VELS INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS)
(Deemed to be University u/s 3 of the UGC Act, 1956)
PALLAVARAM - CHENNAI - INDIA

VELS UNIVERSITY

M.C.A,

Curriculum and Syllabus

(Based On Choice Based Credit System)

Effective from the Academic Year

2015 – 2016

Department of Computer Applications

School of Computing Sciences

15MCA001   **Computer Organization & Architecture**   **4   0   0   3**

Course Objective:

A student should grasp the basic concepts of computer architecture and organization, and understand the key skills of constructing cost–effective computer systems. A student should learn how to quantitatively evaluate different designs and organizations, and provide quantitative arguments in evaluating different designs.

UNIT I INTRODUCTION   **12**

Number Systems – Conversion from One Number to another – Compliments – Binary Codes – Binary Logic – Logic Gates – Truth Tables. Boolean algebra – Axioms – Simplification of Boolean Functions – Karnaugh Map Method – Tabulation Method.

UNIT II LOGIC GATES & CIRCUITS   **12**

Adders – Sub Tractors – Code Convertor – Multilevel NAND And NOR Circuits – Binary Parallel Adder – Decimal Adder – Decoders – Encoders – Multiplexes – Demultiplexer – Design Of Circuits Using Multiplexers / Decoders.

UNIT III FLIP FLOPS & REGISTERS   **12**

Flip Flops – RS, JK, D And T Flip Flops – Excitation Table – Registers – Shift Registers – Counters – Ripple Counters – Synchronous Counters – Design Of Counters.

UNIT IV MEMORY UNIT   **12**

Memory UNIT – Bus Organization – ALU – Design Of ALU – Status Register – Effects of Output Carry – Microprogramming – Design Of Specific Arithmetic Circuits.

UNIT V ACCUMULATOR   **12**

Accumulator – Design of Accumulator – Computer Configuration – Instruction and Data Formats – Instruction Sets – Timing And Control – Execution of Instruction – Design of Computer – Hardwired Control – PLA Control and Micro program Control.

                                                                          TOTAL: 60 HOURS
Text Books:

   1. M.M. Mano, "Digital Logic Computer Design", Pearson Education, 5th Edition, 2013.

Reference Books:

   1. Givone, "Digital Principle Design", Tata McGraw Hill, New Delhi, 1st Edition, 2003.
   2. V. Rajaraman, "Fundamentals of Computers", Third Edition, PHI, New Delhi, 2002
   3. T.C. Bartee, Computer Architecture and Logical Design, McGraw Hill, 1991

15MCA002   **Programming in C**   **4 0 0 3**

Course Objective:

To gain experience about structured programming, to help students to understand the implementation of C language, to understand various features in C

UNIT I BASICS OF 'C', INPUT / OUTPUT & CONTROL STATEMENTS   **12**

Introduction – Identifier – Keywords – Variables – Constants – I/O Statements – Operators – Initialization – Expressions – Type Conversion in C – formatted input and output functions – Test Condition for Selection and Iteration – Conditional Execution and Selection – Iteration and Repetitive Execution – go to Statement – Nested Loops – Continue and break statements.

UNIT II ARRAYS, STRINGS AND FUNCTIONS   **12**

Array – One Dimensional Character Arrays – Multidimensional Arrays – Arrays of Strings – Two Dimensional Character Array – Functions – Parameter Passing Mechanism Scope – Storage Classes – Recursion – Comparing Iteration and Recursion.

UNIT III USER – DEFINED DATATYPES & FILES   **12**

Structures – Initialization – Nested Structures – Structures and Arrays – Structures and Pointers – Union – typedef and Enumeration Types – Bit fields – File Management in C – Files and Streams – File Handling Functions – Sequential Access File – Random Access File – Command Line Arguments.

UNIT IV POINTERS   **12**

Pointers – Pointer Operators – Uses of Pointers – Arrays and Pointers – Pointer Arithmetic – Pointers and Strings – Pointer Indirection – Pointers to Functions – Dynamic Memory Allocation and Deallocations.

UNIT V APTITUDE   **12**

Verbal Ability: English Grammar, Sentence Completion, Verbal Analogies, Word Groups, Instructions, Critical Reasoning and Verbal Deduction.

Numerical Ability: Numerical Computation, Numerical Estimation, Numerical Reasoning and Data Interpretation.

TOTAL: 60 HOURS

Text Books:

1. Behrouz A.Forouzan and Richard F.Gilberg, "Computer science A structured approach using C", CENGAGE learning India pvt., Ltd., New Delhi, Third Edition, 2007.
2. E.Balaguruswamy,"Programming in ANSI C", McGraw Hill Publications New Delhi, Fourth edition, 2007.

Reference Books:

1. K.R.Venugopal , S.R Prasad ,"Mastering in C", McGraw Hill Education India, International Edition, 2007.
2. P.Dey,M.Gosh ,"Programming in C", Oxford University Press, Second Edition, 2011.
3. K.N.King,"C programming – A Modern approach", W.W.Norton, Second Edition, 2008.
4. S.Prata," C Primer plus", Pearson Education, India, 6th Edition, 2013.

15MCA003   **Software Engineering and Methodologies**   **4 0   0 3**

Course Objective:

To provide an insight into the processes of software development, to understand and practice the various fields such as analysis, design, development, testing of Software Engineering. To develop skills to construct software of high quality with high reliability. To apply metrics and testing techniques to evaluate the software

UNIT I INTRODUCTION TO SOFTWARE ENGINEERING   12

Definitions – Size Factors – Quality and Productivity Factors – Managerial Issues – Planning a software project Defining the problem – Developing a Solution Strategy – Planning the Development Process – Planning an Organization structure – Other Planning Activities.

UNIT II SOFTWARE COST ESTIMATION   12

Software cost factors – Software Cost Estimation Techniques – Staffing – level Estimation – Estimating Software Maintenance Costs – The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

UNIT III SOFTWARE DESIGN   12

Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real – Time and Distributed System Design
– Test Plans – Milestones, walkthroughs, and Inspections.

UNIT IV IMPLEMENTATION ISSUES   12

Structured Coding Techniques – Coding Style – Standards and Guidelines – documentation guidelines – Type Checking – Scoping Rules – Concurrency Mechanisms.

UNIT V QUALITY ASSURANCE   12

Walkthroughs and Inspections – Static Analysis – Symbolic Execution – Unit Testing and Debugging
– System Testing – Formal Verification Enhancing Maintainability during Development – Managerial Aspects of Software Maintenance – Source Code Metrics – Other Maintenance Tools and Techniques.

TOTAL: 60 HOURS

Text Books:

1. R.Fairley, "Software Engineering Concepts", Tata McGraw – Hill Edition, 1997.

2. R.S.Pressman, "Software Engineering – A Practioner's Approach", McGraw Hill, 6th Edition, 2001.

Reference Books:

1. Ian Sommerville, "Software Engineering", Addison Wesley, 9th Edition, 2001.
2. Rajib Mal, "Fundamental of Software Engineering", 2nd Edition, PHI, New Delhi, 2005.
3. N. E. Fenton, S. L. Pfleenger, "Software Metrics", Thomson Asia, Singapore. 2004.

15MCA004   **Multimedia Systems**   **4 0 0 3**

Course Objective:

To understand the definition of multimedia, to understand and differentiate text, image, video & audio, Be able to apply concepts and techniques to multimedia system design, be able to implement key of networked multimedia systems, be able to perform fundamental performance analysis on networked multimedia systems.

UNIT I INTRODUCTION   **12**

Introduction Definition – Multimedia Element – Multimedia Applications – Multimedia System Architecture – Evolving Technologies For Multimedia – Defining Objects For Multimedia System – Multimedia Data Interface Standards – Multimedia Databases.

UNIT II IMAGE COMPRESSION   **12**

Compression and Decompression Need for Data Compression – Type of Compression – Binary Image Compression Schemes – Image Compression – Video Compression – Audio Compression.

UNIT III FILE FORMATS   **12**

Data And File Format Standards Rich Text Format – TIFF File Format – Resource Interface File Format – MIDI File Format – JPEG DIB File Format – AVI File Format – MPEG Standards – TWAIN

UNIT IV MULTIMEDIA I/O TECHNOLOGIES   **12**

Multimedia I/O Technologies Image Scanners – Digital Voice and Audio – Digital Camera – Video Images and Animation – Full Motion Video.

UNIT V MULTIMEDIA APPLICATION DESIGN   **12**

Multimedia Application Design Multimedia Application Classes – Types of Multimedia System – Virtual Reality – Components of Multimedia System.

                                                                    TOTAL: 60 HOURS

Text Book:

1. Prabat K Andleigh And Kiran Thakrar,"Multimedia System And Design", Prentice Hall India, New Delhi, 2003

Reference Books:

1. Ralf Steinmetz, Klara Steinmetz,"Multimedia Computing & Communications", Pearson Education, 2012.

2. Tay Vaughan,"Multimedia Making It Work", Tata McGraw Hill, 2002.

3. Parekh R, "Principles of Multimedia", Tata McGraw Hill, 2006.

15MCA005   **Programming in C Laboratory**   **0   0   4   2**

Course Objective

To develop logical skills so that students should be able to solve basic computing problems. To learn the syntax and usage of C programming constructs.

1. Creating and Editing Simple C Program, Compilation Band Execution.
2. Decision Making Using Various If Condition And Switch Case
3. Control Structure – Do, While And For
4. Modular Program Development Using Functions
5. Recursion
6. Sorting And Searching Using Arrays
7. Matrix Operations – Add, Subtract, Multiply and Trace.
8. Pointers, Address Operators and Pointer Arithmetic.
9. Structures And Unions, Accessing Their Members
10. Self – Referential Structures and Linked Lists   .
11. Files and File Operations, Standard Streams.
12. Student Mark List Processing.

TOTAL: 48 HOURS

15MCA006   **Flash & Photoshop Laboratory**   **0   0   4   2**

Course Objective:

Provides students with the ability to use Flash graphics software on microcomputers. Covers basic animation techniques used in the creation, manipulation, and editing of Flash animation graphics.

List of Practicals in Flash

1. To Move An Object, To Move An Object In The Path.
2. Creating A Link Using Texts And Objects, Change The Color Of The Object.
3. Shape Tweening and Using Shape Hints, Motion Tweening, Hybrid Tweening.
4. An Application To Show The Masking Effect

List of Practicals in Photo Shop

1. To Create A Greeting Card, Create Background Picture.
2. Text Effects, Photo Effects
3. Color, Buttons, Editing Images
4. Designing Web Page

List of Practicals in Dreamweaver

1. Text Management
2. Tables– Layers
3. Creating Menu bar
4. Creating Pages and Sites

TOTAL: 48 HOURS

13MCA007   **Productivity Software Laboratory**   **0   0   4   2**

Course Objective:

Microsoft Office is a highly popular desktop suite, containing tools for word processing (Word), spreadsheets (Excel), email (Outlook) and presentations (PowerPoint).

WORD PROCESSING

1. Text Manipulation

   Change the Font Size and Type − Aligning and Justification of Text − Underlining the Text Indexing the Text I, Prepare Bio–Data Ii, Prepare a Letter
2. Usage Of Numbering, Bullets, Footers And Header
   i.   usage of spell checks and find and replace
   ii.   Prepare a document in newspaper format.
   iii.   Prepare a Document with Bullets and Footers and Headers.
3. Tables And Manipulations
   i.   Creations, Insertions, Deletion (Columns & Rows) and Usage of Auto Format.
   ii.   Create A Mark Sheet Using Table And Find Out The Total Marks.
   iii.   Create A Calendar And Auto Format It.
4. Picture Insertion And Alignment, Creation Of Documents Using Templates Creation Of Templates
   i.   Prepare A Greeting Card
   ii.   Prepare A Handout
   iii.   Prepare A Letter Using Any Template
   iv.   Prepare Two Data Using Various Kind Of Templates
5. Mail Merge Concepts
   i.   Prepare A Business Letter For More Than One Company Using Mail Merge
   ii.   Prepare An Invitation To Be Sent To Specific Addresses In The Data Source

ELECTRONIC WORK SHEET

1. Usage Of Formulae And Built In Functions And The Types Of Functions
2. File Manipulations, Data Sorting – Ascending And Descending
3. Mark List Preparation For A Student
4. Individual Pay Bill Preparation
5. Drawing Graphs

PRESENTATION SOFTWARE

1. Exercises On Slide Transition And Animation
2. Usage of Design Templates.

                                                                        TOTAL: 48 HOURS

15MCA008   **Microprocessor Based System Design**   **4 0 0 3**

Course Objective:

Transform a general problem description in microprocessor-based systems into a design specification, partition a design specification into a set of design tasks, formulate a project schedule and a set of work assignments Work in a team to implement the design tasks, construct a prototype/working demonstration and document the final design

UNIT I INTRODUCTION   **12**

Microprocessor evolution and types – 8086 internal architecture – Introduction to programming – language types – addressing modes – program development steps – program development tools – standard program structure.

UNIT II PROGRAMMING STRUCTURES   **12**

Standard Program Structure – Jumps – While…Do – Repeat. Until – Delay Loops – String – Procedures – Macros – Assembly Directives.

UNIT III INTERRUPTS   **12**

8086 Microcomputer – Minimum Mode System – Trouble Shooting – 8086 Interrupts – Interrupts Applications – Programmable Timer / Counter – Interrupt Controller.

UNIT IV HANDSHAKING   **12**

Parallel ports – Handshaking – Interfacing digital and analog devices – Microcomputer
based processor control system – Memory DMA – Cache Memories.

UNIT V MEMORY ACCESS   **12**

EDA tools – Coprocessors Math Coprocessor (8087) – Microcontrollers introduction – architecture addressing modes.

TOTAL: 60 HOURS

Text Book:

1. Douglas V Hall, "Microprocessors And Interfacing", TMH, 2nd Edition Revised, 2007

Reference Books:

1. K.Udaya Kumar and B.S Umasankar, "Advanced Microprocessor and IBM – PC Assembly Language Programming" THM, 2008.

2. A.P.Mathur, "Indroduction to Microprocessor", Tata McGraw Hill, 3rd Ed., 2009.

15MCA009   **Object Oriented Concepts and Data Structures**   **4 0 0 3**

Course Objective:

A student can define the terms of software engineering (software life cycle, software improvement. A student can understand simple UML (Unified Modeling Language) diagrams to represent OO designs and convert a design in UML to the equivalent code. To introduce Object Oriented language constructs.

UNIT I INTRODUCTION TO THE OOPS   **12**

Introduction to the OOPs – Application of OOPs – Benefits of OOPS – OOPS concepts – Classes and Objects – Polymorphism – Encapsulation – Data Abstraction – Inheritance.

UNIT II INTRODUCTION TO DATA STRUCTURES   **12**

Introduction to Data Structures – Classification of DS – Abstract Data Types – Asymptotic Notations – Time Complexity – Arrays – Representation Of Arrays – Operations On Arrays – Stacks – Application Of Stack – Evaluation of Expressions – Queues – Application Of Queue – Circular Queue.

UNIT III LINKED LISTS   **12**

Linked Lists Ordered Lists – Singly Linked List – Circular Linked Lists – Doubly Linked Lists – Polynomials – General Lists.

UNIT IV TREES

                                                                                                                12

Trees – Binary Trees – Binary Tree Traversals, Binary Tree Representation – Binary Search Trees – Threaded Binary Trees – Application of Trees (sets)

UNIT V GRAPHS   **12**

Representation of Graphs – Graph Implementation – Graph Traversals – Application of Graph Traversals – Minimum Cost Spanning Trees – Shortest Path Problems.

TOTAL: 60 HOURS

Text Books:

1. E. Balagurusamy, "Object Oriented Programming with C++", Tata McGraw Hill, Publishing Limited, New Delhi, 2014.
2. Adam Drozdek , "Data Structures and Algorithms in C++", Vikas Publishing House, New Delhi, 2001.
   Reference Books:
1. Robert Lafore, "Object Oriented Programming in C++", Galgotia, 2014.
2. Herbert Schitt, "C++ – The Complete Reference", Tata McGraw Hill,Publishing Ltd, 3rd Edition, 2010.
3. Ellis Horowitz and Sartaj Sahir , "Fundamentals of Data Structure", Galgotia Publications. 2014.

15MCA010   **Programming in C++**   **4   0   0   3**

Course Objective:

Introduction to compiling and software development, basic scalar data types, operators, flow control, streamed input/output, conversions, declaring, defining and invoking functions, strings processing, exceptions handling, dealing with namespaces, object–oriented approach and its vocabulary, dealing with classes and objects and defining overloaded operators

UNIT I INTRODUCTION TO C++   12

Introduction to C++ Language – Token's, Keyboards, Data Types, Variables, Manipulators – Expression – Decision Making and Control Structures.

UNIT II FUNCTIONS   12

Functions – Function Prototyping – Call By Value – Call By Reference – Friend And Inline Functions

– Classes And Objects – Static Member Variable – Static Member Functions – Default Arguments – Constructors And Destructors – Object As Argument – Object As Return Type.

UNIT III   12

Polymorphism, Categorization of polymorphism techniques, Method polymorphism, Polymorphism by Parameter, Operator overloading, parametric polymorphism,

UNIT IV POINTERS & I/O   12

Inheritance – Single, Multiple, Hierarchical, Hybrid – Pointers – Console I/O Operations – Creating Own Manipulators – Templates – Exception Handling.

UNIT V FILES   12

Files – Classes for File Stream Operations – Opening, Closing and Processing Files – End of File Detection – File Pointes – Updating a File – Error Handling During File Operations – Command Line Arguments.

                                                                TOTAL: 60 HOURS

Text Books:

1. E.Balagurusamy, "Object Oriented Programming with C++", Tata McGraw Hill, Publishing Limited, New Delhi, 2013.

Reference Books:

1. Robert Lafore, "Object Oriented Programming in C++", Galgotia, Forth Edition, 2004.

2. Herbert Schitt, "C++ – The Complete Reference", 3rdEdition, TMH, Publishing Ltd, 2010.

15MCA011   **Business Mathematics**   **4   0   0   3**

Course Objective:

To impart the knowledge of Mathematics and Numerical Methods to the students. The course will also serve as a prerequisite for specialized studies and research

UNIT I MATRICES   **12**

Introduction – Definition – Determinant – Types Of Matrices – Matrix Operations – Rank Of A Matrix – Inverse Of A Matrix – Solution Of Linear Equations.

UNIT II FINITE DIFFERENCES   **12**

Introduction – Difference Operators – Newton's Interpolation Formula – Lagrange's Interpolation Formula – Inverse Interpolation.

UNIT III NUMERICAL DIFFERENTIATION AND INTEGRATION   **12**

Derivatives Using Newton's Forward Difference Formula – Derivatives Using Newton's Backward Difference Formula – Derivatives Using Central Difference Formula.
NUMERICAL INTEGRATION: Trapezoidal rule – Simpson's rule.

UNIT IV SET THEORY   **12**

Set Theory – Definition – Elements and Types of Sets – Operations on Sets – Relations and Functions of Sets.

UNIT V DIFFERENTIAL CALCULUS   **12**

Differentiation – Meaning – Rules Maxima and Minima – Applications of Differentiation Demand function – Supply function – Cost function – Revenue function – Profit function – Elasticity – Elasticity of demand – Elasticity of supply.

                                                                                            TOTAL: 60 HOURS
Reference Books:

1. P.R.Vittal, "Business Mathematics", Margham Publications, 2nd Edition, 2003.

2. S. Arumugam, A. Thangapandi Isaac and A. Somsundaram, "Numerical Methods, Scitech Publications India Pvt. Ltd, 2001.

3. A. Singaravelu, Allied Mathematics, Meenakshi Agency, 2007.

15MCA012   **Microprocessor Laboratory**   **0**   **0**   **4**   **2**

Course Objective:

This laboratory course will mainly comprise of exercise on what is learnt under the paper Microprocessor Based System Design (15MCA008)

Using 8085 and Using 8086 Microprocessor kit / MASM software

1. Multibyte Addition of 16 bit number
2. Multibyte Subtraction of 16 bit number
3. Multiplication of 16 bit number
4. Division of 16 bit number
5. Computing GCD of n Numbers
6. Computing LCM of n Numbers
7. Linear Search
8. Computing Factorial
9. Computing Fibonacci Number
10. Greatest of two numbers
11. Computing factorial using procedures
12. Computing factorial using macros

TOTAL: 48 HOURS

15MCA013   **Programming in C++ Laboratory**   **0   0   4   2**

Course Objective

Understand and use the basic programming constructs of C++, Isolate and fix common errors in C++ programs, use memory appropriately, including proper allocation/deallocation procedures, apply object-oriented approaches to software problems in C++ and write small-scale C++ programs using the above skills.

1. Implementation of arrays (One Dimensional sorting)

2. Implementation of arrays (One Dimensional multidimensional)

3. Implementation of arrays (Multidimensional)

4. Implementation of Stack (Using Arrays)

5. Implementation of Queue (Using Pointers)

6. Evaluation of Expressions – ITP (infix to postfix)

7. Postfix expression evaluation

8. Polynomial addition using pointers

9. Singly Linked List

10. Doubly Linked List

11. Tree Traversal(Preorder, Inorder and Postorder):Search methods in graph (DFS, BFS) Using recursion.

12. Shortest path method

TOTAL 48 HOURS

15MCA014   **Visual Programming Laboratory**   **0   0   4   2**

Course Objective:

This course introduces computer programming using the Visual BASIC programming language with object-oriented programming principles. Emphasis is on event-driven programming methods, including creating and manipulating objects. Upon completion, students should be able to design, code, test and debug at a beginning level.

1. Building Simple Applications
2. Working with Intrinsic Controls and ActiveX Controls
3. Application with multiple forms
4. Application with Dialogs
5. Application with Menus
6. Student Mark List Processing using Data Controls
7. Application using Common Dialogs
8. Drag and Drop Events
9. Employee Pay roll Database using RDO
10. Database Management ADO
11. Application using windows common controls(Treeview and Listview)
12. Creating ActiveX Controls

TOTAL: 48 HOURS

15MCA015   **Operating System & UNIX**   **3   0   0   3**

Course Objective: Recognize the concepts and principles of operating systems, the main objective of this course is to provide students with the basic, knowledge and skills of operating,, Managing, and maintaining microcomputer systems, dealing with windows environment efficiently.

UNIT I   INTRODUCTION   9

Introduction – Multi programming – Time sharing – Distributed system – Real time system General System architecture – Operating system services – System calls – System program – System Design and Implementation, Process Management Process concept – Concurrent process – Scheduling concepts – CPU scheduling – Scheduling Algorithms. Multiple processor scheduling.

UNIT II   PROCESS MANAGEMENT   9

Process Management Process Synchronization – Critical section – Synchronization hardware – Semaphores, classical problem of synchronization, inter process communication, deadlocks characterization, Prevention, Avoidance and Detection.

UNIT IIISTORAGE MANAGEMENT   9

Storage Management – Swapping – single and multiple partition allocation – paging – segmentation – paged segmentation, virtual memory – demand paging – page replacement and algorithms, thrashing. Files and Protection – File system organization – file operations– access methods

UNIT IV   INTRODUCTION TO UNIX   9

Introduction to Unix–Unix components – UNIX file – file attributes and permission – standard I/O – redirection – pipe and filters – grep and stream editor – process and signal commands.

UNIT V   SHELL PROGRAMMING   9

Shell programming – Shell variables – Control Structures – Arithmetic in Shell programming – Debugging Scripts.

TOTAL: 60 HOURS

Text Books:

1. A.Silberschatz, P.B.Galvin Ganaga, "Operating Concepts", Addison Wesley – publishing Co., 6th Edition, 2002.
2. Das, Sumitabha, "UNIX THE ULTIMATE GUIDE", Tata McGraw Hill, Delhi, 2001.

Reference Books:

1. Deitel H.M. "An Introduction to Operating System". Addison Wesley Publishing Co.,
2. Tanenbaum.A, "Operating System – Design and implementation", Prentice– Hall of India.
3. B.A. Fozougar, R.Failberg, "Unix and shell programming", Thomson, 2003.

15MCAC016   **Web Technology**   **3   0   0   3**

Course Objective:

Giving the students the insights of the Internet programming and how to design and implement complete applications over the web, Design Methodologies with concentration on Object–Oriented concepts, Client–Side Programming, Server–Side Programming, Database Connectivity to web applications, Adding Dynamic content to web applications, Programming Common Gateway Interfaces, Programming the User Interface for the web applications.

UNIT I INTRODUCTION TO HTML   **9**

Introduction to common HTML, Links and Addressing – Linking in HTML – Images and Anchor – HTML and Images – HTML Images Basics – ALT Attributes – Image alignment – HSPACE and VSPACE – HEIGHT and WIDTH – Layout with Tables – Introduction Tables – Simple Tables – ROWSPAN and COLSPAN – Tables for Layout – Frames – Simple Frame Example – Forms – Forms Controls–Text Controls–Additional<input>Type – New and Emerging form Elements.

UNIT II JAVA SCRIPT   **9**

Core Java Script – Variables – Constant – Expression Conditions – Relational Operators – Data Types – Flow Control – Functions – Objects – Data type Conversation & Equality – Windows and Frames – Forms and Data

UNIT III XML & SERVLET   **9**

Servlets Features – 3-Tier applications – Servlet API – Explaining servlet life cycle - Creating sample servlet – working with ServletConfig , Servlet Context, HtpServletRequest and HtpServletResponse – Request Delegation and Request scope

UNIT IV JSP   **9**

Basic JSP Architecture – Life Cycle of JSP (Translation, compilation) – JSP Tags and Expressions – Role of JSP – Scripting elements – Implementation of JSP

UNIT V JDBC & RMI   **9**

JDBC – Introduction to JDBC and its components – implementing JDBC in Applet in – introduction to RMI – Structure of RMI – implementing RMI.

                                 TOTAL: 45 HOURS

Text Books:

1. I.Bayross, "Teach yourself webtechonology part 1 & 2", BPB, 2010.

2. J.Niederst, "Web design in a Nutshell", SPD, 2011.

Reference Books:

1. A.Subramanyam, "Java Server Programming", SPD, J2EE edition, 2001.

2. M.Young, "Step by Step XML", PHI. Second Edition, 2002.

15MCA017   **Programming in Java**   **3   0   0   3**

Course Objective:

To understand the object oriented programming using Java, invoking methods using class libraries, the important topics and principles of software development & be able to use the Java SDK environment to create, debug and run simple Java programs

UNIT I INTRODUCTION TO JAVA   **9**

Introduction to Java – Features of Java – Object Oriented Concepts – Lexical issues – Data Types – Variables – Arrays – Operators – Control Statements.

UNIT II CLASSES, OBJECTS AND METHODS   **9**

Classes – Objects – Constructors – Overloading methods – Access control – Static and fixed Methods – Inner Class – String Class – Inheritance – Overriding Methods – Using Super – Abstract Class.

UNIT III PACKAGES   **9**

Packages – Access Protection – Importing Packages – Interfaces – Exception Handling – Throw and Throws – Thread – Synchronization – Messaging – Runnable Interface– Inter Thread Communication

UNIT IV I/O STREAMS   **9**

I/O Streams – File Streams – Applets – String Objects – String Buffer – Char Array – Java Utilities – Random, Vector, Calendar and Properties.

UNIT V NETWORK BASICS   **9**

Network Basics – Socket Programming – Proxy Server – TCP/ IP Sockets Net Address – URL – Datagrams – Working With Windows Using AWT Classes. AWT Controls – Layout Management and Menus.

TOTAL: 45 HOURS

Text Book:

1. P. Naughton & H. Schildt, "Java2-The Complete Reference", 5th Edition, Tata McGraw Hill, 2002.

Reference Books:

1. Cay S. Horstmann, Gray Cornell, "Core Java 2 Volume 1 Fundamentals", Addison Wesley, 2003.
2. K. Arnold and J. Gosling, "The Java Programming Language", Second Edition,

15MCA018   **Financial and Management Accounting**   **4 0 0 3**

Course Objective:

Describe the system of accounting standards and principles, prepare a balance sheet, income statement, and a statement of cash flows using both the indirect and direct method. account for short term investments and receivables, including bad debts, account for the purchase, depreciation, or a premium by the effective interest method, including interest payments for full and partial periods.

UNIT I PRINCIPLES OF ACCOUNTING   12

Principles of Accounting Principles of double entry – Assets and Liabilities – Accounting records and systems – Trial balance and preparation of financial statements – Trading, Manufacturing, and profit and Loss accounts, Balance Sheet including adjustments (Simple problems only).

UNIT II ANALYSIS, INTERPRETING ACCOUNTS AND FINANCIAL STATEMENTS   12

Analysis And Interpreting Accounts And Financial Statements   Ratio Analysis – Use Of Ratios In Interpreting The Final Accounts (Trading Accounts And Loss A/C And Balance Sheet) – Final Accounts To Ratios As Well As Ratios To Final Accounts.

UNIT III BREAK–EVEN ANALYSIS   12

Break–Even Analysis And Marginal Costing Meaning Of Variable Cost And Fixed Cost – Cost Volume Profit Analysis – Calculation Of Breakeven Point, Profit Planning, Sales Planning And Other Decision – Making Analysis Involving Break – Even Analysis – Computer Accounting And Algorithm.(Differential Cost Analysis To Be Omitted)

UNIT IV BUDGET FORECASTING   12

Budget/Forecasting Preparation of and Characteristics of Functional Budgets, Production, Sales, Purchases, Cash and Flexible Budgets.

UNIT V PROJECT APPRAISAL   12
Project Appraisal Method Of Capital Investment Decision Making Payback Method, ARR Method – Discounted Cash Flows Net Present Values Internal Rate Of Return Sensitivity Analysis   Cost Of Capital.

                                                              TOTAL: 60 HOURS

Text Books:

1. Shukla M.C. & T.S. Grewal, "Advanced Accounts", S.Chand & Co. New Delhi, 1991.
2. Gupta R.L. & M. Radhaswamy, "Advanced Accounts Vol. II", Sultan Chand & Sons, New Delhi, 1991.

Reference Books:

1. Man Mohan & S.N. Goyal, "Principles of Management Accounting", Arya Sahithya Bhawan, 1987.
2. Kuchhal, S.C, "Financial Management", Chaitanya, Allahabad. 1980.
3. Hingorani, N.L. & Ramanthan, A.R, "Management Accounting", Sultan Chand, New Delhi, 5th edition ,1992..

15MCA019   **Programming in Java Laboratory**   **0   0   4   2**

Course Objective:

Be able to use the Java SDK environnement to create, debug and run simple Java programs, Write programs using object-based programming techniques including classes, objects and Inheritance, Program Java keyboard input and screen output Write clear, elementary Java programs (applications and applets), use a Java-enabled browser and/or the appletviewer to execute Java applets, Use the Java interpreter to run Java applications

Application

1. Determining the order of numbers generated randomly using Random Class.
2. Implementation of Point Class for Image manipulation
3. Usage of Calendar Class and manipulation
4. String Manipulation using Char Array
5. Database Creation for string e–mail address and manipulation
6. Usage of Vector Classes
7. Implementing Thread based applications and Exception Handling in Synchronization
8. Implementing Thread based applications and Exception Handling in asynchronization.

Applets

9. Working with frames and various controls.
10. Working with Dialogs
11. Working with Menus
12. Working with Panel and Layout

                                                        TOTAL: 48 HOURS

15MCA020   **Operating Systems and UNIX Laboratory   0   0   4   2**

Course Objective:

Describe the general structure and purpose of an operating system, explain the concepts of process, address space, and file, compare and contrast various CPU scheduling algorithms; (OS). The objective of the course is to help the programmers create a productive UNIX environment

1. Write a script that ask for users age. If its equal to or higher than 18 , print a message saying this user is allowed to drive any vehicle. If the user age is below 16 print a message telling the user how many years he/she as to wait before legally being allowed to drive.
2. Use an if/tehn /else construct that prints information about the current month.The script should print the number of days in this month and give information about leap year if the current month is February.
3. Check whether the given number is Armstrong.
4. Write a shell script for factorial.
5. Generate a shell script of Fibonacci series and its summation.
6. Check whether the given number is prime or not.
7. Accept any number of arguments and prints them in the reverse order.
8. Design a menu driven program for rename , remove and copy commands.
9. Process scheduling FCFS
10. Process Scheduling Least Frequency used.
11. Process Scheduling Round Robin
12. Signalling processes

TOTAL: 48 HOURS

15MCA021   **Web Technology Laboratory**   **0**   **0**   **4**   **2**

Course Objective:

Understand, analyze and apply the role of languages like HTML, DHTML, CSS, XML, Javascript, Servlet and JSP in the workings of the web and web applications Understand, analyze and create web pages using HTML, DHTML and Cascading Styles sheets. Understand, analyze and build and consume web services.

1. Prepare a bio data using various HTML formatting Tags
2. Prepare Student Mark sheet using Table tags including colspan and rowspan.
3. Develop a webpage for Shopping mall using frames and links using HTML.
4. Write a program in JavaScript for a simple calculator
5. To create an array of elements using java scripts.
6. To find the greatest of two numbers using javascript.
7. Read a string and list it character by character using javascript.
8. Linking the image without clicking using mouseover event in javascript.
9. Write a program to change the background of the webpage using javascript.
10. Create a program for client and server side program
11. Create a webpage for server side program to find the number of hits.
12. Write a program for html to JSP to generate username and password

TOTAL: 48 HOURS

15MCA022   **Computer Networks**   **3   0   0   3**

Course Objective:

The students will be able to build an understanding of the fundamental concepts of computer networking. Familiarize the student with the basic taxonomy and terminology of the computer networking area. Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking.

UNIT I INTRODUCTION   **9**

Introduction – Computer Networks – Network For Companies – Network For People – Application – Network Hardware – LAN, WAN, MAN, Wireless Networks–Network Software – Protocol Hierarchies – Reference Model – OSI Reference model, TCP/IP Reference – Comparison of OSI & TCP/IP.

UNIT II TYPES OF LAYERS   **9**

The Internet – The ARPANET – NSFNET – Internet Usage – Architecture Of Internet – Connection Oriented Network X.25, Frame relay – ATM – ATM Virtual Circuits – ATM Reference Model – Guided Transmission Media – Magnetic Media – Twisted Pair – Coaxial Cable – Fibre Optics – Wireless Transmission – Data Link Layer – Data Link Layer Design Issues.

UNIT III TYPES OF PROTOCOLS   **9**

Public Switched Telephone Network – Structure Of Telephone System – Switching – Elementary Data Link Protocols – An Unrestricted Simplex Protocol – A Simplex Stop And Wait Protocol – A Simplex Protocol For A Noisy Channel – Sliding Window Protocols – One Bit Sliding Window Protocol – A Protocol Using Go Back N – A Protocol Using Selective Repeat.

UNIT IV ROUTING ALGORITHMS   **9**

The Network Layer – Design Issues – Routing Algorithm – The Optimality Principle – Shortest Path Routing – Flooding – Distance Vector Routing – Hierarchical Routing – Link State Routing – Broad Cast Routing – Multicast Routing – Congestion Control Algorithm – General Principle Of Congestion Control – Congestion Prevention Policies – Congestion Control In Virtual Circuit Subnets – Congestion Control In Datagram Subnets – Load Scheduling – Jitter Control.

UNIT V TRANSPORT LAYER   **9**

Transport Layer – Design Issues – Elements Of Transport Protocols – Addressing – Connection Establishment – Connection Release – The Internet Transport Protocol – Network Security – Cryptography.

TOTAL: 45 HOURS

Text Book

1. S.Tanenbaum, "Computer Networks", Pearson Education, Inc, New Delhi, Fourth Edition, 2003.

Reference Books

1. B. Forouzan, "Introduction to Data Communications in Networking", Tata McGraw Hill, New Delhi, 2007.
2. F. Halsall, "Data Communications, Computer Networks and Open Systems", Addison Wessley, 2005.
3. Bertsekas and R. Gallagher, "Data Networks", Prentice hall of India, New Delhi, 2012.

15MCA023   **Relational Database Systems**   **4   0   0   3**

Course Objective:

To introduce basic concepts of RDBMS, to introduce basic concepts of SQL, to introduce the concept of transaction processing, to implement the database normalisation using normal forms

UNIT I INTRODUCTION TO DATABASE SYSTEMS   12

Overview – Data Models – Database System Architecture – History of Database Systems. Entry – Relationship Model Basic Concepts – Constraints – keys – Design Issues – Entry Relationship Diagram – Weak Entity Sets – Extended E–R Features – Design of an E–R Database Schema – Reduction of E–R Schema to Tables –UML.

UNIT II RELATIONAL MODEL   12

Relational Algebra – Extended Relational Algebra Operations – Modification of Database – views – Tuple Relational Calculus – Domain Relational Calculus. SQL Background – Basic Structure – Set Operations – Aggregate Functions – Null Values – Nested Sub queries – views – Joined Relations – Data– Definition Language – Embedded SQL – QBE.

UNIT III NORMAL FORMS   12

Integrity and Security Domain Constraints – referential Integrity – Assertions – Triggers – Security and Authorization – Authorization in SQL – Encryption and Authentication. Relational – Database Design Pitfalls in relational – Database Design – Function Dependencies– Decomposition – Desirable Properties of Decomposition – Normal Forms – Boyce – Codd Normal Forms.

UNIT IV FILE ORGANIZATION   12

Storage and File Structures Overview of Physical Storage media – magnetic Disks – RAID – Tertiary Storage – Storage Access – File Organization – Organization of Records in Files – Data – Dictionary Storage – Indexing and hashing.

UNIT V Oracle, SQL & PL/SQL   12

Introduction to Oracle – DDL,DML and DCL – Aggregate functions – sub queries – join Operations – Views – PL/SQL Block – decision making and Control Structures – Procedure – functions – Sequences – Cursors and Triggers – Example Database Programs.

                                                                    TOTAL: 60 HOURS

Text Books:

1. A.Silberchatz, H.Korth, Subarshan, "Database System Concepts", McGraw – Hill Higher Education, 5th Edition, 2012.
2. Koch and Liney, "Oracle9i The Complete reference", McGraw–Hill, 2002

Reference Books:

1. C.J.Date, "An Introduction to Database Systems", Pearson Education, Seventh Edition, 2003.
2. Elmasri, Navathe, "Fundamentals of Database Systems, Addison Wesley", 3rd Edition, 2000.
3. Jeffrey D. Ullman, Jenifer Wisdom, "A First Course in Database Systems", Pearson Education Asia, 2001.
4. Bipin C. Desai, "An Introduction to Database Systems", Galgotia Publications Pvt. Limited, 2001.
5. Oracle Database Handbook (Oracle Press) 2007.

15MCA024   **Computer Graphics**   **3   0   0   3**

Course Objective:

Students will learn how to develop interactive programs that use effectively the graphics functionalities available in contemporary personal computers, the fundamental principles and technologies upon which these functionalities, and possibly their future evolutions, are based, and the skills for designing and implementing practical graphic solutions to challenging problems in different application domains.

UNIT I INTRODUCTION   **9**

Overview of Graphics – Bresenhams Technique – Line Drawing and Circle Drawing Algorithm – DDA – Line Clipping – Text Clipping

UNIT II 2D TRANSFORMATION   **9**

Two Dimensional Transformation – Scaling and Rotations – Interactive Input Methods – Polygons – Splines – Bezier Curves – Window View Port Mapping Transformation

UNIT III 3D TRANSFORMATION   **9**

3D Concepts – Projections – Parallel Projection – Perspective Projection – Visible Surface Detection Methods – Visualization And Polygon Rendering – Color Models – Animation – Key Frame Systems – General Animation Functions – Morphing

UNIT IV OVERVIEW OF MULTIMEDIA   **9**

Multimedia Hardware and Software – Components of Multimedia – Text, Image – Graphics – Audio – Video – Animation – Authoring.

UNIT V MULTIMEDIA SYSTEMS AND APPLICATION   **9**

Multimedia Communication System – Data Base System – Synchronization Issues – Presentation Requirements – Applications – Video Conferencing – Virtual Conferencing – Virtual Reality – Interactive Video – Video on Demand.

TOTAL: 45 HOURS

Text Books:

1. Hearn D and Baker M.P,"Computer Grapics–C Version", Pearson Education (UNIT1, 2&3), Second Edition, 2010.
2. Ralf Steinmetz, Klara Steinnmetz,"Multimedia Computing, Communication and Aplication", Pearson Eucation, (UNIT4 & UNIT5), 2004.

Reference Books:

1. Siamon J. Guiibbs and Dionysios C. Tsichritzis,"Multimedia Programming", Addison Wesley, 2005.
2. John Villamil,Casanova and Leony Fernanadez, Eliar, "Multimedia Graphics", PHI, 2008.

15MCA025   **Software Development Laboratory**   **0 0 4 2**

Course Objective:

To learn will center on how to understand, organize, analyze, and modify software for menu-driven concept, to have hands-on experience in these areas and gain the ability to extend these skills so as to provide a strong basis for independent computer science work.

Develop software using CASE tools for the application like

1. Library Information Processing.

2. Students Mark sheet processing

3. Telephone directory maintenance.

4. Gas booking and delivery system.

5. Electricity Bill Processing.

6. Bank Transaction (SB).

7. Pay roll processing.

8. Inventory

9. Question Database and conducting quiz.

10. Purchase order processing.

11. Seat Reservation System.

12. Personal Information System

Software required

Languages: C/C++/java/JSDK/Web browser. Any front end tool (like VB, Developer 2000) etc. Any backend tool (Oracle). Any CASE tool

TOTAL: 48 HOURS

15MCA026   **Relational Database Systems Laboratory**   **0   0   4   2**

Course Objective:

Understand the fundamental concepts of database management. These concepts include aspects of database design, database languages, and database-system implementation, understand the role of the DBMS & RDBMS in the organization.

SQL PLUS:

1. Create, Insert, Select & Update into database & simple queries.

   a. Logical Operators

   b. Set Operators

   c. Sorting and Grouping.

2. Nested queries

   a. Sub–queries

   b. Join operations.

   c. The Use of Indexes, Creating Views and Querying In Views.

3. Built–in–functions of SQL, Aggregate Functions & String Functions

PL / SQL:

4. Program for Student Evaluation Systems.

5. Program for Payroll System

6. Program for Electricity Bill Preparation.

7. Program for Seat Reservation Problems

8. Program for create and access sequence and synonyms.

9. Program for create and access the functions

10. Program for create and access Stored procedures

11. Program for create and access Cursors

12. Program for create and access Triggers

TOTAL: 48 HOURS

15MCA027   **Computer Graphics Laboratory**   **0   0   4   2**

Course Objective:

Learn basic and fundamental computer graphics techniques, learn image synthesis techniques, and examine applications of modelling, design and visualization, how to draw pictures using Bresenhams line drawing, mid-point line drawing, mid-point circle drawing and Cohen-Sutherland line clipping

1. Write a C program with Fundamental Graphics function.

2. Write a C program to animate an Image.

3. Write a C program for different types of fonts and colors

4. Write a C program for Line drawing algorithm using DDA.

5. Write a C program for Line drawing algorigm using Bresenhams Technique.

6. Write a C program for Midpoint Circle Drawing Algorithm using Bresenham Technique

7. Write a C program for Ellipse Drawing Algorithm using Bresenham Technique

8. Write a C program for 2D Transformation in Translation

9. Write a C program for 2D Transformation in Rotations.

10. Write a C program 2D Transformation in Scaling.

11. Write a C program for 3D Transformation in Translation

12. Write a C program for 3D Transformation in Rotation

TOTAL: 48 HOURS

15MCA028   Software Testing & Quality Assurance   3   0   0   3

Course Objective:

Understand why quality is key in all of the testing stages in the Software Development Lifecycle, Understanding Requirements, Testing Techniques and Test Documentation and also focuses on testing at all stages of the software development life cycle.

UNIT I INTRODUCTION   9

Introduction Purpose – Productivity and Quality in Software – Testing vs Debugging – Model for Testing – Bugs – Types of Bugs – Testing and Design Style.

UNIT II TESTING STRATEGIES   9

Flow/Graphs and Path Testing – Achievable paths – Path instrumentation – Application – Transaction Flow Testing Techniques – Data Flow Testing Strategies

UNIT III DOMAIN TESTING   9

Domain Testing Domains and Paths – Domains and Interface Testing – Linguistic – Metrics – Structural Metric – Path Products and Path Expressions.

UNIT IV TYPES OF TESTING   9

Syntax Testing – Formats – Test Cases – Logic Based Testing – Decision Tables – Transition Testing – States, State Graph, State Testing.

UNIT V VALIDATION TOOLS   9

Verification and Validation – Fundamental Tools – Levels of Testing – Testing Approaches – Types of Testing – Test Plan – Software Testing Tools Win Runner – Silk Test.

TOTAL: 45 HOURS

Text Books:

1. B. Beizer, "Software Testing Techniques", DreamTech India, New Delhi. 2nd Edition, 2003.

2. K.V.K.K. Prasad, "Software Testing Tools", DreamTech. India, New Delhi, 2005.

Reference Books:

I. Burnstein, "Practical Software Testing", Springer International Edition, 2005.

1. E. Kit, "Software Testing in the Real World Improving the Process", Pearson Education, Delhi, 1995.

2. R.Rajani, and P.P.Oak, "Software Testing", Tata McGraw Hill, New Delhi, 2004.

15MCA029   **Introduction to PHP, MYSQL**   **4   0   0   3**

Course Objective:

To give basic Knowledge of PHP and MySQL, PHP form validation, Understand basic concepts of database stores information via tables. Learn how to retrieve and manipulate data from one or more tables. Updating and inserting data into existing .The advantages of store procedures with storing data using variables and functions.

UNIT I INTRODUCTION TO PHP   12

Introduction to Open Source Technology – Introduction to PHP – How PHP works – the PHP.ini file – Basic PHP Syntax – PHP Tags – PHP Statements And Whitespace – Comments – PHP for Web Application – Variables – Variables Types –Variable Names(Identifiers) – Type Strength – Variable Scope – Super global– Constants Variable –

UNIT II ARRAYS AND CONTROL STRUCTURE   12

Arrays – Types of Array, Multidimensional array, Variable, Contents, Operator In PHP. If–Else Statement, Nested If Statement, Switch Statement Looping Structure – For Loop, While Loop, Do While Loop, For each Loop.

UNIT III FUNCTIONS IN PHP   12

Definition and Syntax of Function, User Defined Function, System Defined Function, Parameterized and Non Parameterize Function. Date & Time Function, Hash Function, Mail Function, File Inclusion – Include(), Require(), String Function – Chr(), strlen(), strops(), strcmp(). Testing and Manipulation Functions.

UNIT IV FILE HANDLING   12

Login Security Authentication (Users Logins) – Authorization (permissions) – Encryption – Session Cookies PHP Mail, File Handling, File Uploading.

UNIT V MYSQL DATABASE   12

What is Database?, Understanding Tables, Record & Fields, Working with PHP My Admin, SQL Data Types, Creating Database & Tables, Dropping Database & Tables, Adding Fields, Selecting Table, Alerting Fields Properties, SQL Queries.

TOTAL: 60 HOURS

Text books:

1. Leon Atkinson, "Core PHP Programming", Pearson Publishers, Third Edition, 2004.

2. Stever Holzner , "The complete Reference PHP", McGraw Hill, 2008.

3. Tim Converse, Joyce Park, Clark Morgan, "PHP 5.0 and MySQL Bible", John Wiley & Sons, First Edition.

Reference Books:

1. Christopher Scollo, Harish Rawat, Deepak Thomas, "Beginning PHP 5.0 Database by Publisher", WROX press, 2002.
2. Ashok Appu, "PHP – A beginners Guides", Wiley Publisher.
3. Steve Suehring , "MySQL Bible", John Wiley &Sons
4. Peter Moulding, "PHP Black Book"
5. Tim converse, Joyce Park and Clark Morgan, "PHP 5 and MySQL", Bible Wiley
6. Matt Doyle , "Beginning PHP 5.3 ", Word publication

15MCA030 .Net Technology **4 0 0 3**

Course Objective:

The student will have the ability to use visual studio .NET effectively. To create a console based and web based application in .Net. .NET is a revolutionary concept on how software should be developed and deployed. An understanding of how to use forms to develop GUI programs under .NET.

UNIT I INTRODUCTION TO .NET TECHNOLOGIES **12**

Overview of .Net Framework – Feature Of .Net Framework – .Net framework class library – .NET Framework Components – Overview with Focus on CLR, CTS – MSIL – JIT – Assembly – DLL – Meta Data – Application Architecture.

UNIT II INTRODUCTION TO C# **12**

C# Building Blocks Introduction to C# – Overview–Types – Expressions – Declarations – Statements – Classes and Struts – OOPS – Constructors and Destructors

UNIT III BASIC WEB SERVER CONTROLS **12**

Windows Controls   Basic web server controls – Rich web server Controls – ToolTip   – Error Provider – Main Menu – Context Menus – Common Dialogs – Date Time Picker – Month Calendar – Splitter – Help Provider – Status Bar – Notify Icon – Print Related

UNIT IV ADVANCED .NET CONTROLS **12**

Web Server List Controls Check Box List – Radio Button List – Drop down List – List Box – Bulleted List. Data Controls Data Grid – Repeater Control – Grid View–Other Web Server Controls Navigation Controls And Validation Controls.

UNIT V OBJECTS AND ADVANCED CONCEPTS IN ASP.NET **12**

Request Object – Response Object – State Management for Session, Application, Cookies, Query String – Introduction to ADO.NET – ADO Vs ADO.NET – Connected ADO.NET Architecture – Disconnected ADO.NET Architecture – Data Reader – Data Adapter – ADO.NET Classes.

TOTAL: 60 HOURS

Text Books:

1. Andrew Troelsen, "C# and the .Net platform", apress, (UNIT I and UNIT II), 2001.
2. Mridula Parihar, et.al. "ASP .NET Bible", Wiley – DreamTech India Pvt. Ltd, – 2002.

Reference Books:

1. David S. Platt – "Introducing .Net", Microsoft press, 2002.
2. Alex Homer et. Al, "professional ASP .NET 1.1", Wiley DreamTech India Pvt. Ltd.2004.
3. Rebecaam. Riordan, "ADO .NET Step By Step", Microsoft Press.

15MCA031   **Data Warehousing and Data Mining**   **4   0   0   3**

Course Objective:

This course helps the students to understand the overall architecture of a data warehouse and techniques and methods for data gathering and data pre–processing .The different data mining models and techniques will be discussed in this course. It makes the students to understand and implement classical algorithms in data mining and data warehousing; students will be able to assess the strengths and weaknesses of the algorithms, identify the application area of algorithms, and apply them.

UNIT I INTRODUCTION   **12**

Data Mining Tasks – Data Mining Versus KDD – Relational Databases – Data Warehouses – Transaction Databases – Object Oriented Databases – Spatial Databases – Temporal Databases – Text And Multimedia Databases – Heterogeneous Databases – Social Implications of Data Mining.

UNIT II DATA PREPROCESSING   **12**

Data Preprocessing – Data Cleaning, Integration and Transformation, Reduction, Discretization and concept hierarchy generation.

UNIT III DATA MINING TECHNIQUES   **12**

Association Rule Mining – The Apriori Algorithm – Multilevel Association Rules – Constraint Based Association Mining – Mining Association Rules In Large Databases.

UNIT IV CLASSIFICATION AND PREDICTION   **12**

Issues Regarding Classification And Prediction–Classification By Decision Tree Induction–Bayesian Classification–Back Propagation–Prediction–Classifier Accuracy.

UNIT V CLUSTER TECHNIQUES   **12**

Clusters Analysis Type Of Data In Cluster Analysis – Categorization of Major Clustering Methods Partitioning Methods – Hierarchical Methods – Case Studies – Mining WWW – Mining Text Database – Mining spatial database.

                                                                                              TOTAL: 45 HOURS

Text Books:

1. Jiawei Han, Micheline Kamber, "Data Mining Concepts and Techniques ", Morgan Kaufmann Publishers, 2002.
2. Alex Berson, Stephen J. Smith, "Data Warehousing, Data mining & OLAP ", Tata McGraw Hill, 2004.

Reference Books:

1. Usama M.Fayyad, Gregory Piatetsky, Shapiro, Padhrai Smyth and Ramasamy Uthurusamy, "Advances in Knowledge Discovery and Data Mining", the M.I.T Press, 1996.
2. Ralph Kimball, "The Data warehouse Life Cycle Toolkit ", John Wiley & sons Inc., 1998.

15MCA032   **PHP & MYSQL Laboratory**   **0   0   4   2**

Course Objective:

Understand the usage of PHP and MySQL in dynamic web development, understand PHP language data types, logic controls, built-in and user-defined functions, be able to setup and configure MySQL, PHP, Apache web server development environment, Select, insert, update and delete data using SQL language, understand Object oriented programming paradigm in PHP, Build a simple, yet functional web application using PHP/MySQL.

1. Write PHP script to display person age and name using post method.

2. PHP script for sorting the marks

3. Write PHP script to change color as per radio button selection.

4. Write PHP script to display images depends on check box selection.

5. Design of admission form using PHP–MYSQL

6. Building a web–based e–mail services

7. Building web forums

8. Creating & updating and inserting into database & simple queries

9. Write PHP script to upload file.

10. Write PHP script to connect to MySQL database, insert data, and fetch data from table.

11. Write PHP script to upload and fetch image from MySQL database

12. Write PHP script that maintain session and set cookie of username and password.

TOTAL: 48 HOURS

15MCA033   **.NET Practical Laboratory**   **0   0   4   2**

Course Objective:

The student will be able to:

Build web applications using ASP.Net, create web forms, apply ADO.Net, validate form data using server-side Validation controls, and create dynamic Web applications that interact with a database using server-side programming

1. Working with Basic Html controls

2. Working with Basic Web Server Controls

3. Working with Basic Web Server List Controls

4. Working with Rich Web Server Controls

5. Write a .NET desktop application to demonstrate how to use a Timer control to create a logon program with a password time–out feature.

6. Write a .NET desktop application to demonstrate how to create and manipulate large integer arrays, and demonstrates the Array concepts.

7. Working with Verification and Validation

8. Working with Windows Application (Calculator)

9. Working with Navigation Control

10. Working with Query String

11. Create a web application and demonstrate session state within a web application.

12. Working with Database Connection using MS Access or SQL

TOTAL: 48 HOURS

15MCA034   Mini Project   0   0   4   2

Each student will develop and implement individually application software based on any emerging latest technologies.

TOTAL: 48 HOURS

15MCA035   Main Project   0   0   0   20

Project Work can be carried out individually in an R&D Section of any Industry or University or in the Institute in which Candidate is Studying. The Project Work/Dissertation Report Shall be Submitted through the Guides/Supervisors to the Head of the Department and then to the University not later than 31st May/31st December. If He / She Fails to Submit the Project Work/Dissertation within the Stipulated Date for a Particular Semester, Project/Dissertation Evaluation and Viva–Voce shall be conducted by one External Examiner And one Internal Examiner who shall normally be The Project Guide.

Continuous Internal Assessment   50 Marks

Dissertation   100 Marks

Viva–Voice   50 Marks

Reviews	Details To Submit
1st Review	Company Profile, Project Title, Software Used (Front And Back End)& Confirmation Letter
2nd Review	**PPT** Presentation About The Project And Its Salient Features
3rd Review	**PPT** Presentation Of Abstract & Explanation Of Project With Tables, Forms And Analysis Report.
4th Review	**PPT** Presentation Of Complete Flow Of Project With Design Tools. Live Demo If Possible
5th Review	Submission Of **Final Project Dissertation** In The Prescribed Format (2 Copies) + 1CD

Note: Rough Documentation Should Be Shown to the Respective Guide Before Binding.

Syllabus of Discipline Specific Elective Courses

15MCA101   **Essentials of Information Technology   3   0   0 3**

Course Objective:

To understand the basics of computers, problem solving techniques, file handling and database concepts, Analysis and Design varied roles of information systems software development life cycle human factors develop interpersonal and analytic skills design a large information system group design effort communicate design orally and in writing data modeling

UNIT I INTRODUCTION TO COMPUTER SYSTEM   9

Basics of computer systems – Various hardware components – Date storage and various memory Units – Central processing unit – Execution cycle – Introduce to software and its classification.

UNIT II PROBLEM SOLVING TECHNIQUES   9

Introduction to Problem Solving – Computational Problem and its Classification – Logic and its Types – Introduction to Algorithms – Implementation of Algorithms using Flowchart – Flowcharts Implementation through RAPTOR Tool – Searching and Sorting Algorithms – Introduction and Classification to Data Structures – Basic Data Structures – Advanced Data Structures.

UNIT III PROGRAMMING BASICS   9

Introduction to Programming Paradigms and Pseudo Code – Basic Programming Concepts – Program Life Cycle – Control Structures – Introduction and Demonstration of 1–D Array And 2–D Array – Searching and Sorting Techniques – Demonstration Concepts of Memory References in Arrays – Strings – Compiler Concepts – Code Optimization Techniques. Structured Programming – Functions

– Structures – File Handling – Introduction to Software Development Life Cycle – Industry Coding Standards and Best Practices – Testing and Debugging – Code Review.

UNIT IV PROJECT   9

Project Specification – Preparation of High Level Design and Detailed Design Document, UNIT Test Plan and Integrated Test Plan – Coding and UNIT Testing Activities – Integration Testing.

UNIT V RDBMS   9

RDBMS – Data Processing – The Database Technology – Data Models – ER Modeling Concept – Notations –Extended ER Features – Logical Database Design – Normalization – SQL – DDL Statements – DML Statements – DCL Statements – Joins – Sub queries – Views – Database Design Issues.

TOTAL: 45 HOURS

Text Books:

1. Andrew S.Tanenbaum, "Structured Computer Organization", PHI, 4th edition, 2010.
2. Dromey, R.G, "How to solve it by computers", Prentice Hall, 2005.
3. Alfred V.Aho, Ullman, Hopcroft, "Data Structures and Algorithms", Addison–Wesley.

4. Yashwant Kanitker, Let Us C, "Yashwanth Kanitkar", Second Edition.

5. Aho Alfred V.Compiler, "Principles, Techniques and Tools", Pearson Education.

6. Henry F Korth,Abraham Silberschatz, "Database System Concepts", 2nd Edition, McGraw Hill International editions, Computer science series, 2012.

Reference Books:

1. John L.Hennessy, David Goldberg, David A.Patterson, "Computer Architecture A Quantitative Approach", Morgan Kaufman Publishers, Second Edition, 1996.

2. Silberschatz and Galvin, "Operating System Concepts", John Wiley & Sons, Sixth edition.

3. Andrew Tanenbaum, "Modern Operating System Concepts", Pearson Education.

4. Milan Milenkovic,"Operating System concepts and design", McGraw–Hill.

5. Charles Crowley,"Operating System A Design–oriented Approach".

6. Lipschutz, Seymour & G A V Pai, "Data Structures", Tata McGraw–Hill.

7. Baldwin, Douglas & Scragg, Greg W., "Algorithms and Data Structures the Science of Computing", DreamTech.

8. Kernighan, Ritchie, "ANSI C Language", Prentice Hall of India, New Delhi, 1992.

9. Schaum series, "Programming in C", 3rd Edition.

10. Jon Bentley, "Programming Pearls", Pearson Education Publication.

11. Tharp Alan L, "File Organization and Processing", John Willey and Sons.

12. Elmasri, Navathe, "Fundamentals of Database Systems", Addison Wesley, Third edition.

13. C.J.Date,"An Introduction to Database Systems", Narosa Publication, 6th Edition.

15MCA102   **Software Project Management**   **3 0 0 3**

Course Objective:

To define and highlight importance of software project management. To formulate strategy in managing projects. To estimate the cost associated with a project. To plan, schedule and monitor projects for the risk management. To define the software management metrics. To train software project managers and other individuals involved in software project planning and tracking and oversight in the implementation of the software project management process

UNIT I INTRODUCTION   **9**

Introduction to Competencies – Product Development Techniques – Management Skills – Product Development Life Cycle – Software Development Process and models – The SEI CMM – International Organization for Standardization.

UNIT II DOMAIN PROCESSES   **9**

Managing Domain Processes – Project Selection Models – Project Portfolio Management – Financial Processes – Selecting a Project Team – Goal and Scope of the Software Project – Project Planning – Creating the Work Breakdown Structure – Approaches to Building a WBS – Project Milestones – Work Packages – Building a WBS for Software.

UNIT III SOFTWARE DEVELOPMENT   **9**

Tasks and Activities – Software Size and Reuse Estimating – The SEI CMM – Problems and Risks – Cost Estimation – Effort Measures – COCOMO. A Regression Model – COCOMO II – SLIM, A Mathematical Model – Organizational Planning – Project Roles and Skills Needed.

UNIT IV SCHEDULING ACTIVITIES   **9**

Project Management Resource Activities – Organizational Form and Structure – Software Development Dependencies – Brainstorming – Scheduling Fundamentals – PERT and CPM – Leveling Resource Assignments – Map the Schedule to a Real Calendar – Critical Chain Scheduling.

UNIT V QUALITY ASSURANCE   **9**

Quality Requirements – The SEI CMM – Guidelines – Challenges – Quality Function Deployment – Building the Software Quality Assurance – Plan – Software Configuration Management Principles – Requirements – Planning and Organizing – Tools – Benefits – Legal Issues in Software – Case Study.

                                                 TOTAL: 45 HOURS

Text Book:
1. Robert T. Futrell, Donald F. Shafer, Linda I. Safer, "Quality Software Project Management", Pearson Education, Asia, 2002.

Reference Books:

1. Pankaj Jalote, "Software Project Management in Practice", Addison Wesley, 2002.
2. Hughes, "Software Project Management, 3rd Edition", Tata McGraw Hill, 2004.

15MCA103   **Internet of Things**   **3   0   0   3**

Course Objective: To learn the basic issues, policy and challenges in the Internet. To understand the components and the protocols in Internet. To build a small low cost embedded system with the internet. To understand the various modes of communications with internet. To learn to manage the resources in the Internet. To deploy the resources into business. To understand the cloud and internet environment.

UNIT I INTRODUCTION   9

Definition – phases – Foundations – Policy– Challenges and Issues – identification – security – privacy. Components in internet of things Control UNITs – Sensors – Communication modules – Power Sources – Communication Technologies – RFID – Bluetooth – Zigbee – Wi-Fi – Rflinks – Mobile Internet – Wired Communication.

UNIT II PROGRAMMING THE MICROCONTROLLER FOR IOT   9

Basics of Sensors and actuators – examples and working principles of sensors and actuators – Cloud computing and IOT – Arduino / Equivalent Microcontroller platform – Setting up the board – Programming for IOT – Reading from Sensors Communication Connecting Microcontroller With Mobile Devices – Communication Through Bluetooth and USB – Connection With The Internet Using Wi-Fi / Ethernet

UNIT III RESOURCE MANAGEMENT IN THE INTERNET OF THINGS   9

Clustering – Software Agents – Data Synchronization – Clustering Principles in an Internet of Things Architecture – The Role of Context – Design Guidelines –Software Agents for Object – Data Synchronization – Types of Network Architectures – Enabling Autonomy and Agility by the Internet of Things – Technical Requirements for Satisfying the New Demands in Production – The Evolution from the RFID – based EPC Network to an Agent based Internet of Things – Agents for the Behaviour of Objects.

UNIT IV BUSINESS MODELS FOR THE INTERNET OF THINGS   9

The Meaning of DiY in the Network Society– Sensor–actuator Technologies and Middleware as a Basis for a DiY Service Creation Framework – Device Integration – Middleware Technologies Internet of Things Semantic Interoperability as a Requirement for DiY Creation –Ontology – Value Creation in the Internet of Things – Application of Ontology Engineering in the Internet of Things – Semantic Web – Ontology – The Internet of Things in Context of EURIDICE – Business Impact

UNIT V FROM THE INTERNET OF THINGS TO THE WEB OF THINGS   9

Resource–oriented Architecture and Best Practices – Designing Restful Smart Things – Web – enabling Constrained Devices – The Future Web of Things – Set up cloud environment – send data from microcontroller to cloud – Case studies – Open Source e–Health sensor platform – Be Close Elderly monitoring – Other recent projects.

                                                                  TOTAL: 45 HOURS

Text Books:

1. Charalampos Doukas, "Building Internet of Things with the Arduino", Create space, April 2002.
2. Dieter Uckelmann et.al, "Architecting the Internet of Things", Springer, 2011

Reference Links:

1. http //postscapes.com/
2. http //www.theinternetofthings.eu/what–is–the–internet–of–things.

15MCA104   **Mobile Computing**   **4**   **0**   **0**   **4**

Course Objective:

To understand the basics of Mobile computing. To learn the role of wireless networks in Mobile Computing. To study about the underlying wireless networks. To understand the architectures of mobile. To become familiar with the mobile computing platforms

UNIT I WIRELESS COMMUNICATION FUNDAMENTALS   **12**

Introduction – Wireless transmission – Frequencies for radio transmission – Signals – Antennas – Signal Propagation – Multiplexing – Modulations – Spread spectrum – MAC – SDMA – FDMA – TDMA – CDMA – Cellular Wireless Networks.

UNIT II TELECOMMUNICATION NETWORKS   **12**

Telecommunication systems – GSM – GPRS – DECT – UMTS – IMT–2000 – Satellite Networks – Basics – Parameters and Configurations – Capacity Allocation – FAMA and DAMA – Broadcast Systems – DAB – DVB.

UNIT III WIRELESS LAN   **12**

Wireless LAN – IEEE 802.11 – Architecture – services – MAC – Physical layer – IEEE 802.11a – 802.11b standards – HIPERLAN – Blue Tooth.

UNIT IV MOBILE NETWORK LAYER   **12**

Mobile IP – Dynamic Host Configuration Protocol – Routing – DSDV – DSR – Alternative Metrics.

UNIT V TRANSPORT AND APPLICATION LAYERS   **12**

Traditional TCP – Classical TCP improvements – WAP, WAP 2.0.

                                             TOTAL: 60 HOURS

Text Books:

1. Jochen Schiller, "Mobile Communications", PHI/Pearson Education, Second Edition, 2003.
   (UNIT I Chap 1,2 & 3 – UNIT II chap 4,5 & 6–UNIT III Chap 7.UNIT IV Chap 8– UNIT V Chap 9 & 10.)
2. William Stallings, "Wireless Communications and Networks", PHI/Pearson Education, 2002.
   (UNIT I Chapter – 7 & 10–UNIT II Chap 9)

Reference Books:

1. Kaveh Pahlavan, Prasanth Krishnamoorthy, "Principles of Wireless Networks", PHI/Pearson Education, 2003.
2. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, "Principles of Mobile Computing", Springer, New York, 2003.
3. Hazysztof Wesolowshi, "Mobile Communication Systems", John Wiley and Sons Ltd, 2002.

15MCA105   **Compiler Design**   **4   0   0   4**

Course Objective

To understand the various optimization techniques. To understand about compiler's instruction selection and scheduling techniques. To explore how parallelism is handled by compilers. To understand how compilers deal with pipelining architecture. To appreciate the just–in–time compilations

UNIT I INTRODUCTION   **12**

Compilers – Analysis of the source program – Phases of a compiler – Cousins of the Compiler – Grouping of Phases – Compiler construction tools – Lexical Analysis – Role of Lexical Analyzer – Input Buffering – Specification of Tokens

UNIT II PARSERS   **12**

Role of the parser, Writing Grammars – Context – Free Grammars – Top Down parsing – Recursive Descent parsing – Predictive parsing – bottom–up parsing – shift Reduce Parsing – Operator Precedent Parsing – LR Parsers – SLR Parser – Canonical LR Parser – LALR Parser

UNIT III EXPRESSIONS   **12**

Intermediate Languages – Declarations – Assignment Statements – Boolean Expressions – Case Statements – Back patching – procedure calls

UNIT IV OPTIMIZATION TECHNIQUES   **12**

Issues in the design of code generator – The target machine – Runtime Storage management – Basic Blocks and Flow Graphs – Next use Information – A simple Code generator – DAG representation of Basic Blocks – Peephole optimization.

UNIT V STORAGE   **12**

Introduction – Principal Sources of Optimization – Optimization of basic Blocks – Introduction to Global Data Flow Analysis – Runtime Environments – Source Language issues – Storage Organization – Storage Allocation strategies – Access to non–local names – Parameter Passing.

TOTAL: 60 HOURS

Text Book:

1. Alfred Aho, Ravi Sethi, Jeffy D.Ullman, "Compilers – Principles, Techniques and Tools", Pearson Education Asia, 2003.

Reference Books:

1. Henk Alblas and Albert Nymeyer, "Practice and Principles of Compiler Building with C", PHI, 2001
2. Kenneth C. Louden, "Compiler Construction Principles and Practices", Thompson Learning, 2003.

15MCA106   **Cloud Computing**   **4   0   0   4**

Course Objective:

To introduce the broad perceptive of cloud architecture and model. To understand the concept of Virtualization and design of cloud Services. To be familiar with the lead players in cloud. To understand the features of cloud simulator. To apply different cloud programming model as per need. To learn to design the trusted cloud Computing system

UNIT I CLOUD ARCHITECTURE AND MODEL   12

Technologies for Network–Based System – System Models for Distributed and Cloud Computing – NIST Cloud Computing Reference Architecture. Cloud Models – Characteristics – Cloud Services – Cloud models (IaaS, PaaS, SaaS) – Public vs Private Cloud – Cloud Solutions – Cloud ecosystem – Service management – Computing on demand.

UNIT II VIRTUALIZATION   12

Basics of Virtualization – Types of Virtualization – Implementation Levels of Virtualization – Virtualization Structures – Tools and Mechanisms – Virtualization of CPU, Memory, I/O Devices – Virtual Clusters and Resource management – Virtualization for Data – canter Automation.

UNIT III CLOUD INFRASTRUCTURE   12

Architectural Design of Compute and Storage Clouds – Layered Cloud Architecture Development – Design Challenges – Inter Cloud Resource Management – Resource Provisioning and Platform Deployment – Global Exchange of Cloud Resources.

UNIT IV PROGRAMMING MODEL   12

Parallel and Distributed Programming Paradigms – Map Reduce , Twister and Iterative Map Reduce – Hadoop Library from Apache – Mapping Applications – Programming Support – Google App Engine, Amazon AWS – Cloud Software Environments – Eucalyptus, Open Nebula, Open Stack, Aneka, CloudSim

UNIT V SECURITY IN THE CLOUD   12

Security Overview – Cloud Security Challenges and Risks – Software–as–a–Service Security – Security Governance – Risk Management – Security Monitoring – Security Architecture Design – Data Security – Application Security – Virtual Machine Security – Identity Management and Access Control – Autonomic Security.

TOTAL: 60 HOURS

Text Books:

1. Kai Hwang, Geoffrey C Fox, Jack G Dongarra, "Distributed and Cloud Computing, From Parallel Processing to the Internet of Things", Morgan Kaufmann Publishers, 2012.
2. John W.Rittinghouse and James F.Ransome, "Cloud Computing   Implementation, Management, and Security", CRC Press, 2010.

3. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing, A Practical Approach", TMH, 2009.

4. Kumar Saurabh, "Cloud Computing – insights into New–Era Infrastructure", Wiley India, 2011.

5. George Reese, "Cloud Application Architectures Building Applications and Infrastructure in the Cloud" O'Reilly.

Reference Books:

1. James E. Smith, Ravi Nair, "Virtual Machines Versatile Platforms for Systems and Processes", Elsevier/Morgan Kaufmann, 2005.

2. Katarina Stanoevska–Slabeva, Thomas Wozniak, Santi Ristol, "Grid and Cloud Computing – A Business Perspective on Technology and Applications", Springer.

3. Ronald L. Krutz, Russell Dean Vines, "Cloud Security – A comprehensive Guide to Secure Cloud Computing", Wiley – India, 2010.

4. Rajkumar Buyya, Christian Vecchiola, S.Thamarai Selvi, 'Mastering Cloud Computing", Tata McGraw Hill, 2013.

5. Gautam Shroff, "Enterprise Cloud Computing", Cambridge University Press, 2011 11. Michael Miller, Cloud Computing,Que Publishing, 2008.

6. Nick Antonopoulos, "Cloud computing, Springer", Publications, 2010

15MCA107   Management Information Systems   3   0   0   3

Course Objective

MIS is very useful for efficient and effective planning and control functions of the management. Management is the art of getting things done through others. MIS will be instrumental in getting the things done by providing quick and timely information to the management. Reports give an idea about the performance of men, materials, machinery, money and management. Reports throw light on the utilisation of resources employed in the orgnisation.

UNIT I INTRODUCTION TO INFORMATION SYSTEMS   9

Why study Information System – Why Business need Information Technology – Fundamentals of Information System – Overview of Information Systems.

UNIT II SOLVING BUSINESS PROBLEMS WITH INFORMATION SYSTEMS   9

System Approach to Problem Solving – Developing Information System Solution – Database Management Managing Data Resources – Technical Foundations of database Management.

UNIT III INFORMATION SYSTEMS FOR STRATEGIC ADVANTAGES   9

Fundamentals of Strategic Advantage Strategic Applications and Issues in It; Managing IT   Enterprise and Global Management

UNIT IV BUSINESS APPLICATIONS OF INFORMATION TECHNOLOGY   9

The Internet and Electronic Commerce – Fundamentals of Electronic Commerce – Information System for Business Operations Business Information System – Transaction – processing Systems.

UNIT V INFORMATION SYSTEMS FOR MANAGERIAL DECISION SUPPORT   9

Decision Support Systems Artificial Intelligence technology in Business – Managing IT – Planning for Business change with IT – Implementing business change with IT – Security & Control Issues in I/S – Ethical and societal challenges of Information Technology.

TOTAL: 45 HOURS

Text Book

1. James A. O'Brien, "Management Information Systems", Galgotia publications, Fourth Edition, 1999.

Reference Book

1. Gordon B. Davis Margre the H. Olson, "Management Information Systems", McGraw Hill, 3rd Reprint 2000.
2. George M. Marakas ,   James A. O'Brien "Management Information Systems", Irwin/McGraw-Hill, 10th Edition.
3.   Jawadekar, "Management Information Systems", McGraw Hill, 5th Edition.

15MCA108Organizational Behaviour   3   0   0   3

Course Objective

To establish a social system in the organization. To determine the motivation level of employees. To encourage the people, to work enthusiastically in the organization. To create an environment for the development of effective leadership. To develop effective group behavior among the employees. To identify the reasons for conflict and to resolve the conflict.

UNIT 1 ORGINISATIONAL BEHAVIOUR   9
Management roles – Management skills challenges and opportunities for OB – models of OB foundation of HRM & OB – Historical development of   HR & OB – Research foundation of OB Communication – the two way communication

UNIT 2 PERSONALITY   9

Personality determinants–personality attribute that OB–attitude–concept of attitude–type & function of attitude-motivation-theories of motivation - Perception perceptual selectivity–social perception

UNIT3 LEADERSHIP   9

Leadership theories–conflicts–types of conflict–conflict process–work team–benefit of work team–types of work team–shaping individual to team player & TQM

UNIT4 ORGANISATIONAL CHANGE   9

Forces of change – lewin's three step model to O.C – Work stress and stress management – organizational development – O.D Pros–client–consultant relationship – organizational development intervention – types of intervention

UNIT5 ORGANISATIONAL STRUCTURE   9

Elements to design an organization structure – Types of organization–line organization function organization – line and staff organization – division organization – matrix organization – virtual organization

                                                                    TOTAL: 45 HOURS
Text Book

1. Prasad, L. M, "Organizational Behaviour", Sultan S. Chand & Co. 5th Revised Edition Reprint 2014
2. Saiyadain, M. S, "Organizational Behaviour", TMH Publisher, 2004
3. Sekaran & Uma, "Organizational Behaviour" Text & Cases, Tata McGraw Hill Public Company Ltd., New Delhi, 2005.
4. K. Aswathappa, , Organizational Behaviour – Text , Cases and Games, Himalaya Publishing House , 2006

Reference Books

1. Robbins, Stephen, "Organizational Behaviour", Published by Prentice Hall, Sixteenth Edition, 2015.
2. Newstrom, J. W, " Organizational Behavior Human Behavior At Work", Published by McGraw – Hill College, Boston, MA, 2001
3. Chandan, J. S., "Organizational Behaviour", Vikas Publications. 3rd Edition, 2004
4. Ghanekar, Anjali, "Organizational Behaviour", Everest publishing, 2011.

15MCA109   **Object Oriented Analysis and Design**   **3 0 0 3**

Course Objective

Develop a working understanding of formal object–oriented analysis and design processes, Develop an appreciation for and understanding of the risks inherent to large–scale software development, Learn (through experience!) techniques, processes, and artifacts that can mitigate these risks, Develop the skills to determine which processes and OOAD techniques should be applied to a given project, and Develop an understanding of the application of OOAD practices from a software project management perspective

UNIT I INTRODUCTION   **9**

System Development – Object Basis – Development Life Cycle – Methodologies – Patterns – Unified Approach – UML.

UNIT II USE CASE MODELS   **9**

Use–Case Models – Object relations – Attributes – Methods – Class and Object responsibilities

UNIT III CASE DESIGN   **9**

Design Processes – Design Axioms – Class Design – Object Storage – Object Interpretability – Case Studies.

UNIT IV USER INTERFACE DESIGN   **9**

User Interface Design – View layer Class – Micro–Level Processes – View Layer Interface – Case Studies.

UNIT V TESTING   **9**

Quality Assurance Tests – Testing Strategies – Test Cases – test Plants – Continuous testing – Debugging Principles – Measuring User Satisfaction – Case Studies.

TOTAL: 45 HOURS

Text Books

1. Ali Bahrami, "Object Oriented Systems Development", McGraw Hill International Edition, 1999.

Reference Book

1. Grady Booch, "Object Oriented Analysis and design", Addison Wesley, 2nd, Edition, 1999.
2. Brett McLaughlin, Gary Pollice, David West"Head First Object-Oriented Analysis and Design- A Brain Friendly Guide to OOA&D", O'Reilly Media, November 2006.
3. Craig Larman " Applying UML and Patterns: An Introduction to Object-oriented Analysis and Design and the Unified Process", Prentice Hall Professional, 2002

15MCA110   Business Intelligence and its application   3 0 0 3

Course Objective

The objective of this course is for the students to achieve a profound understanding of Business Intelligence (BI) systems in terms of its tools, current practices and impacts. The students should acquire knowledge on how to design BI solutions for different BI targets and users.

UNIT1 INTRODUCTION TO BUSINESS INTELLIGENCE   9

Introduction to OLTP and OLAP, BI Definitions & Concepts, Business Applications of BI , BI Framework, Role of Data warehousing in BI, BI Infrastructure components – BI process, BI Technology , BI Roles & Responsibilities.

UNIT II BASICS OF DATA INTEGRATION   9

Concepts of data integration need and advantages of using data integration, introduction to common data integration approaches, introduction to ETL using SSIS, Introduction to data quality, data profiling concepts and applications.

UNIT III INTRODUCTION TO MULTI–DIMENSIONAL DATA MODELING   9

Introduction to data and dimension modeling, multidimensional modeling vs. multi-dimensional modeling, concepts of dimensions, facts, cubes, attributes, hierarchies, star and snowflake schema, introduction to business metrics and KPIs, creating cubes using SSAS.

UNIT IV ENTRERPRISE REPORTING   9

Basic of Enterprise Reporting, Introduction to enterprise reporting, concepts of dashboards, balanced scorecards, introduction to SSRS Architecture, enterprise reporting using SSRS.

UNIT V CASE STUDY   9

- A project that allows the students to apply Technical, Behavioral, Process concepts learnt in the elective course by
    - o   Executing near real–life project (with large data).
    - o Working in teams (Project teams will ideally comprise of 4 members).
    - o Experiencing expectations from different roles.

TOTAL: 45 HOURS

Text Books

1. David Loshin, "Business Intelligence", Imprint: Morgan Kaufmann, 2nd Edition, 2012.
2. Mike Biere, "Business intelligence for the enterprise", first edition, IBM Press, 2003.
3. Larissa Terpeluk Moss, Shaku Atre, "Business intelligence roadmap", Addison Westley press, 2004.

Reference Books

1. Brain, Larson, "Delivering business intelligence with Microsoft SQL server", 2008,Mcgraw Hill,3rd Edition
2. Lynn Langit, "Foundations of SQL server 2005 Business intelligence" A Press, 2nd edition 2011.

15MCA111   **Network Security**   **3 0 0 3**

Course Objective

To understand Network Devices functions and configurations hub, switch, tap and Routers, Understand Network Security Devices (IDS, Firewall..Etc.), Understand and analyse network services, Understand network–troubleshooting concepts, Understand network security concepts, Understand network intrusions

UNIT I INTRODUCTION   **9**

Attacks – Services – Mechanisms – Conventional Encryption – Classical and Modern Techniques – Encryption Algorithms – Confidentiality.

UNIT II PUBLIC KEY ENCRYPTION   **9**

Public key cryptography RSA (Rivest shmir-adleman) algorithm – Elliptic Curve Cryptography – Number Theory Concepts – Modular arithmetic – Euler's theorem.

UNIT III MESSAGE AUTHENTICATION   **9**

Message Authorization and Hash Functions- Authentication Requirements – Digest Function – Digital Signatures – Digital signature Standards.

UNIT IV NETWORK SECURITY PRACTICE   **9**

Authentication Protocols, Authentication Applications – Electronic Mail Security – Internet Protocol Security – Web Security.

UNIT V SYSTEM SECURITY   **9**

Introduction to security attacks - Intruders –Types of Intruders – Viruses – Worms – Firewalls Design Principles –Trusted Systems.

TOTAL: 45 HOURS

Text Book

1. Stallings, "Cryptography & Network Security – Principles & Practice", Prentice Hall, 3rd Edition 2002.

Reference Books

1. Bruce, Schneier, "Applied Cryptography", Toha Wiley & Sons, 2nd Edition, 1996.
2. Man Young Rhee, "Internet Security", Wiley, 2003.
3. Pfleeger & Pfleeger, "Security in Computing", Pearson Education, 3rd Edition, 2003.

15MCA112   Ad Hoc Networks   3 0 0 3

Course Objective

To understand the state–of–the–art in network protocols, architectures and applications, Analyze existing network protocols and networks, Develop new protocols in networking, To understand how networking research is done, To investigate novel ideas in the area of Networking via term–long research projects.

UNIT I. INTRODUCTION   9

Introduction–Fundamentals of Wireless Communication Technology – The Electromagnetic Spectrum – Radio Propagation Mechanisms – Characteristics of the Wireless Channel – IEEE 802.11a,b Standard – Origin Of Ad hoc Packet Radio Networks – Technical Challenges – Architecture of PRNETs – Components of Packet Radios – Ad hoc Wireless Networks –What Is an Ad Hoc Network? Heterogeneity in Mobile Devices – Wireless Sensor Networks – Traffic Profiles – Types of Ad hoc Mobile Communications – Types of Mobile Host Movements – Challenges Facing Ad Hoc Mobile Networks–Ad hoc wireless Internet

UNIT II AD HOC ROUTING PROTOCOLS   9

Introduction – Issues in Designing a Routing Protocol for Ad Hoc Wireless Networks – Classifications of Routing Protocols –Table–Driven Routing Protocols – Destination Sequenced Distance Vector (DSDV) – Wireless Routing Protocol (WRP) – Cluster Switch Gateway Routing (CSGR) – Source–Initiated On–Demand Approaches – Ad Hoc On–Demand Distance Vector Routing (AODV) – Dynamic Source Routing (DSR) –Temporally Ordered Routing Algorithm (TORA) – Signal Stability Routing (SSR) –Location–Aided Routing (LAR) – Power–Aware Routing (PAR) – Zone Routing Protocol (ZRP)

UNIT III MULTICASTROUTING IN AD HOC NETWORKS   9

Introduction – Issues in Designing a Multicast Routing Protocol – Operation of Multicast Routing Protocols – An Architecture Reference Model for Multicast Routing Protocols –Classifications of Multicast Routing Protocols – Tree–Based Multicast Routing Protocols– Mesh–Based Multicast Routing Protocols – Summary of Tree–and Mesh–Based Protocols – Energy–Efficient Multicasting – Multicasting with Quality of Service Guarantees – Application–Dependent Multicast Routing – Comparisons of Multicast Routing Protocols

UNIT IV TRANSPORT LAYER, SECURITY PROTOCOLS   9

Introduction – Issues in Designing a Transport Layer Protocol for Ad Hoc Wireless Networks – Design Goals of a Transport Layer Protocol for Ad Hoc Wireless Networks –Classification of Transport Layer Solutions – TCP Over Ad Hoc Wireless Networks –Other Transport Layer Protocols for Ad Hoc Wireless Networks – Security in Ad Hoc Wireless Networks – Network Security Requirements – Issues and Challenges in Security Provisioning – Network Security Attacks – Key Management – Secure Routing in Ad Hoc Wireless Networks

UNIT V QoS AND ENERGY MANAGEMENT   **9**

Introduction – Issues and Challenges in Providing QoS in Ad Hoc Wireless Networks –Classifications of QoS Solutions – MAC Layer Solutions – Network Layer Solutions – QoS Frameworks for Ad Hoc Wireless Networks Energy Management in Ad Hoc Wireless Networks –Introduction – Need for Energy Management in Ad Hoc Wireless Networks – Classification of Energy Management Schemes

– Battery Management Schemes – Transmission Power Management Schemes – System Power Management Schemes

TOTAL: 45 HOURS

Text Book

1. C. Siva Ram Murthy and B.S. Manoj "Ad Hoc Wireless Networks Architectures and Protocols", Prentice Hall PTR, 2004.

Reference Books

1. C.K. Toh, "Ad Hoc Mobile Wireless Networks Protocols and Systems", Prentice Hall PTR, 2001.
2. Charles E. Perkins, "Ad Hoc Networking", Addison Wesley, 2000

15MCA113   Big Data Analytics   3   0   0   3

Course Objective

To explore the fundamental concepts of big data analytics, To learn to analyze the big data using intelligent techniques, To understand the various search methods and visualization techniques, To learn to use various techniques for mining data stream, To understand the applications using Map Reduce Concepts.

UNIT I INTRODUCTION TO BIG DATA   9

Introduction to BigData Platform – Challenges of Conventional Systems – Intelligent data analysis – Nature of Data – Analytic Processes and Tools – Analysis vs Reporting – Modern Data Analytic Tools – Statistical Concepts Sampling Distributions – Re–Sampling – Statistical Inference – Prediction Error.

UNIT II MINING DATA STREAMS   9

Introduction To Streams Concepts – Stream Data Model and Architecture – Stream Computing – Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream – Estimating Moments – Counting Oneness in a Window – Decaying Window – Real time Analytics Platform(RTAP) Applications – Case Studies – Real Time Sentiment Analysis, Stock Market Predictions.

UNIT III HADOOP   9

History of Hadoop – The Hadoop Distributed File System – Components of Hadoop – Analysing the Data with Hadoop – Scaling Out– Hadoop Streaming – Design of HDFS–Java interfaces to HDFS – Basics – Developing a Map Reduce Application – How Map Reduce Works – Anatomy of a Map Reduce Job run – Failures – Job Scheduling – Shuffle and Sort – Task execution – Map Reduce Types and Formats – Map Reduce Features

UNIT IV HADOOP ENVIRONMENT   9

Setting up a Hadoop Cluster – Cluster specification – Cluster Setup and Installation – Hadoop Configuration –Security in Hadoop – Administering Hadoop – HDFS – Monitoring–Maintenance – Hadoop benchmarks – Hadoop in the cloud

UNIT V FRAMEWORKS   9

Applications on Big Data Using Pig and Hive – Data processing operators in Pig – Hive services – HiveQL – Querying Data in Hive – fundamentals of HBase and ZooKeeper – IBM InfoSphere BigInsights and Streams. Visualizations – Visual data analysis techniques, interaction techniques; Systems and applications

TOTAL: 45 HOURS

Text Books
1. Michael Berthold, "Intelligent Data Analysis", David J. Hand,", Springer, 2007.
2. Tom White " Hadoop The Definitive Guide", O'reilly Media, Third Edition, 2012.
3. Chris Eaton, Dirk DeRoos, Tom Deutsch, George Lapis, Paul Zikopoulos, "Understanding Big Data Analytics for Enterprise Class Hadoop and Streaming Data", McGrawHill Publishing, 2012
4. Anand Rajaraman and Jeffrey David Ullman, "Mining of Massive Datasets", Cambridge University Press, 2012.
5. Bill Franks, "Taming the Big Data Tidal Wave Finding Opportunities in Huge Data Streams with Advanced Analytics", John Wiley & sons, 2012.

6. Glenn J. Myatt, "Making Sense of Data", John Wiley & Sons, 2007.

Reference Books

1. Pete Warden, "Big Data Glossary", O'Reilly, 2011.

2. Jiawei Han, Micheline Kamber, "Data Mining Concepts and Techniques", Elsevier, Reprinted Second Edition, 2008.

3. Da Ruan, Guoquing Chen, Etienne E.Kerre, Geert Wets, "Intelligent Data Mining", Springer,2007

4. Paul Zikopoulos, Dirk deRoos, Krishnan Parasuraman, Thomas Deutsch , James Giles , David Corrigan, Harness, "The Power of Big Data the IBM Big Data Platform", Tata McGraw Hill Publications, 2012

5. Michael Minelli, Michele Chambers, Ambiga Dhiraj, "Big Data, Big Analytics Emerging Business Intelligence and Analytic Trends for Today's Businesses", Wiley Publications, 2013 .

6. Zikopoulos, Paul, Chris Eaton, "Understanding Big Data Analytics for Enterprise Class Hadoop and Streaming Data", Tata McGraw Hill Publications, 2011.

Syllabus of Generic Elective Courses

15MCA151   **Soft Skill – I**   **2 0 0 2**

Course Objective

To help the students understand interpersonal skills, to support them in building interpersonal skills, to better the ability to work with others.

UNIT I PRONUNCIATION   6

1. An Introduction to Phonetics
2. Sounds – Vowel Sounds, Consonant Sounds and Diphthongs
3. Speaking with the right pronunciation
4. Regional Slant and how to overcome the slant
5. Standard Pronunciation and Received Pronunciation (R.P.)
6. Correcting common errors of pronunciation

DRILL IN LANGUAGE LAB

UNIT II SPEAKING   6

Learning to talk

Different attitude–different concept–different orientation according to the situation, aim and talk
1. Familiar Topics
2. Brain – storming, just a minute
3. Thinking Together
4. Finding the right word, Expressions, Usage, Mannerisms, Postures,Body–Language, Eye–Contact, Gestures.
5. Presenting points
6. Overcoming hesitations, Shyness and Nervousness
   [From a word to a sentence and then to a short speech]

7. Speech – Rhythm
         –Rising and falling Tone
         –Accent
         –Intonation
         –Word stress, Syllable Stress and Sentence Stress.

UNIT III DRILLING IN THE LANGUAGE LAB   6

8. Preparing a speech on a given Subject
9. Pattern of a speech to suit the audience
   –addressing the audience, slowly introducing the topic, defining the topic, points 1,2,3,…and if there is a draw–back mention it, Conclusion 'Thank You'.

10. choose the right word for right meaning– expression to suit the thought

11. Words – Derivatives, synonyms & Antonyms

DRILLING WITH DIFFERENT TOPICS FROM FAMILIAR TO UNFAMILIAR

UNIT IV Writing Skills [creative Writing]   6

I Narration and Story – Telling

1) Narrating an incident, Cogency and Readability

2) Choosing the Tense

3) Plan of a story [Introducing the story, characters, incidents and proper end]

DRILL IN LANGUAGE LAB

II Reports

  1) Agenda of a meeting
  2) Circulars & Internal Memos
  3) Reports of Meetings
  4) Reports of Experiments
  5) Business Report
  6) Reporting for the media
  7) Writing Press Reports
  8) Conflict resolution – Adopting an agreed resolution

UNIT V Reading [Reading to Understand]   6

  1) Reading with pauses
  2) Reading with Intonation
  3) Reading in a classroom
  4) Reading to an assembly of Business men / Scientists
  5) Quoting
  6) Slogans in the reading material
  7) Training for a News Reader/Corporate Spokesperson

Function of Commonly used Tenses
The function of the Parts of Speech in daily use in the corporate world

TOTAL 30 HOURS

15MCA152   **Soft Skill – II**   **2 0 0 2**

Course Objective

To help the students understand Speaking skills, to support them in building communication skills, to better the ability to work with others.

UNIT I SPEAKING   **6**

       1) Speaking at an Interview – "Interviews"
       2) Meeting People
       3) Exchanging Greetings
       4) Introducing Oneself
       5) Introducing people to others
       6) Debates and Group Discussions
       7) At the Interview for a Job

DRILL IN LANGUAGE LAB

UNIT II Telephone Conversation   **6**

       1) Etiquette & Manners
       2) Answering the Telephone
       3) Asking for someone
       4) Taking and leaving messages
       5) Making Enquiries

DRILL IN LANGUAGE LAB

UNIT III Presentation   **6**

       1) Presenting a matter for discussion
       2) Presenting a problem for Support
       3) Presenting a product among customers and inventors
       4) Slogans for advertising
       5) Proverbs Re–defined
       6) Saying 'No' without saying 'No'
       7) Presenting a paper at a seminar/conference

DRILLING IN PRESENTATION [EXERCISES]

UNIT IV Writing Skills   **6**

       1) Letters [Different types of Letters]
       2) Developing an argument, story or an article from hints
       3) Note – Making
       4) Drafting
       5) Summary Writing
            –Method of Summarizing

–Summarizing paragraphs, Essays, Stories,
Incidents, Long articles, Speeches.

UNT V Listening Skills [Listening and Taking Notes]   6

1) Listening in a class – room
2) Listening to a Public – speaker
3) Listening to a Scientists
4) Listening to the news to pick–out the points
5) Listening in Corporate offices
6) Listening to a recorded speech – cassette of C.D.
7) The importance of listening in Business houses

DRILL IN LANGUAGE LAB

VI PERSONALITY

1) Personality – An Introduction –Roles of Heredity and Learning
   Identity Clothing/Speech/Age/Success/Reputation/Aspirations and Achievements.

2) Attitude

- Advantages of positive attitude Thought and Action
- Appearance
- Facial Expressions
- Dress Code
- Posture
- Gesture
- Know the impressions created.

3) Presenting Oneself – [Manner and matter]

- Timing   * Being true to type
- Knowledge   * Punctuality
- Skill and Competence   * Self – confidence
- Communication   * Assurance
- Behaviour
- Avoiding Anxiety
- Shrewdness

4) Path to greatness

- Self Confidence
- Self-Motivation
- Leadership Qualities
- Be Innovative and Original / Creativity

5) The Impact of appearance

- Essentials of a good appearance
- Cleanliness and morals
- Importance of dress
- Overcome shyness / fear and Anxiety
- positive thinking
- career planning
- Etiquette & Manners
- Speech
- Character
- Integrity
- Wisdom
- Courage

6) Interpersonal Skills

- Team work
- Concept of leadership
- The Virtues of a Leader
- Decision making
- Time Management

Source Materials

–Newspapers and Magazines
–Write to Communicate – Geetha Nagaraj
–Spoken English – "A Self Leaning Guide to Conversation Practice", 34th Reprint–Tata Mc Crow Hill–New Delhi.
–Powell, In Company – Macmillan
–Personality Development – Elizabeth B. Hurlock

Website

www.tatamcgrawhill.com
www.dictionary.cambridge.org
www.wordsmith.org

TOTAL 30 HOURS

15GPD251 Personality Development – I   2   0   0   2

UNIT I   SOFT SKILLS   **4**

Introduction to Personality Development – Importance of Soft skills – Soft Skills for work place – First Impression – General Appearance – Posture – Cleanliness – Confidence and its usage.

UNIT II SOFT SKILLS II   **4**

Grooming – Attire – Attitude – Stability & Maturity Development – Strength & Weakness / Goal Settings – Kinesis – Motivation & Self–Motivation

Total 30 Hours

15GPD252   **Personality Development – II**   **2 0 0 2**

UNIT I   **Life Skills**   **4**

Basic etiquette – Email etiquette – Business etiquette – Telephone etiquette – Meeting etiquette – Adjustment of Role & Leadership – Team Management & Development.

UNIT II   **Life Skills II**   **4**

Stress Management – Time Management – Event Management – Change Management – Seminars & Conference organizing – Conflict Resolution – The Art of Delegating Effectively – Enhancing Personal Effectiveness.