**Master of Science (Information Technology)**

**Subject:** COMPUTER ORGANIZATION & ARCHITECTURE

**Code**: MST500

**Credits:** 4

**OBJECTIVE:** This course aims to provide the student with in depth understanding of the structures and behavior of the various functional modules of the computer and how hardware components are organized forming a Computer.

**UNIT-I**

Digital Components Combinational; Flip flops; Sequential Circuits;Integrated Circuits;Decoders; Multiplexes;Demultiplexer;CodeConverter;Registers; Shift Registers;Binary Counters; MemoryUnit; Register Transfers, Microoperations, Basic Computer Organization & Design Register Transfer; Control Function; Bus and MemoryTransfers; Arithmetic MicrooperationsLogic Microoperations; Shift Microoperations ;Arithmetic Logic Shift Unit

**UNIT-II**

Instruction Codes; Computer Registers; Common Bus Systems; Computer Instructions; Timing and Control*;* Instruction Cycle; Memory-Reference Instructions;  Input-Output  and   Interrupt;  Computer  Description; Design of BasicComputer; Design of  Accumulator  Logic Programming the Basic Computer, Computer Arithmetic Introduction; Programming Arithmetic and Logic Operations; Input Output Programming; Addition and Subtraction; Multiplication Algorithms; Division Algorithms; Floating-Point Arithmetic Operations

**UNIT-III**

Introduction to Major Components of a CPU; General Register Organization; Stack Organization; Instruction Formats; Addressing Modes ;Data Transfer and Manipulation;   Program Control; Reduced Instruction Set Computer; Control Memory ;Address Sequencing ; Microprogram Example ;Design of Control Unit

**UNIT-IV**

Characteristics of Multiprocessors; Flynn’s Classification; Interconnection Structures; Interprocessor Arbitration; Interprocessor Communication, Synchronization and Mutual Exclusion with a Semaphore; Cache Coherence; Parallel Processing; Pipelining; Arithmetic Pipeline; Instruction Pipeline; RISC Pipeline; Vector Processing; Array Processors

**UNIT-V**

Peripheral Devices; Input Output Interface; Asynchronous Data Transfer; Modes of Transfer; Priority Interrupt; Direct Memory Access; Input-Output Processor; Memory Hierarchy; Main Memory; Auxiliary Memory; Associative Memory; Cache Memory; Virtual Memory; Memory Management

**TEXTBOOKS:**

1. M. Morris Mano, “Computer System Architecture”, Prentice Hall of India Pvt. Ltd

##### REFERENCES:

1. M. Morris Mano, “Digital Logic and Computer Design”*,* Prentice Hall of India Pvt. Ltd
2. M. Morris Mano, “Computer Engineering Hardware Design”*,* Prentice Hall, Inc
3. P. Pal Choudhuri, “Computer Organization and Design”, Prentice Hall of India Pvt.

**Subject:** CONCEPTS OF ALGORITHM AND PROGRAMMING (CAP)

**Code**: MST501

**Credits**: 3

**OBJECTIVE:** The objective of this subject is to discuss the basic techniques and algorithms for attacking and solving various types of problems. The emphasis should be on writing algorithms and programs in C and understanding the object oriented paradigm

**UNIT-I**

Definition of Algorithms- Writing algorithms- top down design – Program verification- The efficiency of algorithms- Concept of Recursion- some simple example to illustrate these concepts like finding the GCD of two numbers- Swapping two variables- Summation of n given numbers- generation of Fibonocci sequence- Reversing a given number-Base conversion.

**UNIT-II**

Introduction to- C character set- Delimiters-The C Keywords-Identifiers- Constants-Variables-Rules for Defining Variables-Data Types-Declaring Variables- Initializing Variables – Type Conversion-Priority of Operators and their Clubbing- Comma and Conditional Operator-Arithmetic Operators-Relational Operators –Logical Operators-Bitwise Operators-Input and Output in C-Formatted and Unformatted Functions -Library Functions; if statement- if…else statement-various forms of if- nested if -break statement-continue statement – go to statement - switch statement - nested switch statement - for statement -while statement do while statement - arrays - working with string and standard functions.

**UNIT-III**

Introduction to pointers – pointer declaration – Arithmetic Operations with pointers – pointers and arrays – pointers and two-dimensional arrays – array of pointers – pointers to pointers – pointers and strings – void pointers – function definition and declaration – proto types - types of functions – call by value and reference – functions returning more values – function as an argument – function with operators – function and decision statements – function and loop statements – function with arrays and pointers – recursion – pointer to function – storage classes; preprocessor directives– structures and unions – bit wise operators – files – command line arguments – dynamic memory allegation – graphics in C .

**UNIT-IV**

Introduction to C++: Identifier, Keywords, Constants, data types, Modifiers, reference variables, Operators, Type conversion, Variable declaration, expressions, statements, manipulators Input and output statements, stream I/O, Conditional and Iterative statements, breaking control statements. Storage Classes: Automatic, Static, Extern, Register, Functions- Prototyping, Definition and Call, Scope Rules; Function overloading, Default Arguments, Const arguments; Pointer to functions, Inline functions; Classes and Objects-Class Declaration and Class Definition, Defining member functions, making functions inline, Nesting of member functions, Members access control, const data members, Const member functions, this pointer; Friend functions and Friend classes; Constructors- properties, types of constructors; Destructors- Properties, Destroying objects, rules for constructors and destructors

**UNIT-V**

Inheritance-defining derived classes, inheriting private members, single inheritance, types of derivation, function redefining, constructors in derived class; types of inheritance-Single, Multiple, Multilevel and Hybrid, types of base classes-Direct, Indirect, Virtual, Abstract, code reusability; Polymorphism: Methods of achieving polymorphic behaviour; Operator overloading: overloading binary operator, overloading unary operators, rules for operator overloading, operator overloading using friend function. Function overloading: early binding, Polymorphism with pointers, virtual functions, late binding, pure virtual functions and abstract base class. Virtual destructors; Difference between function overloading, redefining, and overriding

**TEXTBOOKS:**

1. E. Balagurusamy, “Programming in C”, TMH Publications
2. Herbert Schildt, “The Complete Reference C++”, Tata McGraw-Hill

##### REFERENCES:

1. Deitel and Deitel, “C++ How to Program”, Pearson Education, 2001
2. Yashavant Kanetkar, “Let Us C”, BPB publication

**Subject:** CAP-PRACTICAL

**Code**: MST502

**Credits**: 3

**OBJECTIVE:** To provide students the skill for programming and algorithms using C and C++

**LIST OF PROGRAMS:**

1. WAP to find the roots of a quadratic equation using C language
2. WAP to find whether given number is prime or not using C language
3. WAP using C language to find the reverse of a given number
4. WAP using C language to find whether given number is palindrome or not
5. WAP using C language to find the value of sinx, using series expansion
6. WAP using C language to Sort the elements in a given array, using bubble sort
7. WAP to Sort the elements in a given array, using insertion sort using C language
8. WAP to find the product of two matrices of sizes 3 x 4 and 4 x 3 using C language
9. WAP to find the position of given element in the array, using binary search using C language
10. Print the elements in the reverse order of the given elements in the array using C language
11. WAP to find the number of vowels in a given string using C language
12. WAP to find the number of letters in the given string using C language
13. WAP to find the number of words in the given string using C language
14. Write a C++ program to implement flight class with data member as flight no,source, destination and fare. Write a copy constructor and a member function to display the flight information.
15. Write a C++ program to implement a string object. Include member functions to compare two strings and to concatenate two strings
16. Write a C++ program to implement a class to represent complex numbers. Include member functions to add and multiply to complex numbers. Overload assignment operator =
17. Write a C++ program to implement time class that has separate data members for hours, minutes and seconds. Overload + Operator to add two times (object) and ++ operator to increment the time by one second
18. Write a C++ program to implement a student class having roll no., name, rank, addresses as data members. Overload assignment operator =
19. Write a C++ program to implement user defined string class. Overload the constructor and a member function to concatenate two strings.
20. Write a C++ program implement Complex class with the member function Add, Subtract and Multiply two complex Numbers
21. Write a C++ Program to implement a sphere class with appropriate members and member function to find the surface area and the volume (Surface = 4 π r2 and Volume = 4/ 3 π r3 )
22. Write a C++ program to implements a string class. Overload + Operator to concatenate two strings
23. Write a C + + program to implement matrix class. Add member function to transpose the matrix
24. Write a C++ program to find the number of characters, word and lines in the given text as input
25. Write a C++ program to implement a telephone bill class with Name, Address, Tel. No., No. of calls as data members. Compute the amount to be paid if the charges per call is Rs. 2/-
26. Write a C ++ program to implement a class for complex numbers with add and multiply as member functions. Overload ++ operator to increment a complex number
27. Write a C ++ program to implement a date class with member functions as next, previous which return next date and previous date objects

**Subject:** WEB DESIGNING- PRACTICAL

**Code**: MST503

**Credits**: 3

**OBJECTIVE:** The students will learn about the various web designing techniques and build their own websites using different tools

**CONTENTS:**

1. Creating web page using basic formatting tags: heading, paragraph, underline break, bold, italic, underline, superscript, subscript, font and image; different attributes like align, color, bgcolor, font face, border, size
2. Write HTML code to develop a Web page having the background in red and title "My First Page" in any other color
3. Create an HTML document giving details of your name, age, telephone number, address, TLC code & enrolment number aligned in proper order
4. Write an HTML code to design a page containing text, in form of paragraphs giving suitable heading style
5. Create a page to show different attributes of Font tag
6. Create a page to show different attributes: italics, bold, underline
7. Creating web page having navigation links using anchor tag, internal, external, mail and image links; lists-ordered, unordered
8. Creating web page having table tag; HTML Form controls-form, text, password, textarea, button, checkbox, radio button, select box, hidden controls, Frameset and frame
9. Write an HTML code to create a Web page of blue color and display links in red colour
10. Create a Web page with appropriate content and insert an image towards the left hand side of the page. When user clicks on the image, it should open another Web page
11. Create a Web page, which should contain a table having two rows and two columns.
12. Write an HTML code to develop a Web page having two frames that divide the Web page into two equal rows.
13. Write an HTML code to develop a Web page having two frames that divide the Web page into two equal rows and then divide the second row into two equal columns.
14. Write an HTML code to develop a Web page having frames as described in the above question and then fill each frame with a different background color
15. Design a page with a text box called 'name' and a button with label 'Enter. When you click on the button another page should open, with the message "Hello < name > ", where name should be equal to the name entered in the first page
16. Design a Web Page, which is like 'compose' page of e-mail 1. Design a Web Page, which is like 'compose' page of e-mail
17. Writing programs implementing cascading style Sheet (CSS), CSS syntax, comments, id and class, background color, background image- text - text color, text alignment, text decoration, text transformation, text indentation; CSS font - font families, font style, font size - setting text size , using pixels and em; CSS lists - different list item markers, unordered list, ordered list, an image as the list item marker
18. Writing programs implementing CSS tables - table borders, collapse borders, table width and height, table text alignment, table padding, table color; CSS positioning - static positioning, fixed positioning, relative positioning, absolute positioning, overlapping elements, float, horizontal align, image gallery, image opacity/transparency
19. Writing program using Javascript tag, comments, variables, document methods-write and writeln methods, alert; operators-arithmetic, assignment, relational, logical, javascript functions, conditional Statements, loops, break and continue; events familiarization-onLoad, onClick, onBlur, onSubmit, onChange
20. Write a JavaScript code to create a pull down menu box.
21. Write a program to move a text with mouse pointer and to change colour of text randomly
22. Create a Web page using two image files, which switch b/w one another as the mouse pointer moves over the image. Use the On Mouse over and On Mouse out event handler
23. Create an HTML form that has a number of text boxes. The user fills the textboxes with data. Write a script that verifies that all textboxes have been filled. If a text box has been left empty pop up an alert message indicating the box that has been left empty. When OK button is clicked, set focus to that specific textbox. If all the textboxes are filled, display thank you.
24. Working HTML 5 events using javascript-offline,onabort, onafterprint, onbeforeonload, onbeforeprint, onblur, oncanplay, oncanplaythrough, onlclck, oncontextmenu, ondbclick,ondrag,ondragend,ondragcenter,ondragleave,ondragover,ondragstart,ondrop,ondurationchange,onemptied,onended,onerror,onfocus,oninput,oninvalid,onload,onmouseover,onmouseup,onmousewheel,onpagehide,onpageshow,onplaying,onprogress,onratechange,onredo,onresize,onscroll,onseeked,onseeking,onselect,onsubmit, onsuspend, onundo, onunload,onvolumchange,onwaiting
25. Working with scalable vector graphics-embeding SVG,SVG line, circle,rectangle, ellipse, polygon, gradients; Canvas element-using canvas to draw polygon,path, text, transformation
26. Working with web storage-session storage, local storage, delete web storage; web socket events-open, message, error, close;web socket methods-socket.send(),socket.close()
27. Working with Joomla 3.4 CMS-installation, work areas, control panel, -tootlbar;menu-content, component, extensions, help menu
28. Creating menus, adding menus items, modifying menu items, submenus
29. Working with Joomla modules-create module, breadcrumb module, feed display module, footer module, search module, random image module, whos is online module, syndicate module
30. Working with Joomla global setting-system setting, media setting, language manager, private messages, mass emailing, cache management, users setting
31. Working with Joomla template-template manager, customize template, adding template, creating, adding,customize logo, category management, adding content, formatting content, article metadata, adding banners, contacts adding news feed, adding forum, web links
32. Working with joomla plugins-plugin mangers, authentication plugins, content plugins, editor plugins, search plugins, users plugins, extension, system plugins
33. Working on Site Management-global configuration- site online and offline, metadata setting, change site url ,updating web site, updating extension, disabling and uninstalling extensions, back up site
34. Web hosting-www, web server, internet service provider, web hosting providers,domain names, web hosting email servers,web hosting technologies and types
35. Working with Cpanel-using file section tools, mange domains, manage email, manage security section, manage databases, manage software section tools

**TEXTBOOKS:**

1. HTML5 and CSS3: Develop with Tomorrow's Standards Today, Hogan Brian P**,** Springer India Private Limited
2. HTML 5 Foundations, Matt West, Wiley India Pvt Ltd
3. Using Joomla, Ron Severdia Kenneth Crowder, Shroff Publications

**REFERENCES:**

1. Responsive Web Design with HTML5 and CSS3, Hogan Brian P., Shroff Publishers & Distributers Private Limited - Mumbai
2. HTML 5 and CSS 3 Made Simple, Ivan Bayross, BPB
3. Joomla Accessibility, Joshue O Conner, Shroff Publications

**Subject:** PC Software and Hardware-PRACTICAL

**Code**: MST504

**Credits**: 3

**OBJECTIVE:** To enable students to work with computer hardware and software like MS Office and its applications in the relevant fields

**CONTENTS:**

1. Introduction to MS Word and its area of use
2. Identify the different components of the document window and their functions
3. Creating and saving a document, open an existing file and saving a file using a new name
4. Protecting the document window using a password
5. Document creation- text selection and editing, cut, copy, paste, finding and replacing text
6. Formatting the text- font and size selection, alignment and spacing of text, paragraph indenting, bullets & numbering, headers & footers and changing case
7. Working with themes, table of contents, watermark, margins, size and orientation of page
8. Working with hyperlink, columns, drop cap, page setup, print preview and printing of documents
9. Working with tables- insert table, changing cell width & height, alignment of text in cell, insert / delete rows and columns, merging & splitting of cells
10. Working with pictures- picture style, aligning, text wrapping & cropping
11. Working with mail merge
12. Introduction to MS PowerPoint and its area of use
13. Identify the different components of the PowerPoint window and their functions
14. Creating and saving a presentation, open an existing presentation and saving it using a new name and Protecting the presentation using a password and working with slides-insert, delete and copying of slides
15. Working with themes- color, fonts & effects, slide design, background styles, animation and transition effects, setting the slide timer
16. Working with tables, hyperlinks, insert textbox, slide number, header & footer, wordart
17. Creating a photo album, picture and clipart and working with media clips- insert movie and sound clip
18. Changing page setup, slide orientation, printing a presentation and running the presentation using the slide show and function key
19. Introduction to MS Excel and its area of use and
20. Identify the different components of the excel window and their functions
21. Understanding what is a workbook, worksheet, cells, range and auto fill handle Open, save, close & renaming a workbook and Protecting the workbook using a password
22. Inserting worksheets, copying & renaming sheets, deleting sheets, editing text, selecting cells, rearranging & merging of cell contents and working with cell formatting using auto row format, row and column formatting, cell border, hyperlink
23. Working with formula using addressing method, auto sum and functions, merging from excel workbook to word document
24. Managing data-sorting data, filtering data, freezing rows & columns, cell contents, working subtotals and data form and working with charts
25. Understanding the different components of a desktop computer
26. Understanding the different brands of the components
27. Assembling a computer
28. Partitioning and Installing operating system and drivers
29. Installing application soft wares
30. Troubleshooting RAM, hard drive, SMPS problems

**Subject:** OPERATING SYSTEMS

**Code**: MST550

**Credits**: 4

**OBJECTIVE:** To describe the major components of an operating system, their functions and purpose to achieve the various case studies of different types of Operating System.

**UNIT-I**

Introduction **–** Definition, Types of Operating System, Functions of the Operating System, Operating Systems Services, System Components, System Calls, Single User, Multi User and Multitasking Operating System;

**UNIT-II**

Process Management – Process, Scheduling, CPU Scheduling Concepts, Process Synchronization, Semaphore, Classical Problems of Synchronization, Deadlocks, Deadlock Detection, Deadlock Recovery;

**UNIT-III**

Memory Management – Introduction, Logical address V/s Physical address, Swapping, Contiguous Allocation, Partitioned Memory Allocation, Fragmentation, Paging, Segmentation, Virtual Memory, Page Replacement, Page Replacement Algorithms, Frame Allocation Algorithm;

**UNIT-IV**

File Management – File concepts, Access Methods, Directory Structure, Allocation Methods, Free Space Management, Secondary Storage Structure, Disk Scheduling, FCFS Scheduling, Disk Management;

**UNIT-V**

Distributed System and Security – Client/Server Computing, Remote Procedure Calls, Clusters, Threats and its Goals, Types of threats, Protection Mechanism, Digital Signature, Case Study on MS-DOS, Windows NT, Windows XP, Windows 7, Windows Ultimate, Android, Jelly Beans.

**TEXTBOOKS:**

1. Stalling, W., “Operating system ,” Sixth Edition, Prentice Hall (India)
2. Sibsankar Haldar and Alex A. Aravind , “Operating Systems”, Pearson Education.

**REFERENCE:**

1. Abraham Silberschatz and Peter Baer Galvin, “Operating System Principles”, Seventh Edition, Wiley-India Publication

**Subject:** ADVANCED COMPUTER NETWORKS

**Code**: MST551

**Credits**: 4

**OBJECTIVE:** To acquaint the students with the application of networking with emphasis on various TCP/IP protocols and the working of ATM and its performance, Network security and authentication

**UNIT-I**

Layered protocols, internet Addressing, mapping internet address to physical address, internet protocol, OSPF, RIP,RARP, BOOTP, DHCP, BGP, ARP, IP, Ipv6, ICMPTransport protocols: UDP, TCP and SNMP

**UNIT-II**

Frame relay, B-ISDN, ATM protocol stack, ATM switching, internetworking with ATM Networks, traffic management in ATM

**UNIT-III**

High Speed LAN-LAN Ethernet, fast Ethernet, gigabit Ethernet, FDDI, DSL, ADSL

**UNIT-IV**

Wireless communication- wireless networks, wireless channels, channel access, network architecture, IEEE 802.11, Bluetooth

**UNIT-V**

Network Analysis and Modeling- Queuing theory, modeling network as a graph, network management system and standard

**TEXTBOOK:**

1. Dayanand Ambawade, Dr. Deven shah, Prof. Mahendra Mehra,” Advance Computer Network”, Wiley India

**REFERENCE:**

1. William Stallings, “High-Speed Networks and Internets, Performance and Quality of Service”,  Pearson

**Subject:** RELATIONAL DATABASE MANAGEMENT SYSTEM-PRACTICAL

**Code**: MST552

**Credits**: 3

**OBJECTIVE:** The objective of this Course is to introduce to the students the fundamental concepts necessary for designing, using and implementing database systems and applications

**CONTENTS:**

1. Working with MySQL Data Definition, Table Creation, Constraints
2. Working with Insert, Select Commands, Update & Delete Commands
3. Study of SELECT command with different clauses
4. Study of GROUP functions (avg, count, max, min, sum)
5. Study of various type of SET OPERATORS (Union, Intersect, Minus)
6. Write the query to implement the concept of Intergrity constrains
7. Writing Nested Queries & Join Queries
8. Working with MySQL date and time format-extracting year, month, calculating present age from date of birth
9. Implementing Views
10. Working with Transaction
11. Perform the queries for triggers
12. Write the query for creating the users and their role.

**TEXTBOOKS:**

1. Abraham Silberschatz- Henry K. Korth- S. Sudarshan, “Database System Concepts”, 4th edition, McGraw Hill International Edition
2. Vikram Vaswani,” MySQL(TM): The Complete Reference”, Mc Graw Hill Education Publication

**REFERENCES:**

1. Madhilika Jain- VineetaPillai- Shashi Singh- Satish Jain, “A Level- Introduction to Database Management Systems”, BPB Publications
2. R S Gill, “Database Management System”, I K International
3. R Elmasri and S B Navathe, ”Fundamentals of Database Systems”, Pearson Publication
4. G. K. Gupta, “Database Management System”, Tata McGraw Hill Publication

**Subject:** DATA STRUCTURE USING C

**Code**: MST553

**Credits:** 3

**OBJECTIVE:** To understand the different methods of the algorithm, its efficiency and the fundamental component of problem solving for organizing large amounts of data to be efficiently implemented to solve a specific problems

**UNIT-I**

Introduction – The concept of data structure, Abstract data type, Concept of list & array, Recursion Functions and its implementation; Introduction to Stack – Stack as an abstract data type, primitive operation on stack, Stacks application: Infix, post fix, prefix and recursion, multiple stack;

**UNIT-II**

Introduction to the linked list – Basic operations on linked list, Stacks and queues linked list, Header nodes, Doubly Linked List, Circular Linked List, Stacks and queues as a circular linked list, application of linked list; Introduction to queues – Primitive Operations on the Queues, Queue as an abstract data type, Circular queue, Dequeue, Priority queue, Applications of queue;

**UNIT-III**

Trees–basic terminology, binary trees, tree representations using array & linked list, basic operation on binary tree; traversal of binary trees – inorder, preorder & post order, application of binary tree, threaded binary tree, b-tree & height balanced tree, binary tree representation of trees;

**UNIT-IV**

Sorting–Insertion sort, Selection sort, Quick sort, Bubble sort, Heap sort, Comparison of sorting methods, Hash Table, Collision resolution Techniques; Introduction to graphs – Definition, Terminology, Directed, Undirected & Weighted graph, Representation of graphs, Graph Traversal- Depth first & Breadth first search, Spanning Trees minimum spanning Tree, Shortest path algorithm;

**TEXTBOOKS:**

1. A.A Puntambekar, “ Data structures Using 'C++' “, Technical Publications
2. E. Balagurusamy, “ Data Structures Using C ++“,TATA McGraw-Hill

**REFERENCES:**

1. Yashavant Kanetka, “Data Structures Through C”,BPB Publication
2. Aaron M. Tenenbaum, Yedidyah Langsam, Moshe J. Augenstein, “Data StructuresUsing C”, Pearson Education India
3. Kruse, Tondo & Leung, “Data Structures and Program Design”, PHI publications

**Subject:** DATA STRUCTURE USING C-PRACTICAL

**Code**: MST554

**Credits**: 3

**OBJECTIVE:** To understand the different methods of the algorithm, its efficiency and the fundamental component of problem solving for organizing large amounts of data to be efficiently implemented to solve a specific problems

**LIST OF PROGRAMS:**

1. Implementation of Concatenation & length using for loop statement
2. Implementation of Comparison & length using for loop statement
3. WAP to Access substring
4. WAP to find the Factorial using recursion
5. WAP to find the GCD of a number using recursion
6. WAP to find the Tower of Hanoi using recursion
7. WAP to find the Fibonacci Series using recursion
8. WAP to implement Insertion in an Array
9. WAP to implement Deletion in an Array
10. WAP to perform Binary output
11. WAP to implement Linear Binary &Sort
12. WAP to implement Bubble sort
13. WAP to implement Insertion
14. WAP to implement Select
15. WAP to implement Merge
16. WAP to implement Quick
17. WAP to implement BST & Tracing
18. WAP to Create a Linked list
19. WAP to implement Insertion in a linked list
20. WAP to implement Deletion in a linked list
21. WAP to implement Searching in a linked list
22. WAP to implement Double Linked list
23. WAP to implement Circular Linked list
24. WAP to implement Stack push and pop array
25. WAP to implement Stack Linked list
26. WAP to implement Queue Array
27. WAP to implement Queue Linked list
28. WAP to implement Double Queue
29. WAP to implement Circular Queue
30. WAP to implement Circular Stack

**TEXTBOOKS:**

1. A.A Puntambekar, “ Data structures Using 'C++' “, Technical Publications
2. E. Balagurusamy, “ Data Structures Using C++ “,TATA McGraw-Hill

**REFERENCES:**

1. Yashavant Kanetka, “Data Structures Through C++”,BPB Publication
2. Aaron M. Tenenbaum, Yedidyah Langsam, Moshe J. Augenstein, “Data Structures Using C”, Pearson Education India
3. Kruse, Tondo & Leung, “Data Structures and Program Design”, PHI publication.

**Subject:** LINUX SHELL PROGRAMMING-PRACTICAL

**Code**: MST555

**Credits**: 3

**OBJECTIVE:** To provide a comprehensive introduction to Shell Programming and enable to write simple and complex Shell scripts to automate processes in the Unix environment

**UNIT-I**

Introduction-what is linux, installing linux (any distros), looking into the linux kernel, The GNU utilities, linux desktop, environment linux distributions - core linux distributions, specialized linux distributions, the linux LiveCD

**UNIT-II**

Starting the shell, the shell prompt, the bash manual, file system navigation- the linux filesystem, traversing directories, file and directory listing - basic listing, modifying the information presented, the complete parameter list, filtering listing output, file handling - creating files, copying files, linking files, renaming files, deleting files, directory handling - creating directories, deleting directories, viewing file contents - viewing file statistics, viewing the file type, viewing the whole file, viewing parts of a file

**UNIT-III**

Using multiple commands, creating a script file, displaying messages, using variables - environment variables, user variables, the backtick, redirecting input and output - output redirection, input redirection, pipes, performing math - the expr command, using brackets, a floating-point solution, exiting the script - checking the exit status, the exit command

**UNIT-IV**

Working with the if-then statement, the if-then-else statement, nesting ifs,the test command - numeric comparisons, string comparisons, file comparisons, compound condition testing, advanced if-then features - using double parentheses, using double brackets, the case command, the for command - reading values in a list, reading complex values in a list, reading a list from a variable, reading values from a command, changing the field separator, reading a directory using wildcards, the c-style for command - the c language for command, using multiple variables, the while command - basic while format, using multiple test commands, the until command, nesting loops, looping on file data, controlling the loop - the break command, the continue command, processing the output of a loop

**UNIT-V**

Command line parameters - reading parameters, reading the program name, testing parameters, special parameter variables - counting parameters, grabbing all the data being shifty, working with options - finding your options, using the getopt command, the more advanced getopts, standardizing options, getting user input - basic reading, timing out, silent reading, reading from a file, understanding input and output - standard file descriptors, redirecting error, removing a trap running scripts in background mode - running in the background, running multiple background jobs, exiting the terminal, running scripts without a console, job control - viewing jobs, restarting stopped jobs, being nice - the nice command, the renice command, running like clockwork - scheduling a job using the at command, using the batch command, scheduling regular scripts, start at the beginning - starting your scripts at boot, starting with a new shell

**TEXTBOOK:**

1. Micheal Jang,”Linux Mastering Red Hat Linux 9”, BPB Publications

**REFERENCES:**

1. John Goerzen,”Linux Programming Bible”,IDG Books
2. Sumitabha Das,”Your Unix – The Ultimate Guide”,TMH
3. Mathew,”Professional Linux Programming”, Wrox-Shroff
4. Welsh & Kaufmann,”Running Linux”, O’Reiley & Associates

**Subject:** ADVANCED JAVA PROGRAMMING

**Code**: MST600

**Credits:** 3

**OBJECTIVE:**  To enable students to acquire basic knowledge of fundamentals of object-oriented programming using Java. Course coverage includes the design and implementation of both graphical applets and standalone applications, and the use of visual components in graphical user interface design. Language elements covered include loops, arrays, input/output structures, events, exceptions, and threads.

**UNIT- I**

Java Overview: Genesis, Java Philosophy, Java & Internet, Object-Oriented Programming features, Java Applet and Application, Java Environment and Java Development Kit (JDK) & Java Standard Library (JSL), Java language fundamentals, The scope and lifetime of variable, Type conversion and casting, Control statements, Arrays classes and objects: The this keyword, Garbage collection, Overloading constructor, Using object as parameters, Argument passing, Returning objects, Recursion, Introducing Access control (public, private and protected), static**,** final, nested classes, String class, Command-line argument.

**UNIT- II**

Inheritance: Member access and inheritance, method overriding, dynamic method dispatch, using abstract classes, using final with inheritance, the Object class; Packages, Interface, classpath, Exception handling: Fundamentals, Exception types, Java’s built-in exceptions, user defined exceptions; Networking: Socket overview, Stream Sockets, Datagram sockets, Manipulating URLs, Establishing a simple Server/Client using Stream Sockets, Connectionless Client/Server Interaction with Datagrams; Images: File formats, image fundamentals, creating, loading and displaying images, ImageObserver, MediaTracker

**UNIT- III**

String handling: **S**tring constructors, methods for character extraction, string searching & comparison, data conversion using valueof (), StringBuffer Exploring java.lang**:** Simple type wrappers, System class, class Class, Math functions; The utility classes: Vector, Stack , HashTable, StringTokenizer, Bitset, Date, Calendar, GregorianCalendar, Random, Observable Input/Output-Exploring java.io: The java.io classes and interface, File class and methods for creating, renaming, listing and deleting files and directories, I/O stream classes (FileInputSream, FileOutputStream, BufferedInputStream, BufferedOutputStream, PushBackInputStream, InputStreamReader, BufferedReader, BufferedWriter, PrintStream, RandomAccessFile)

**UNIT- IV**

The Applet class: applet architecture, passing parameters to applets, getDocumentBase, getCodeBase, and showDocument, AppletContext and AudioClip interfaces, Graphics class and methods for drawing lines, rectangles, polygons and ovals; Swing: Component and Container classes, Layout managers (FlowLayout, GridLayout, BorderLayout), Handling events, Adapter classes, Anonymous inner classes

Swing GUI components (JLabel, JTextField, JTextArea, JButton, JCheckBox, JRadioButton, JList, JComboBox, JScrollBar, JScrollPane, JToolTip, JPanel, JFrame); Menus: JmenuBar, JMenu, JMenuItem, JSeparator; Multithreaded Programming: The Java thread model (thread priorities, synchronization and inter-thread communication); Deadlock, ThreadGroup.

**UNIT- V**

Java Beans: Introducing JavaBeans Concepts and Bean Development Kit (BDK), Using the Bean Box, Writing a simple Bean, Bean Properties (simple properties), Manipulating events in the Bean Box

Java database connectivity (JDBC): Introduction to JDBC, type of JDBC connectivity, Establishing database connections, Accessing relational database from Java programs; Java Servlets: Servlet overview and architecture, Servlet Interface and Servlet life cycle, HttpServlet Class, HttpServletRequest Interface, HttpServletResponse Interface, Handling HTTP get Requests, Setting up the Apache Tomcat Server, Deploying a web application, Handling HTTP get requests containing data, Handling HTTP post requests.

**TEXTBOOK:**

1. Deitel, H. M.; P. J. Deitel, Java : How To Program (Sixth Edition), New Delhi: Prentice-Hall India, 2005

**REFERENCES:**

1. Schildt, H., The Complete Reference Java 2 (Fifth Edition), New Delhi: Tata McGraw-Hill, 2005
2. Moss, K., Java Servlets (Second Edition), New Delhi: Tata McGraw-Hill

**Subject:** ADVANCED JAVA PROGRAMMING-PRACTICAL

**Code**: MST601

**Credits:** 3

**OBJECTIVE:** To enable students to acquire basic knowledge of fundamentals of object-oriented programming using Java. Course coverage includes the design and implementation of both graphical applets and standalone applications, and the use of visual components in graphical user interface design. Language elements covered include loops, arrays, input/output structures, events, exceptions, and threads.

**LIST OF PROGRAMS:**

1. To implement simple program based on operator loop decision statements
2. To implement Program to define Class and instantiate Objects
3. Program to implement constructor and Method overloading and Method overriding
4. Program to create components using Swing
5. Program to implement Wrapper Class and command line argument
6. Program to demonstrate packages and interfaces
7. Program to demonstrate Single level and Multi level inheritance
8. Program to demonstrate Exception Handling
9. Program to demonstrate Multithreading and Synchronization
10. WAP that import the user define package and access the Member variable of classes that Contained by Package.
11. Program that show the partial implementation of Interface.
12. Program to Handle the user define Exception using throw keyword.
13. Program to create a thread that Implement the Runable interface.
14. Program to Implement Interthread communication.
15. Program to implement Server and client using networking
16. Program using Applet Class
17. Program to perform String Class and StringBuffer Class.
18. Program to implement all the Swing components
19. Designing an application using any IDE.
20. Creating a database Connection
21. Programs creating Simple Java Bean and Java Servlets.

**Subject:** ANALYSIS AND DESIGN OF ALGORITHM

**Code**: MST602

**Credits**: 4

**OBJECTIVE:** To analyze the algorithm, its efficiency and the fundamental component of problem solving and to understand the importance of algorithm and finding its time and space complexity both theoretically and practically

**UNIT–I**

Introduction – Fundamentals of Algorithmic Problem Solving,Statement of the Problem, Design of an Algorithm, Correctness of an Algorithm, Analyzing an Algorithm, Implementation of Algorithm; Problem Types –Searching, Sorting, Graph Related Problems; Graph Representations – Adjacency matrix, Adjacency List, Path Matrix, Spanning Tree; Graph Properties – Bipartite Graph; Analysis of Algorithm Efficiency – Space Complexity, Analysis of Space Complexity, How to calculate Space Complexity, time complexity; Asymptotic Notations – Big Oh Notation, Omega Notation, Theta Notation, Little Oh Notation, Comparison of Asymptotic Notations

**UNIT–II**

Mathematical Analysis Recursive –Backward Substitution Method, Important Recurrence Type, Fibonacci Numbers,Recursion Tree; Brute Force Method – Bubble Sort, Implementation of bubble sort, Selection Sort,Implementation of Selection Sort; Exhaustive Search – Travelling Salesman Problem, Knapsack Problem, and Assignment Problem; Divide and Conquer – Merge sort, Analysis andImplementation of Merge Sort, Quick Sort, Analysis and Implementation, Binary Search, Analysis and Implementation; Multiplication of Large Integers; Strassen’s Matrix Multiplication;

**UNIT-III**

Decrease and Conquer **–** Insertion sort: analysis of Insertion Sort and its implementation; DFS and BFS –Depth First Search, Breadth First Search; Topological Sort; Transform and Conquer – Balanced Search Tree,AVL Trees; Heap sort – Heaps, Initial Heap Construction, Inserting a Key into a Max Heap, Deleting a key from Max Heap;

**UNIT–IV**

Space and Time Tradeoffs **–** Sorting by Counting; String Matching –Horspool Algorithm and its implementation; Hashing – hash Functions, Collision Resolution Techniques; Dynamic Programming – Warshall’s Algorithm; Floyd’s Algorithm; Knapsack problem;

**UNIT–V**

Greedy Technique **–** Prim’s Algorithm, Krusakal’s Algorithm, Dijkstra’s Algorithm, Huffman Codes and Tree; Backtracking & branch and bound, n – Queens Problem, Assignment Problem, Knapsack Problem, Travelling Salesman Problem; Limitation of Algorithm Power –P ***,*** NP and NP – Complete Problems – NP – Completeness, Polynomial Time, NP – completeness and reducibility;

**TEXTBOOKS:**

1. Puntambekar, “Analysis and Design Of Algorithms”, Technical Publications
2. Anany Levitin, “Introduction to Design of Analysis and Algorithm “, Addison Welsey Edition

**REFERENCES:**

1. Robert Sedgewick and Phillippe Flajojet , *“* An Introduction to the Analysis of Algorithm ( 2nd Edition) “, Welsey Publication .
2. Sara Baase and Allen Van Gelder, “Computer Algoritm: Introduction to Design and Analysis of Algorithm (3rd Edition)”.

**Subject:** SOFTWARE PROJECT MANAGEMENT

**Code**: MST603

**Credits**: 4

**OBJECTIVE:** To enable students to plan, manage a project and understand the different risk factor that may associate with a project.

**UNIT-I**

Introduction to Competencies - Product Development Techniques - Management Skills-The SEI CMM - International Organization for Standardization Formulation of a test case plan or test bed at the requirements stage: Ways to gather requirements and documentation.

**UNIT-II**

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**

Tasks and Activities - Software Size and Reuse Estimating: A Regression Model - COCOMO II - SLIM Organizational Planning - Project Roles and Skills Needed. Mode of good interface design-simple pleasant dialog boxes, non-interfering colors, non crowding of user controls on the interface panel.

**UNIT-IV**

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.; Quality: Requirements – The SEI CMM - Guidelines - Challenges - Quality Function Deployment.

**UNIT-V**

IEEE-CS/ACM - Software Engineering Code of Ethics-Introduction, purpose, preamble, principles- public, client and employer, product, judgment, management, profession, colleagues, self; Plagiarism – What is it,types, Five levels or degrees of plagiarism, prevention, MLCU policy, IEEE plagiarism guidelines, citation-APA, IEEE.

**TEXTBOOK:**

1. Bob Hughes, Mikecotterell, “Software Project Management”, Third Edition, Tata McGraw Hill

**REFERENCES:**

1. Ramesh, Gopalaswamy, "Managing Global Projects", Tata McGraw Hill
2. Royce, “Software Project Management”, Pearson Education
3. EEE-CS/ACM - Software Engineering Code of Ethics - Don Gotterbarn, Keith Miller, Simon Rogerson Executive Committee, IEEE-CS/ACM Joint Task Force on Software Engineering Ethics and Professional Practices
4. Jalote, “Software Project Management in Practice”, Pearson Education

**ELECTIVE I**

**Subject:** data mining and datawarehousing

**Code**: MSTE600

**Credits**: 4

**OBJECTIVE:** To enable the student to interpret the different kinds of database and to make use of the different types of data mining and data warehousing.

**UNIT-I**

Data warehousing Components–building a Data warehouse, Mapping the Data Warehouse to a Multiprocessor Architecture, DBMS Schemas for Decision Support, Data Extraction, Cleanup, and Transformation Tools, Metadata

**UNIT-II**

Business Analysis- reporting and query tools and applications, tool categories, the need for applications, Cognos Impromptu, Online Analytical Processing (OLAP), multidimensional data model, OLAP Guidelines, multidimensional versus multi-relational OLAP, categories of tools, OLAP Tools and the Internet

**UNIT-III**

Introduction to data mining-data, types of data, data mining functionalities, interestingness of patterns, classification of data mining systems, data mining task primitives, integration of a data Mining System with a data warehouse, issues, data preprocessing

**UNIT-IV**

Association rule mining and classification-Mining Frequent Patterns, Associations and Correlations, mining methods, mining, various kinds of association rules, correlation analysis and constraint based association mining, classification and prediction, basic concepts, decision tree; Induction-Bayesian classification, rule based classification, classification by back propagation, support Vector machines, Associative Classification

**UNIT-V**

Clustering and applications and trends in data mining-cluster analysis, types of data, categorization of Major Clustering Methods-K means, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid Based Methods, Model-Based Clustering Methods, Clustering High Dimensional Data, constraint, based cluster analysis, Outlier Analysis, Data Mining Applications

**TEXTBOOKS:**

1. Alex Berson and Stephen J. Smith, “ Data Warehousing, Data Mining & OLAP”, Tata McGraw, Hill Edition
2. Jiawei Han and Micheline Kamber, “Data Mining Concepts and Techniques”, Second Edition, Elsevier,

**REFERENCES:**

1. Pang Ning Tan, Michael Steinbach and Vipin Kumar, “ Introduction To Data Mining”,Person Education
2. K.P. Soman, Shyam Diwakar & V. Ajay “, Insight into Data mining Theory and Practice”, Easter Economy Edition, Prentice Hall of India
3. G. K. Gupta, “ Introduction to Data Mining with Case Studies”, Prentice Hall of India
4. Daniel T.Larose, “Data Mining Methods and Models”, Wile Interscience

**Subject:** COMPUTER GRAPHICS

**Code:** MSTE601

**Credits:** 4

**OBJECTIVE:** To provide students with an understanding of the basic principles, techniques, and algorithms for generating and interacting with simple graphical objects on a display screen that form the basis of computer graphics and modeling.

**UNIT-I**

Introduction to computer Graphics – Advantages of computer graphics, Applications and graphics software, Classifications of computer graphics; Video display Technologies- Raster scan systems, Random scan systems, CRT, Flat Panel Displays, Video controller, Graphics software

**UNIT-II**

Scan Conversion– attributes of output primitives, line drawing algorithms like Digital Differential Analyzer, Bresenham’s algorithm, Mid-point algorithm , Circle generating algorithms, scan converting ellipse; Filling Polygons-Boundary Fill algorithm, Flood Fill algorithm

**UNIT-III**

2D geometrical transforms-Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems; Windowing and Clipping-Viewing pipeline, Viewing transformations, 2-D Clipping algorithms

**UNIT-IV**

3D geometrical transforms- Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems; Windowing and Clipping-Viewing pipeline, Viewing transformations, Projections, 3D Clipping algorithms

**UNIT-V**

Visible Surface Detection- Back-Face Detection, Depth – Buffer Method, Scan Line Method – A-Buffer Method, Properties of Light, Infinitive Color Concepts, RBG Color Models

**TEXTBOOKS:**

1. Donald Hearn and M Pauline Baker, “Computer Graphics C Version”, Pearson Education
2. Foley, Vandam, Feiner and Huges, “Computer Graphics: Principles and Practice”, Pearson Education

**REFERENCES:**

1. William M. Newman, R.F. Sproull, “Principles of Interactive Computer Graphics”, Tata McGraw Hill
2. Steven Harrington, “Computer Graphics: A Programming Approach”, Tata McGraw Hill
3. David F. Rogers, “Procedural Elements for Computer Graphics”, Tata McGraw Hill
4. David F. Rogers, J. Alan Adams, "Mathematical Elements of Computer Graphics", Tata McGraw Hill

**Subject:** INFORMATION SECURITY

**Code:** MSTE602

**Credits:** 4

**OBJECTIVE:** To provide an understanding of the principal concepts, major issues, technologies, and basic approaches in information security.

**UNIT- I**

Introduction**-**Security problem in computing, elementary cryptography – DES – AES – Public key encryption, uses of encryption software

**UNIT-II**

Program security**-**security programs – non-malicious program errors – virus and other malicious code, targeted malicious code, control against program threats

**UNIT-III**

Security in operating systems**-**protected objects and methods of protection, memory and address protection, control of access generated objects, file protection mechanisms, user authentication, trusted operating systems, models of security

**UNIT- IV**

Database and network security**-** database security requirements, reliability and integrity – sensitive data, inference ,multilevel databases and multilevel security, threats in networks – network security controls, firewalls, intrusion detection systems, secure email

**UNIT- V**

Administering security and ethical issues**-**security planning – risk analysis – organizational security policies – physical security – protecting programs and data – information and the law – software failures – computer crime – privacy – ethical issues

**TEXT BOOK:**

1. Charles B. Pfleeger, and Shari Lawrence Pfleeger, “Security in Computing”, Pearson Education

**REFERENCES:**

1. Matt Bishop, “Computer Security – Art and Science”, Pearson Education.
2. William Stallings, “Cryptography and Network Security – Principles and Practices”, Prentice-Hall of India.
3. Atul Kahate, “Cryptography and Network Security”, Tata McGraw-Hill

**Subject:** cloud computing

**Code**: MSTE603

**Credits**: 4

**OBJECTIVE:** To provide the knowledge of techniques and services of cloud.

**UNIT-I**

Cloud Computing Fundamentals- what cloud computing, essential characteristics, history of cloud computing – cloud architecture – cloud storage – why cloud computing matters – advantages of cloud computing – disadvantages of cloud computing

**UNIT-II**

Developing cloud services-Web-Based Application, Pros and Cons of Cloud Service Development, Types of Cloud Service Development ,Software as a Service – Platform as a Service, Web Services – On Demand computing, Discovering Cloud Services Development Services and Tools – Amazon Ec2, Google App Engine , IBM Clouds

**UNIT-III**

Cloud computing for everyone-centralizing email communications – collaborating on schedules, collaborating on to-do lists, collaborating contact lists, cloud computing for the community, collaborating on group projects and events, cloud computing for the corporation

**UNIT-IV**

Using cloud services-collaborating on calendars, schedules and task management – exploring online scheduling applications ,exploring online planning and task management, collaborating on event management, collaborating on contact management, collaborating on project management, collaborating on word processing, collaborating on databases – storing and sharing files, evaluating web mail services, evaluating web conference tools – collaborating via social networks and groupware, collaborating via blogs and wikis.

**UNIT-V**

Cloud computing risk issues: privacy and compliance risks, threats to infrastructure, data, and access control, cloud service provider risks, cloud computing security challenges- security policy implementation, virtualization security management, vm security recommendations, vm-specific security techniques

**TEXTBOOK:**

1. Zaigham Mahmood , Thomas Erl , Ricardo Puttini , “Cloud Computing - Concepts, Technology & Architectur”, Pearson Education

**REFERENCES:**

1. Broberg J, “Cloud Computing: Principles And Paradigms”, Wiley India Pvt Ltd
2. Bloor Robin, Kaufman Marcia , Hurwit Judith ,“Cloud Computing For Dummies”, Wiley India Pvt Ltd

**ELECTIVE II**

**Subject:** PHP TECHNOLOGY

**Code**: MSTE650

**Credits**: 3

**OBJECTIVE: PHP** is a server-side scripting language designed for web development but also used as a general-purpose programming language. PHP code is interpreted by a web server with a PHP processor module which generates the resulting web page. PHP commands can be embedded directly into an HTML source document rather than calling an external file to process data. It has also evolved to include a command-line interface capability and can be used in standalone graphical applications.

**UNIT-I**

Introduction to PHP as a programming language - advantages of php, the server side architecture decomposed, overview of PHP, history, object oriented support, benefits in running PHP as a server side script. Installing a web server, internet information server, and IIS installation, testing web server setup

**UNIT-II**

The basics of PHP- data types, variables, constants, operators, arrays, conditional statements (if statement, executing multiple statements, else if clause and switch statement), iterations (for loop, while loop, controlling an array using a while loop, do while statement, foreach loop and special loop key words)

**UNIT-III**

Functions, user defined functions, functions with arguments, built in functions( print(), includer(), header(), phpinfo() ), PHP server variables, working with date and time, performing mathematical operations , working with string functions, system variable (GET, POST, cookies& Session, Forums)

**UNIT-IV**

Working with forms, form elements (text box, text area, password, radio button, checkbox, the combo box, hidden field and image), adding elements to a form, uploading files to the web server using PHP, building a challenge and response subsystem and understanding the functionality of the FORM attribute Method Regular Expressions-engine, types of regular expressions, symbols used in regular expressions. error handling in PHP- displaying errors, warnings, types of errors, error levels in php, logging errors and ignoring errors

**UNIT-V**

Data base connectivity using PHP –MySQL-performing, executing commands, different types of data base operations like Insertion, deletion, update and query on data

**TEXTBOOKS:**

1. Peter MacIntyre , Rasmus Lerdorf , Kevin,"Programming PHP",O'Reilly
2. G Steven Holzner,"Php: The Complete Reference",Mcgraw Hill Education

**REFERENCES:**

1. Vikram Vaswani,"PHP 5.3: A Beginner's Guide : A Beginner's Guide ",Mcgraw Hill Education
2. Janet Valade,"PHP and MySQL For Dummies, 4th Edition ",John Wiley & Sons Inc

**Subject:** .NET TECHNOLOGY

**Code**: MSTE652

**Credits:** 3

**OBJECTIVE:** To provide students with the skills needed to develop web – based applications in ASP .NET for the Microsoft .NET platform. The Course focuses on user management, event driven programming, state management, page validation, website navigation, state management, user profile, working with database and dataset.

**UNIT-I**

ASP.NET essentials-Overview of .Net framework, what’s new in ASP.Net, Introduction to visual web developer; introducing asp.net pages, application lifecycle; provider models, coding models, code sharing compiling application, global.asax file, web.config file; state management.

**UNIT-II**

Standard Controls-The Control Class, Web Control Class: Buttons, Labels, Literal, Place Holders, Hidden field control, File Upload Control, List Boxesetc. and studying their classes; Image: Image Control, Image Button ,Image Map and studying their classes.

**UNIT-III**

**Navigation Control:** Tree View Control, Menu Control, Site Map Control; Wizard Control and studying their classes; Validation Controls, Validation Group; Calendar and Ad Rotators; Master Pages and Themes.

**UNIT-IV**

Authorization and authentication: user management- login controls: login control, login view, login status, logon name, password recovery, create user control wizard, change password control; user profiles: using profiles, anonymous profiles, authenticated profiles.

**UNIT-V**

Working With Database - Server Explorer; Working with ADO.Net: connection object, Command object, datareader class, dataadapter class, Dataset: datatable class, datarow etc.;Data provider: OLEDB, SQLClient, Mysql and others; Access data source: using Object Data Source; Base Data List Class, list view, form view, Grid View,Details View Class, DataList Class,Repeater Class.

**TEXTBOOKS:**

1. ASP.Net, “Black Book” , Dream Tech Press Publications.
2. ASP.NET ,“The complete reference”, McDonald, McGraw-Hill

**REFERENCES:**

1. Chris Hart, John Kauffman,Chris Ullman,”Beginning ASP.NET 2.0”, Wiley Publications.
2. Matthew MacDonald, Adam Freeman, ”Pro ASP.NET 4 in C# 2010”, Apress
3. MridulaPariharet al ,”ASP.NET Bible”,by Hungry Minds, Inc.

**Subject:** J2EE TECHNOLOGY

**Code**: MSTE654

**Credits:** 3

**OBJECTIVE:**  Java EE stands for Java Enterprise Edition. Java EE is used as a platform for performing server programming with the help of Java Programming Language. Java EE provides libraries that offer functionality to deploy distributed applications. Java EE is a combination of components such as JSP, Servlets and EJBs. Using Java EE, you can create web applications that can be hosted on any web server. Almost 80% of online web applications in the internet are developed using Java EE and its components.

**UNIT-I**Introduction to JavaEE-Introduction to J2EE-J2EE overview-why J2EE?-J2EE architecture- overview on the JavaEE architecture -1 tier- 2 tier -3 tier - n tier - JavaEE key standard J2EE APIs-J2EE containers

**UNIT-II**

Java database connectivity- JDBC product -types of drivers - two-tier client/server model - three-tier client/server model - basic steps of JDBC -creating and executing SQL statement -the result set object - working with database metadata - interface

**UNIT-III**

JavaServer Pages**-**JSP technologies -understanding the client-server model - understanding web server software -configuring the JSP server - handling JSP Errors - JSP translation time errors -JSP request time errors - creating a JSP Error Page

**UNIT-IV**

Servlets-Servlet Interaction & Advanced Servlets - Life cycle of Servlet -Java Servlet Development Kit - Javax.servlet package - reading servlet parameters -reading initialization parameters - the javax.servlet.http package - handling HTTP

**UNIT-V**

RMI-RMI Architecture - Designing RMI application - Executing RMI application, EJB,types of enterprise java beans - session bean & entity bean - features of session bean - life-cycle of stateful session bean - features of entity bean - life-cycle of entity bean -container-managed transactions & bean-managed transactions o implementing a container-manged entity bean, XML- XML syntax rules

**TEXTBOOKS:**

1. Schildt, H., “J2ee: The Complete Reference”, Tata McGraw Hills

**REFERENCES:**

1. Moss, K., “Java Servlets (Second Edition)”, Tata McGraw-Hill
2. Marty Hall,”Core Servlets & JavaServer Pages”, Pearson India

**ELECTIVE II-PRACTICAL**

**Subject:** PHP TECHNOLOGY-PRACTICAL

**Code**: MSTE651

**Credits:** 3

**OBJECTIVE:** To practice writing program using PHP on notepad++

1. WAP in PHP to print some text
2. WAP in PHP to store data in variables, Interpolating Strings, Creating variable variables, Creating constant.
3. WAP in PHP using math operators, for Incrementing and decrementing values, String operators, Operator precedence.
4. WAP in PHP using If statement, PHP Comparison operators, PHP Logical operators, Else statement, Elseif statement, Switch statement, Using For loops, Using While loops, Using Do…While loops, Using foreach loop, Terminating loops early, PHP alternate syntax.
5. WAP in PHP using String functions, Modifying the Data in arrays, Deleting arrays with loops(for loop,print\_r function,foreach loop,while loop), PHP array Functions, Extracting Data from arrays, Sorting arrays, Using PHP array operators, Comparing array with each other, Handling Multidimensional arrays in loops, Splitting and Merging arrays, other array functions
6. WAP in PHP using Creating functions in PHP, Passing functions some Data, Passing arrays to functions, Passing by reference, Passing variable numbers to arguments, Returning Data from arrays, Returning arrays, Returning List, returning reference, Introducing variable Scope in PHP, Accessing Global Data, Working with Static variables, PHP conditional functions, PHP variable functions.
7. WAP in PHP using Handling Text fields, Handling Text areas, Handling Check boxes, Handling radio buttons, Handling List boxes, Handling Password controls, Handling Hidden controls, Handling image Maps, Handling Buttons( Making Button data Persist, using Submit Buttons as HTML buttons)
8. WAP in PHP to display the size of array, swap the keys and value of arrays, reverse the array, delete elements from an array using associative array
9. Write a PHP Program to display the today’s date.
10. Write a PHP Program to read the employee details.
11. Write a PHP program to prepare the student marks list.
12. Write a PHP program to generate the multiplication of two matrices.
13. Write a PHP application to add new Rows in a Table.
14. Write a PHP application to modify the Rows in a Table.
15. Write a PHP application to delete the Rows from a Table.
16. Write a PHP application to fetch the Rows in a Table.
17. Develop an PHP application to make following Operations
18. Registration of Users.
19. Insert the details of the Users.
20. Modify the Details.
21. Transaction Maintenance.
    1. No of times Logged in
    2. Time Spent on each login.
    3. Restrict the user for three trials only.
    4. Delete the user if he spent more than 100 Hrs of transaction.

**Subject:** .NET TECHNOLOGY-PRACTICAL

**Code**: MSTE653

**Credits:** 3

**OBJECTIVE:** To provide students with the skills needed to develop web – based applications in ASP .NET for the Microsoft .NET platform. The Course focuses on user interfaces, on user management, event driven programming, state management, page validation, website navigation, state management, user profile, working with database, dataset and other requirements to build a web application.

**LIST OF PROGRAMS:**

1. Implementing user authentication and authorization.
2. Web page validation.
3. Implement event handlers with various controls
4. Program implementing image map control.
5. Program demonstrating file upload, adrotator.
6. Program implementing wizard control.
7. Website navigation.
8. Program implementing Login control.
9. Program implementing Master page and theme.
10. Implementation of session, cookies, etc.
11. Program implementing database connection and data manipulation.
12. Working data list class.
13. Working with dataset and data adapter

**Subject:** J2EE TECHNOLOGY-PRACTICAL

**Code**: MSTE655

**Credits:** 3

**OBJECTIVE:** To implement the programming techniques of J2EE.

**LIST OF PROGRAMS:**

1. Programs implementing JSP interface
2. Programs implementing JSP connecting to the database
3. Programs implementing JSP handling request
4. Programs implementing the concept of JSP scripting elements.
5. Programs implementing the concept of JSP Actions, Custom Tag libraries, Directives and connecting pages.
6. Programs implementing the concept of including and forwarding from JSP Pages.
7. Programs implementing the concepts of Custom Actions.
8. Programs implementing the concept of servlets.
9. Implementing a container-managed Entity Bean.