curve Generation , B – Spline Curves, Bezier Curves, Hidden Surface, Z – Buffer Algorithm, Scan Line Algorithm, Painters Algorithm, Depth Comparisons.	8					8	
TEXT & REFERENCE BOOKS : • *COMPUTER GRAPHICS : A PROGRAMMING, APPROACH – STEVEN HARRINGLOM (MGH)* • *COMPUTER GRAPHICS : SCHAUM'S OUTLINE SERIES* • *COMPUTER GRAPHICS : DONALD HEAON & M. PAULIVE BAKER (PHI)*							

Course: MCA **Semester: V**
Sub Code: 5MCA2 **Subject Name: Advanced .Net Programming**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT-I HTML - Concepts of Hypertext, Versions of HTML, Elements of HTML syntax, Head & Body Sections, Building HTML documents, Inserting texts, Images, Hyperlinks, Backgrounds and Colour controls, Different HTML tags, Table layout and presentation, Use of front size & Attributes. List types and its tags, Use of Frames and Forms in web pages, ASP & HTML Forms.	8	6				14	
UNIT- II Overview of C#, C# and .NET, similarities & differences from JAVA, Structure of C# program. Language features: Type system, boxing and unboxing, flow controls, classes, interfaces, Serialization and Persistence, Serializing an Object, Deserializing an Object. Delegates and Reflection.	8	6				14	
UNIT III Overview of Dynamic Web page, introduction & features of ASP.NET, Understanding ASP.NET Controls, Applications, Web servers, installation of IIS. Web forms, web form controls -server controls, client controls. Adding controls to a web form, Buttons, Text Box , Labels, Checkbox, Radio Buttons, List Box. Adding controls at runtime. Running a web Application, creating a multiform web project. Form Validation: Client side validation, server Side validation, Validation Controls : Required Field Comparison Range. Calendar control, Ad rotator Control, Internet Explorer Control.	8	6				14	
UNIT-IV Overview of ADO.NET, from ADO to ADO.NET. ADO.NET architecture, Accessing Data using Data Adapters and Datasets , using Command & Data Reader, binding data to data bind Controls, displaying data in data grid. XML in .NET , XML basics, attributes, fundamental XML classes: Document, text writer, text reader. XML validations, XML in ADO.NET, The XML Data Documents.	8	6				14	
UNIT-V Web services: Introduction, State management- View state, Session state, Application state. SOAP, web service description language, building & consuming a web service. Web Application deployment. Caching. Threading Concepts, Creating Threads in .NET, managing threads, Thread Synchronization, Security features of .NET, Role based security & Code access security, permissions,	8	6				14	
TEXT & REFERENCE BOOKS : • *ASP.NET 3.5 BLACK BOOK (COVERS C# AND VB 2008 CODES) - DREAMTECH PUBLICATION* • *THE COMPLETE REFERENCE ASP.NET BY MATHEW MACDONALD - TMH* • *PROFESSIONAL ASP.NET- WROX PUBLICATION* • *4 . 5. INTRODUCTION TO .NET FRAMEWORK-WORX PUBLICATION*							

Course: MCA **Semester: V**
Sub Code: 5MCA3 **Subject Name: Advanced Java**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT I Introduction & Requirements - Introduction to HTML ,Java Server Pages – Basics – JSP Constructs – Scripting elements - directives - actions – beans – tags Introduction to apache tomcat server (installation & configuration)-start/stop tomcat services – run jsp page on tomcat	8	6				14	
UNIT II JSP implicit objects, Handling Request Parameters – Form Handling (text fields / text area) – Handling multiple buttons/check boxes/radios/combos - Session Management – URL Rewriting - Hidden fields – cookies –	8	6				14	
UNIT III Introduction to Servlet- Servlet Life Cycle – ServletRequest & Servlet Response – Writing Servlets – Requirements & Configuration ServletRequest & ServletResponse Methods & use – sending different types of data	8	6				14	
UNIT IV Introduction to MySQL –features, installation & configuration, creating & managing database, MySQL Driver Java Database Connectivity (JDBC) with MySql –loading MySql driver – creating connection – Statement – ResultSet	8	6				14	
UNIT V Java Naming Directory Interfaces – JMS – Introduction – Topic – example of Topic & Queue – EJB – Basics – stateless / client creation – statefull client creation – Container Managed Persistence – Bean Managed Persistence	8	6				14	
TEXT & REFERENCE BOOKS : • *PROFESSIONAL JAVA SERVER PROGRAMMING - SPD PUBLICATIONS* • *ADVANCED JAVA LECTURE NOTES* • *BUILDING JAVA ENTERPRISE SYSTEMS WITH J2EE-PAUL PERRONE,VENKATA S.R.KRISHNA,R.CHAGANTITECHMEDIA PUBLICATIONS* • *ENTERPRISE JAVABEANS - RICHARD MONSON HAEFEL SPD PUBLICATIONS* • *JAVA RMI – TROY BRYAN DOWNING*							

Course: MCA **Semester: V**
Sub Code: 5MCA4 (A) **Subject Name: Soft Computing**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT I Soft Computing : Introduction of soft computing, soft computing vs. hard computing, various types of soft computing techniques, applications of soft computing. Basic concepts of neural network, Human Brain- Biological neural network, evolution of artificial neural network, Structure and Function of a single neuron, Difference between ANN and human brain, characteristics and applications of ANN, , Learning Methods, Activation function, neural network architecture	8	4				12	
UNIT II Supervised Learning**:** Perceptron learning,- Single layer, multilayer, linear Separability, Widrow & Hebb's learning rule/Delta rule, Adaline, Madaline, Back propagation network, Error back propagation algorithm, derivation of EBPA, characteristics and application of EBPA .	8					8	
UNIT III Counter propagation network, architecture, functioning & characteristics of counter ,Propagation network, Hopfield/ Recurrent network, configuration, stability constraints, Adaptive Resonance Theory: Architecture, classifications, Implementation and training, Application in pattern and face recognition	8	2				10	
UNIT IV Fuzzy Logic: Fuzzy set theory, crisp set , Fuzzy set, Operations on Fuzzy Sets: Compliment, Intersections, Unions, Product, Difference, Properties of fuzzy set, Crisp relation & fuzzy relations, introduction & features of membership functions, Fuzzy rule base system: fuzzy propositions, formation, decomposition & aggregation of fuzzy rules, fuzzy reasoning, Applications of fuzzy logic.	8					8	
UNIT V Genetic Algorithm : Fundamentals, basic concepts, working principle, encoding, fitness function, reproduction, Genetic modeling: Inheritance operator, cross over, inversion & deletion, mutation operator,	8					8	
TEXT & REFERENCE BOOKS : • *S, RAJASEKARAN & G.A. VIJAYALAKSHMI PAI, NEURAL NETWORKS, FUZZY LOGIC & GENETIC* • *ALGORITHMS, SYNTHESIS & APPLICATIONS, PHI PUBLICATION.* • *S.N. SIVANANDAM & S.N. DEEPA, PRINCIPLES OF SOFT COMPUTING, WILEY PUBLICATIONS*							

Course: MCA **Semester: V**
Sub Code: 5MCA4 (B) **Subject Name: Information Network Security**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT- I Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms.	8					8	
UNIT- II Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation,Secure Hash Functions .	8					8	
UNIT- III Public key cryptography principles, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management Kerberos, X.509 Directory Authentication Service.	8					8	
UNIT- IV Email privacy: Mail Security, IP security, Web security. Overview, IP Security Architecture, Combining Security Associations and Key Management.	8					8	
UNIT -V Introduction of Cyber Crime, Categorizing cyber crime, perception of cyber criminals: hackers, insurgents and extremist groups, Information Warfare- concept, information as an intelligence weapon, attacks and retaliation, attack and defense. Cyber Law	8					8	
TEXT & REFERENCE BOOKS : • *NETWORK SECURITY, KAUFMAN, PEARLMAN AND SPECINER, PEARSON EDUCATION.* • *INFORMATION WARFARE : CORPORATE ATTACK AND DEFENSE IN DIGITAL WORLD, WILLIAM* • *HUTCHINSON, MATHEW WARREN, ELSEVIER.* • *NETWORK SECURITY ESSENTIALS (APPLICATIONS AND STANDARDS) BY WILLIAM STALLINGS PEARSON EDUCATION.* • *FUNDAMENTALS OF NETWORK SECURITY BY ERIC MAIWALD (DREAMTECH PRESS)* • *CRYPTOGRAPHY AND NETWORK SECURITY, THIRD EDITION, STALLINGS, PHI/PEARSON* • *PRINCIPLES OF INFORMATION SECURITY, WHITMAN, THOMSON.* • *NETWORK SECURITY: THE COMPLETE REFERENCE, ROBERT BRAGG, MARK RHODES, TMH* • *INTRODUCTION TO CRYPTOGRAPHY, BUCHMANN, SPRINGER.*							

Course: MCA **Semester: V**
Sub Code: 5MCA4 (C) **Subject Name: Advanced Database**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT-I Overview of Object-Oriented concepts, Object identity, Object structure, and type constructors, Encapsulation of operations, Methods, and Persistence, Type hierarchies and Inheritance, Type extents and queries, Complex objects; Database schema design for OODBMS; OQL, Persistent programming languages; OODBMS architecture and storage issues; Transactions and Concurrency control, Example of ODBMS	8					8	
UNIT- II Database design for an ORDBMS – Nested relations and collections; Storage and access methods, Query processing and Optimization; An overview of SQL3, Implementation issues for extended type; Systems comparison of RDBMS, OODBMS, ORDBMS	8					8	
UNIT- III Architectures for parallel databases, Parallel query evaluation; Parallelizing individual operations, Sorting, Joins; Distributed database concepts, Data fragmentation, Replication, and allocation techniques for distributed database design; Query processing in distributed databases; Concurrency control and Recovery in distributed databases. An overview of Client-Server architecture	8					8	
UNIT- IV Web interfaces to the Web, Overview of XML; Structure of XML data, Document schema, Querying XML data; Storage of XML data, XML applications; The semi structured data model, Implementation issues, Indexes for text data(7/2/6)	8	6				14	
UNIT -V Active database concepts. Temporal database concepts.; Spatial databases, Concepts and architecture; Deductive databases and Query processing; Mobile databases, Geographic information systems.	8					8	
TEXT & REFERENCE BOOKS : • *ELMASRI AND NAVATHE, FUNDAMENTALS OF DATABASE SYSTEMS [4E], PEARSON EDUCATION* • *RAGHU RAMAKRISHNAN, JOHANNES GEHRKE, DATABASE MANAGEMENT SYSTEMS [3E], MCGRAW-HILL* • *KORTH, SILBERCHATZ, SUDARSHAN , DATABASE SYSTEM CONCEPTS, MCGRAW-HILL.* • *PETER ROB AND CORONEL, DATABASE SYSTEMS, DESIGN, IMPLEMENTATION AND MANAGEMENT, THOMSON LEARNING.* • *C.J.DATE, LONGMAN, INTRODUCTION TO DATABASE SYSTEMS, PEARSON EDUCATION*							

Course: **MCA** **Semeste**r: V

Sub Code: 5MCA5 (A) **Subject Name: Principles of Compiler Designing**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT – I Introduction To Compiler, Overview of Compilation, Process , Typical Compiler Structure, Implementing A Compiler . Programming Language Grammars, Elements of A Formal Language Grammar, Derivation, Reduction & Syntax Trees, Ambiguity Regular Grammar & Regular Expression – Context Free Grammar.	8					8	
UNIT – II Scanning & Parsing Techniques – The Scanner, Regular Grammar and Fsa, Top Down Parsing, Parsing Algorithm, Top Down Parsing Without Backtracking, Predictive Parsers, Bottom Up Parsing, Lr Parsers, Shift Reduce Parsing .	8					8	
UNIT – III Symbol Table Organization: Symbol – tables – contents – data structures for symbol tables, storage	8					8	
UNIT – IV Memory Allocation – Static & Dynamic Memory Allocation, Compilation Control Transfer, Procedure Calls, Conditional Execution, Iteration Control Construct.	8					8	
UNIT – V Lexical Syntax Errors, Semantic, Major Issues In Optimization, Optimizing , Transformations, Local Optimization, Program Flow Analysis, Global Optimization.	8					8	
TEXT & REFERENCE BOOKS : • *INTRODUCTION TO AUTOMATA THEORY, LANGUAGE AND COMUTATION - " JOHN E - HOPCOFT, RAJEEV MOTWANI, JEFFERY D. ULLMAN 2ND EDITION* • *COMPILER CONSTRUCTION PRINCIPLES & PRACTICE – " D.M. DHAMDHERE 2ND EDITION* • *PRINCIPLES OF COMPILER DESIGN – AFFRED V. AHO, JEFFERY D. ULLMANCOMPILERS PRINCIPLES, TECHNIQUES AND TOOLS – AFFRED V. AHO RAVI SETHI, JEFFERY D. ULLMAN.*							

Course: **MCA** **Semester: V**
Sub Code: 5MCA5 (B) **Subject Name: Software Project Management and Testing**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT-I **Testing Basics And Development Models:** Principals and Context of Testing In Software Production, Software Quality Control and its Relation With Testing, Validating And Verification, **White Box Testing:** White Box Testing - Static Testing, Structural Testing-Unit ,Code, Functional Testing, Code and Complexity Testing,.	8					8	
UNIT –II **Black Box Testing-** Positive and Negative Testing, Boundary Value Testing, Equivalence Partitioning, User Documentation Testing, **Integration Testing**: Introduction and types of Integration Testing, Scenario Testing, System and Acceptance Testing- Acceptance Testing.	8					8	
UNIT -III **Performance Testing-** Introduction, Factors Related too Performance Testing, Methodology For Performing Testing, Regression Testing, **Overview Testing Tools:** Win runner, Load runner, Test Director.	8					8	
UNIT -IV **Software Project Management:** Overview, Software Project Management Framework, Problems in Software Projects. Scope Management , Communication Techniques and Tools. Requirement Specifications, Resources types for a Software Projects.	8					8	
UNIT -V **Software Project Estimation:** Work Breakdown Structure (WBS), Steps in WBS, Measuring Efforts for a Project, **Project Scheduling:** Scheduling and its Need, Scheduling Basics, Gant Chart,	8					8	
TEXT & REFERENCE BOOKS : • *SOFTWARE TESTING: PRINCIPLES AND PRACTICE BY GOPALASWAMY AND SRINIUASAN, 81775812 LX. PUBLISHER, PEARSON EDUCATION INDIA. ISBN, 81775812 LX.* • *SOFTWARE TESTING T OOLS : COVERING WINRUNNER, SILK T EST, LOADRUNNER, JMETER AND T ESTDIRECTOR WITH CASE BY DR. K. V.K.K. PRASAD, ISBN: 8177225324, WILEY DREAMTECH,* • *HTTP://WWW.COLUMBIA.EDU/ -JM221 7/* • *BASICS OF SOFTWARE PROJECT MANAGEMENT BY NIIT ,, PRENTICEHALL OFLNDIA,ISBN 81-203-2490-0* • *SOFTWARE PROJECT MANAGEMENT BY BOB HUGHES & MIKE COTTERELL, T ATA MCGRAW HILL, ISBN 0-07-061 985-9*							

Course: MCA **Semester: V**
Sub Code: 5MCA5(C) **Subject Name: Multimedia and Virtual Reality**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
UNIT -I Introduction To Multimedia , Needs and Areas of use, Development Platforms for Multimedia Identifying Multimedia Elements Text, Images, Sound, Animation and Video, Making Simple Multimedia With PowerPoint.Concepts of Plain & Formatted Text, RTF & HTML Texts, Using Common Text Preparation Tools, Conversion to and From of Various Text Formats, Using Standard Software, Object Linking And Embedding Concept.	8					8	
UNIT -II Sound and its Attributes : Sound and Its Effects In Multimedia, Frequency, Sound Depth, Channels and its Effects on Quality and Storage, Size Estimation of Space of a Sound File, Sound Card Standard – FM Synthesis Cards, Waves Table Cards, MIdI And MP3 Files and Devices, 3D Sounds. Importance of Images Graphics in Multimedia, Vector and Raster Graphics, Image Capturing Methods, Scanner, Digital Camera Etc. Various Attributes of Images Size, Color, Depth Etc, Various Image File Format BMP, DIB, CIF, PIC, and TIF Format Their Features And Limitations.	8					8	
UNIT –III Basic of Video – Analog and Digital Video Type of Video , Digitization of Analog Video, Video Standard – NTSC, Pal, HDTV, Video Capturing Media /Instruments Videodisk Camcorder Compression Techniques, File Formats AVI, MJPG, MPEG, Video Editing and Movie Making Tools .	8					8	
UNIT -IV Animation and its Basic – Principals of Animation and its Use in Multimedia, Computer System Configuration and Peripherals Requirements, Software for Animation, Effects of Resolution, Pixel Depth, Image Size, on Quality and Storage, Types of Animation and applications.	8					8	
UNIT -V Introduction to virtual reality and its Applications, Virtual Reality Terminology Head Mounts Display (HMD), Boom, Cave, Input Devices and Sensual Technology, Characteristic If Immersive VR Shared Virtual Environments, Non Immersive VR,VRML, VR - Related Technology Application	8					8	
TEXT & REFERENCE BOOKS : • *MULTIMEDIA: MAKING IT WORK (4TH EDITION) BY THYVAUGHAN, TATA MCGRAW HILLS.* • *MULTIMEDIA IN ACTION JAMES E SHUMAN VIKAS PUBLISHING HOUSE.* • *MULTIMEDIA BASICS VOLUME / TECHNOLOGY, ANDREAS HOIZINGER, FIREWALL MEDIA(LAXMI PUBLICATIONS PVT. LID) NEW DELHI.*							

Course: MCA **Semester: V**
Sub Code: 5MCA5 (D) **Subject Name: PHP Programming**

Unit	Lectures	Practical's	Workshops	Demo	Field Visits	Total Hours	Remarks
Unit-I Introduction to PHP, History of PHP, Versions of PHP, Features of PHP, Advantages of PHP over Other Scripting Languages, Installation and Configuration of PHP, Data Types in PHP, PHP Syntax, Comments, PHP Variables and Constants, Scope of Variables, PHP String, String Manipulation, PHP Operators, Precedence of Operators, Expressions, Creating a PHP Script, Running a PHP Script, Basic HTML, Embedding PHP in HTML, Passing Information between Pages, PHP $_GET, PHP $_POST.	8					8	
Unit-II PHP Conditional Statements, PHP Looping Statements, Break, Continue, Exit, PHP Functions: Built-in and User Defined Function, Regular Expression Functions, Mathematical, Date and Time Functions, PHP Arrays: Creating Array and Accessing Array Elements, PHP File Permissions, Working with Files: Opening, Closing, Reading, Writing a File; Working with Directory: Creating, Deleting, Changing a Directory	8					8	
Unit-III Working with Forms & Databases**:** Introduction to a Web Form, Processing a Web Form, Validating a Web Form, PHP-Supported Databases; Using PHP & My SQL: Installation and Configuration of My SQL on Windows, Checking Configuration, Connecting to Database, Selecting a Database, Adding Table and Altering Table in a Database, Inserting, Deleting and Modifying Data in a Table, Retrieving Data, Performing Queries, Processing Result Sets.	8					8	
Unit-IV Input Validation, PHP with Client Side Scripting Language, Exception and Error Handling in PHP, Cookies and Session Handling,	8					8	
Unit-V Code Re-use, require(), include(), and the include_path, File System Functions and File Input and Output, File Uploads, Use of CSS, Introduction to Object Oriented Programming with PHP, Installing and Configuring Apache to use PHP on Windows, php.ini File,	8					8	
Text & References Book: • *PHP & My SQL, by Vikram Vaswani, TMH Publications* • *PHP Essentials, by Julie C. Meloni, BPB Publications* • *PHP 5 and My SQL Bible, by Tim Converse and Joyce Park, Wiley-DreamTech India Publications* • *Web Technologies, Black Book, DreamTech Press* • *Atkinson, Leon. Core PHP Programming, New York: Prentice Hall* • *Learning PHP 5, By David Sklar Publisher O'Reilly Media* • *Mastering PHP, by Charles, Publisher: Bpb* • *Expert PHP and MySQL, Wrox Programmer to Programmer, Wrox Press, 2010* • *PHP for Absolute Beginners, Apress, 2009* • *Sams Teach Yourself CSS in 24 Hours (2nd Edition), Sams Publishing, 2006* • *http:// www.phpbuilder.com* • *http://php.faqts.com*							

INTERNAL EVALUATION

For internal evaluation wherever required as per scheme, the concerned faculty members must keep a detailed record of activities performed. At least 2 tests must be conducted evenly distributed in the semester and syllabus, each having a weightage of 25% (in case more than 2 tests conducted, best 2 performance may be considered). Further the entire semester attendance be evaluated for 25% weightage and fully a comprehensive subject viva on the assignments (at least two) shall have a weightage of 25%.

The record for every students must be maintained at least for 6 months after the end of examination, foil/counter foil must be submitted to the Examination Section before the start of theory examination. The format (for 20 marks weightage) is attached herewith.

1. Subject code
2. Subject name
3. Year
4. Study Institute code
5. Name & address of Study Institute
6. Name of Class Coordinator

Roll No.	Enrollment No.	Test-1 Marks MM-5	Test-2 Marks MM-5	Attendance MM-5	Viva MM-5	Total MM-20

Signature of Class Coordinator

Signature of Head of Institute