SEMESTER- III			
ALLIED - PRACTICAL– III – HTML LAB			
Code: 15UCSAR3	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits :2**

1. Develop an HTML document for a web page of your favorite National Leader. Design the page with an attractive color combination, with suitable headings and horizontal rules.
2. Develop an HTML document with an example of Ordered List and Unordered List (all types of list).
3. Create your resume using HTMLtags also experiment with colors, text, link, size and also other tags you studied.
4. Design a web page for your college containing a description of the courses, departments, faculties, library etc , use href , list tags.
5. Create a web page to display your marks in the following table format.

Reg No.	Name	SEMESTER I							
		Language		English		C		HTML	
		Int	Ext	Int	Ext	Int	Ext	Int	Ext

6. Create user feedback form (use textbox, text area, checkbox, radio button, select box etc.)
7. Create a web page using frame. Divide the page into two parts with Navigation links on left hand side of page(width=20%) and content page on right hand side of age(width=80%). On clicking the navigation Links corresponding content must be shown on the right hand side.
8. Create a frameset and open different pages in the frames.
9. Write an HTML code to display a list of five cars in a frame, Link each one to a brief description in second frame. The left frame should display the list and the right frame should display the paragraph about the frame.
10. Create a HTML document to display a list of four flowers and link each one to another document displaying brief description of the flower, Add pictures wherever possible.
11. Write HTML program to create Image Map.
12. Write HTML program to e-mail registration form.

SEMESTER- III			
CORE – III – JAVA PROGRAMMING			
Code: 15UCSC31	**Hrs / week :6**	**Hrs / Semester: 90**	**Credits :4**

Objectives:

- To understand the fundamental concepts of Java Programming.
- To understand the concept multi-threading, Applets, AWT and Networking.
- To understand the advanced concept of internet programming and also developing web based application using java programming.

UNIT I: The History and Evolution of Java: Creation of java - Operators – Control statements – Class , Methods , Inheritance

Packages and Interfaces: Packages - Access Protection – Importing Packages - Interfaces.

UNIT II:

Exception Handling: Exception-Handling Fundamentals-Exception Types-Uncaught Exceptions-Using try and catch-Multiple catch clauses-Nested try Statements-throw-throws-finally-Java‘s Built-in Exceptions.

Multithreaded Programming: Java Thread Model-Main Thread-Creating a Thread-Creating Multiple Threads- Using isAlive() and join ()-Thread Priorities-Synchronization - Interthread Communication-Suspending, Resuming, and Stopping Threads-Using Multithreading.

UNIT III:

The Applet Class: Applet Basics - Applet Architecture - Applet Skeleton - Simple Applet Display Methods - Requesting Repainting - HTML APPLET tag - Passing Parameters to Applet.

Event Handling: Event Handling Mechanisms - Delegation Event Model - Event Classes (The Action Event, Item Event, Key Event , Mouse Event) - Sources of Events - Event Listener Interfaces (Action Listener , Item Listener, Key Listener, Mouse Listener) - Adapter Classes

Introducing the AWT: AWT Classes - Window fundamentals - working with Frame Windows - Working with Graphics.

UNIT IV:

Using AWT Controls: Controls Fundamentals-Labels-Using Buttons-Applying Check Boxes-Check Box Group-Choice Controls-Using a Text Field-Using a Text Area-Understanding Layout Managers-[Flow Layout Only]-Menu Bars and Menus.

RMI: Remote Method Invocation – Text Formatting

UNIT V:

JDBC Package :JDBC – JDBC versus ODBC – Types of JDBC drivers – Connection – Statement – PreparedStatement.

ResultSet : Fields of ResultSet – Methods of ResultSet – Executing a query - ResultSetMetaData – DatabaseMetaData.

Database in JDBC : Basicdatatypes in JDBC – Advanced datatypes in JDBC – fields of Statement – methods of Statement

Text Books:

1. The Complete Reference Java™ ,SeventhEdition,By Herbert Schildt, TATA McGRAW-HILL EDITION. Chapters: 1, 9, 10, 11,21,22,23,24,29,30,31 (Unit I, II, III, IV& V)
2. Core Java2 Volume II Advanced Features by S.Horstmenn and Gary Cornell, The Sun Microsystems press Java Series. Chapter: 4.(Unit V)

Books for Reference:

- Java 2 Programming Black Book - Steven Holzner dreamTech Press
- JavaBeans Programming from the GroundUp - Joseph O'Neil, TMGH, New Delhi
- The J2EE Tutorial, KathyWalrath Pearson Education Asia.

SEMESTER- IV			
CORE – V – RDBMS			
Code: 15UCSC41	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :4**

Objectives:

- To learn the fundamental data models and conceptualize and depict a database system using ER diagram
- To make a study of SQL and relational database design using Oracle

UNIT – I

Database System Application- Relational Databases-Database Architecture- Structure of Relational Databases.

UNIT – II

Overview of the Design process- The Entity Relationship Model- Entity Relationship diagrams- Extended E-R features.

UNIT – III

Decomposition using Functional Dependencies- Decomposition using Multivalued Dependencies.

UNIT – IV

Introduction to SQL, Data types , DDL, DML, and DCL statements, Retrieving information from database tables.

UNIT – V

Introduction to PL/SQL programming , Loops , Cursors , Exceptions , Procedures , Functions , Packages , Triggers.

Text Books :

1. H. F. Korth& A. Silberschatz, s. Sudarshan Database system Concepts, Fifth edition , Tata McGraw Hill, New Delhi
2. NileshShah,"Database Systems Using Oracle A simplified Guide to SQL and PL/SQL",Prentice Hall of India,2002.

Books for Reference:

- Alexis Leon and Mathews Leon, Fundamentals of Database Management Systems.
- C. J. Date, Database Systems, Prentice Hall of India, New Delhi.
- Ivan Bayross, SQL,PL/SQL, The programming language of Oracle.
- Elmasri&Navathe, Fundamentals of Database systems, Addison & Weisely, New Delhi.

SEMESTER- V			
CORE – VII– ASP.NET			
Code: 15UCSC51	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Objectives:

- To highlight the features of ASP.NET and apply it to develop various applications.
- To understand the concepts of .Net framework as a whole and the technologies that constitutes the frame work.
- To make the students to get experience and be ready for the large scale projects in IT industry.

UNIT-I:

The .Net Framework- The .NET Programming Framework-VB.NET, C#, and the .NET Language- The Common Language Runtime-The .NET Class Library-ASP.NET-Visual Studio .NET.

Learning The .Net Language-Data Types-Declaring Variables-Scope and Accessibility-Variable Operations-Object-Based Manipulation-Conditional Structures-Loop structures-Functions and Subroutines

UNIT-II:

Asp.Net Applications- ASP.NET Applications-Code-Behind-The Global.asax Application File-Understanding ASP.NET Classes-ASO, BET Configuration

Web Form Fundamentals- A Simple Page Applet-Improving the Currency converter-A deeper Look at HTML Control Classes-The Page Class-Assessing HTML Server Controls.

UNIT-III:

Web Controls-Stepping Up to Web Controls-Web Control Classes-Auto Post Back and Web Control Events-A Simple Web Page Applet-Assessing Web Controls.

Using Visual Studio .Net-The promise of Visual Studio. NET-Starting a Visual Studio .NET Project-The Web Form Designer-Writing Code-visual Studio .NET Debugging-Working Without Visual Studio .NET.

UNIT-IV:

State Management-The Problem of State-Viewstate-Transferring Information-Custom cookies-Session State-Session State Configuration-Application State.

Tracing And Logging-Logging Exceptions-Error Pages-Page Tracing

UNIT-V:

Database Connectivity: Overview of ADO.NET: Introducing ADO.NET and data Management− characteristics of ADO.NET –The ADO.NET Object Model. ADO.NET Data Access SQL Basics –The SQL Select Statement – The SQL Update Statement – The SQL Insert Statement − The SQL Delete Statement–Creating a connection –Defining a Select Command – Updating Data – Accessing Disconnected Data –Updating Disconnected Data – Data Binding –Introducing Data Binding –Single Value Data Binding –Repeated Value Data Binding –Data Binding with Databases−The DataLiIst, DataGrid and Repeater.

Text Book:-

The Complete Reference ASP.NET, MATHEW MACDONALD, TMH 2002

Books for Reference:

- Microsoft ASP.NET Step by step, G, Andrew Duthie, PHI
- ASP.NET 2.0 Black book.
- NitinPandey ," Microsoft ASP.NET", PHI,2002
- MridulaParihar, YeshSingal and NitinPandey, "Visual Studio .Net Programming", PHI, 2002
- C. Muthu,"ASP.NET", 2nd Ed., Vijay Nicole Imprints Pvt.Ltd., 2008.

SEMESTER VI			
CORE – X– MOBILE COMPUTING			
Code: 15UCSC61	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :4**

Objectives:

- Learn and build Android and Windows applications.
- Understand the differences between Android, Windows and other mobile development environments.
- Learn about package and deploying Applications.

UNIT I

Overview

A little background about mobile technologies, Different mobile technologies – Android, Windows, IOS, Black Berry, series 40, Bada, Benefits and drawbacks of Smartphone programming, Overview of Android, How it all got started, Why Android different and important, Android Stack overview, Linux kernel, native libraries, App framework, Apps, SDK overview, platforms, tools, versions. Creating and setting up custom Android emulator.

UNIT II

Get Started with Android

Install the android SDK, Install base tools, install SDKs and Add-ons, Install apache Ant, Emulator, and Device. Get know Eclipse, Build , install and Run the Application in your Emulator or Device, Project Structure.

Designing User interface

Designing by declaration, creating the opening screen, using alternate resources, implementing an about box, applying a theme, adding a menu, adding settings, debugging with log messages, debugging with debugger.

UNIT III

Exploring 2D graphics and Multimedia

Learning the basics, adding Graphics to existing apps, handling input, learn to change the final improvements, Playing audio, Playing Video, Adding sound to existing app,

Storing local Data

Reading/writing local data, Accessing the Internal File system, Accessing SD card.

UNIT IV

Location and Sensing

SMS Messaging , Displaying MAPS Location Data, Monitoring and Tracking a Location,

Putting SQL to work Introducing SQLite, In and Out of SQLite, Hello Database, Data Binding, using content provider, implementing content provider.

Preparing and Publishing

Preparing app for publishing, Deploying APK files, uploading in Market.

UNIT V

Introduction to Windows Phone Programming

Windows 8 GUI development, windows 8 software Development tools, .Net 4.5 features Windows Phone platform overview, Multitasking windows, interacting from background, local data, working with sensors, tools – phone emulator, debugging and performance, what is new in windows phone 8, app-to-app communication.

More on Windows phone

Lock screen background, Lock screen badges, Tiles, tiles templates, Tiles update, Final touch before deploying and testing in emulators, Monetizing the App, in-app purchase.

Text Books:

1. Grant Allen, Beginning Android 4, Apress, 2012.
2. Wei-Meng Lee, Beginning android 4 application Development, John Wiley & sons, Inc, 2012.
3. Charles Petzol, Programming Windows, Microsoft Press,6th Edition, 2012.

Books for Reference:

- Ed Burnette, Hello, Android: Introducing Google's Mobile Development Platform,Pragmatic. Bookshelf (2009), ISBN-13: 978-1934356173.
- Jerome (J.F) DiMarzio , Android - A programmer's Guide, TataMcgraw Hill , 2010, ISBN: 9780071070591.
- Charles Petzold, Programming Windows Phone, Microsoft Press,2010

SEMESTER VI			
CORE – XI– OBJECT ORIENTED SOFTWARE ENGINEERING			
Code: 15UCSC62	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :4**

Objectives:

- To understand the concepts of analysis, design and implementation of a software product.
- To have general understanding about object-oriented software engineering.
- To make students to get experience and be ready for the large scale projects in IT Industry.

UNIT I:

Software and Software Engineering: The nature of software – What is software engineering? Software engineering as a branch of the engineering profession – Stakeholders in software engineering – Software quality – Software engineering projects – Activities common to software projects –General Principles that can be applied in any software project - Difficulties and risk in software engineering as a whole.

UNIT II:

Developing Requirements: Domain analysis – The starting for software projects – Defining the problem and the scope – What is a requirement? – Types of requirements – Some techniques for gathering and analyzing requirements – Managing changing requirements – Difficulties and risks in domain and requirements analysis .

UNIT III:

Modeling With Classes: What is UML? – Essentials of UML class diagrams – Associations and multiplicity – Generalization – Instance diagrams – More advanced features of class diagrams .

Modeling Interactions And Behaviour: Interaction diagrams – State diagrams – Activity diagrams .

UNIT IV:

Architecting and Designing Software: The process of design – Principles leading to good design – Techniques for making good design decisions – Software architecture – Architectural patterns – Writing a good designing document.

UNIT V:

Testing And Inspecting TO Ensure High Quality: Basic definitions – Effective and efficient testing – Defects in ordinary algorithms – Defects in numerical algorithms – Defects

in timing and co-ordination: deadlock, livelocks and critical races – Defects in handling stress and unusual situations .

Managing The Software Process: What is project management? – Software process models – Cost estimation Building software engineering teams – Project scheduling and tracking.

Text Book:

Object Oriented Software Engineering, Timothy C.Lethbridge and Robert Laganiere, TMH 2004.

Books for Reference:

- Object Oriented and Classical Software Engineering, Fifth Edition, Stephen R.Schach, TMH.
- Fundamentals of Software Engineering , Second Edition ,Carlo Ghezzi , MedhiJazayeri , Dino Mandrioli, PHI.

Chapters for syllabus :

Unit I – Chapter 1 (1.1 to 1.8 & 1.9)

Unit II – Chapter 4 (4.1 to 4.9 & 4.12)

Unit III – Chapter 5 (5.1 to 5.6) , Chapter 8 (8.1 to 8.3)

Unit IV – Chapter 9 (9.1 to 9.6)

Unit V – Chapter 10 (10.1 to 10.6) , Chapter 11 (11.1 to 11.5)

SEMESTER VI			
CORE – XII– COMPUTER NETWORKS			
Code: 15UCSC63	**Hrs / week :5**	**Hrs / Semester:75**	**Credits :4**

Objectives:

- To understand the concepts of data communication.
- To get through understanding of different topologies.
- To study the function of different layers.
- To get familiarized with different protocols and network components.

UNIT-I

Introduction: Data communications-Networks- Network Types- Internet History- Standards and Administration.

Network Models : Protocol Layering- TCP/IP Protocol suite- The OSI Model.

Transmission Media: Guided Media- Unguided Media: Wireless

UNIT-II

Switching: Introduction- Packet switching - Structure of a switch.

Data Link control :DLC Services- Data Link Layer Protocols -HDLC.

Media Access Control : Random Access- Controlled Access.

UNIT-III

Wired LANs: Ethernet -: Ethernet Protocol – Standard Ethernet - Fast Ethernet- Gigabit Ethernet - 10Gigabit Ethernet.

Wireless LANS: Bluetooth.

Connecting Devices and Virtual LANs: Connecting Devices - Virtual LANs.

UNIT-IV

Network layer: Unicast Routing : Introduction – Routing Algorithms- Unicast Routing Protocols.

Next Generation IP : IPv6 Addressing

Introduction to Transport Layer: - Introduction – Transport-Layer Protocols.

Application Layer : Standard Client – Server Protocols: FTP- Electronic mail-TELNET Secure Shell –Domain Name System.

UNIT-V

Quality of Services : Data- flow characteristics Flow control to improve QOS-Integrated Services.

Cryptography and Network Security: Introduction – Confidentiality-Other aspects of Security .

Text Book:

" Data Communications and Networking "-BehrouzA.Foruzan- McGraw Hill Education Private Ltd., Fifth Edition 2013.

Unit I: Chapter 1.1-1.5, 2.1-2.3,7.1,7.3

Unit II: Chapter 8.1-8.4, 11.1-11.3, 12.1-12.2

Unit III: Chapter 13.1-13.5, 15.3, 17.1-17.2

Unit IV : Chapter 20.1-20.3, 22.1,23.1-23.2, 26.2-26.6

Unit V : Chapter 30.1-30.3, 31.1-31.3

Books for Reference:

- "Computer Networks"- Andrew S.Tenanbaum, Fourth Edition, PHI.
- Computer Networks , R.S.Rajesh, K.S.Easwarakumar&R.Balasubramanian, Vikas
- Computer Networking , James F. Kurose, Keith W.Ross, Third Edition, Pearson

SEMESTER- III			
CORE – PRACTICAL III – JAVA PROGRAMMING LAB			
Code: 15UCSCR3	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

1. Write a Java program to find the area of a square, rectangle by
   i.Overloading Constructor
   ii.verloading Method
   Define a class called Student with data members name, roll number and age.
2. Write a suitable constructor and a method output () to display the details. Derive another class Student from Student1 from Student with data members height and weight.Write a constructor and a method output () to display the details which overwrites the super class method Output () (Apply method Overriding concept).
3. Write a java program to create a package “Employee” which contains the classes Emp and Emppay.The data members of Emp are name, emp_id, category and Bpay.Write suitable constructors and methods to compute net pay of the employee. The class Emppay contains the main method.
4. Write a java program to create and implement an interface.
5. Write a java program to create a thread
   i. Using Thread class ii.Using runnable interface
6. Write a java program to design a calculator to perform arithmetic operations.
7. Create an applet with four Checkboxes with labels and a Text area object. The program must display the details while clicking a particularCheckbox.
8. Write a java program, which creates a window with a checkbox group with boxes for the colors, Violet, Indigo, Yellow, Orange, Red, Blue and Green. When the button is selected the background color must change accordingly.
9. Write a java program to demonstrate the use of choice box.
10. Write a java program to throw the following exception,
    i. Negative Array Size ii. Array Index out of Bounds
11. Write a java program to illustrate mouse event handling.
12. Write a java program to create a File menu with options new, save, and close, edit menu with options cut, copy and paste.
13. Write a program to display your mark sheet using JDBC.

SEMESTER V			
CORE – PRACTICAL V – ASP.NET LAB			
Code: 15UCSCR5	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :5**

1. Create a simple web application for currency conversion, discount calculation, interest Calculation depending on user's choice.
2. Create a Web Page to Simulate the Billing System of a Super Bazar .
3. Design a feedback form.
4 Create an application in which you are required to validate a form.
5. Create an Application which has Image, Image map and Image Button.
6. Create an Authentication form
7. Simulate a notepad editor using ASP.NET.
8. Create an application in which user has to display records in the Grid View Control from Table created in access data base.
9. Develop a CIA SYSTEM Using Grid Control.
10. Create a web application to insert, delete, edit and update records in a Table.

SEMESTER V			
CORE – PRACTICAL VI – PHP & MYSQL LAB			
Code: 15UCSCR6	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :5**

1. Creating simple webpage using PHP.
2. Write programs using conditional-looping statements in PHP.
3. Use of looping statements in PHP.
4. Creating programs using arrays.
5. Creating user defined functions.
6. File manipulation using PHP.
7. Creating simple table with constraints.
8. Insertion-Updation and Deletion of rows in MYSQL tables.
9. Searching of data by different criteria.
10. Sorting of data.
11. Demonstration of joining tables.
12. Usage of subqueries.
13. Validating Input.

SEMESTER VI			
CORE – PRACTICAL VII – MOBILE COMPUTING LAB			
Code: 15UCSCR7	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :4**

1. Creating “Hello world” Application.
2. Creating an Application that displays message based on the screen orientation.
3. Create an application that displays custom designed Opening Screen.
4. Create menu in Application.
5. Play an audio, based on the user event.
6. Read/ write the Local data.
7. Display Map based on the Current location.
8. Create / Read / Write data with database (SQLite).
9. Hello world – windows app.
10. Create a Tiles based app.
11. Design a Lock Screen in the existing app.
12. Learn to deploy both android and windows Applications.

SEMESTER- V			
CORE - ELECTIVE I– DATA MINING			
Code: 15UCSE51	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Objectives:

- To study the basic and advanced concepts in Data Mining techniques.
- To understand the various algorithms involved in data mining and its applications.

UNIT I:

Introduction: What is Data Mining?-Why Data Mining now!-The Data Mining Process-Data Mining Applications-Data Mining Techniques.

Association Rules: Introduction-basics-The Task and a Naïve Algorithm-The Apriori Algorithm-Improve the efficiency of the Apriori Algorithm.

UNIT II:

Classification: Introduction - Decision tree - Building a Decision Tree - Overfitting and pruning - Decision Tree Rules - Naïve Bayes Method - Estimating Predictive Accuracy of Classification Methods - Improve Accuracy of classification methods - other evaluation criteria for classification methods.

UNIT III:

Cluster Analysis: What is Cluster Analysis?- Desired features of Cluster Analysis-Types of Data –Computing Distance- Types of Cluster Analysis Methods-Partition Methods-Hierarchical Methods-Density based methods- Quality and validity of cluster analysis methods.

UNIT IV:

Web Data Mining: Introduction-Web Terminology and characteristics- Locality and Hierarchy in the web-Web Content mining- Web usage mining.

Search Engine: Introduction - Search Engine Functionality - Search Engine Architecture.

UNIT V:

Data Warehousing: Introduction - Operational Data Stores - Data Warehouses-Data Warehouse Design-Guidelines for Data Warehouse Implementation-Data Warehouse Metadata.

Online Analytical Processing (OLAP): Introduction - OLAP- Characteristics of OLAP Systems-Multi Dimensional View and Data Cube-Data Cube Implementation- Data Cube Operations.

SEMESTER V			
CORE - ELECTIVE I–WEB TECHNOLOGY			
Code: 15UCSE52	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Objectives:

- Distinguishing characteristic of scripting languages
- Using Javascript for dynamic effects
- To learn XML fundamentals and creating XML applications
- Create conforming web pages

UNIT I

INTRODUCTION

What is Internet? History of Internet, Internet Services and Accessibility, Uses of Internet, Protocols, Web Concepts, Internet Standards

INTERNET PROTOCOLS

Introduction, Internet Protocols, Host Names, Internet Applications and Application Protocols

JAVA NETWORK PROGRAMMING

Introduction, UDP/IP and TCP/IP Communications, I/O Streams, Sockets, Multicast Sockets, Remote Method Invocation, Protocol Handler, Content Handlers

UNIT II

JAVASCRIPT

Introduction, Language Elements, Objects of Javascript, Other Objects, Arrays

VBSCRIPT

Introduction, Embedding VBScript Code in an HTML Document, Comments, Variables, Operators, Procedures, Conditional Statements, Looping Constructs, Objects and VB Script, Cookies.

UNIT III

DYNAMIC HTML (DHTML)

Introduction, Cascading Style Sheets (CSS), DHTML Document Object Model and Collections, Event Handling, Filters and Transactions, Data Binding

EXTENSIBLE MARK-UP LANGUAGE (XML)

Introduction, HTML vs XML, Syntax of the XML Document, XML Attributes, XML Validation, XML DTD, The Building Blocks of XML Documents, DTD Elements, DTD Attributes, DTD Entities, DTD Validation, XSL, XSL Transformation, XML Namespaces, XML Schema

UNIT IV

COMMON GATEWAY INTERFACE (CGI)

Introduction, Server – Browser Interaction, CGI Scripts Structure, The CGI.pm Module, Perl Variables, CGI Environment Variables, Processing Forms, Sending Mail, Validating the Form Data, Handling Checkboxes, Server Side Includes (SSI), CGI Server Side and Client Side Applets, CGI Security Issues

SERVLETS

Introduction, Advantages of Servlets over CGI, Installing Servlets, The Servlet Life Cycle, Servlet API, A Simple Servlet, Handling HTTP GET Requests, Handling HTTP POST Requests, Cookies, Session Tracking, Multi – tier Application Using Database Connectivity, Servlet Chaining

UNIT V

JAVA SERVER PAGES (JSP)Introduction, Advantages of JSP, Developing First JSP, Components of JSP, Reading Request Information, Retrieving the Data Posted from a HTML File to a JSP File, JSP Sessions, Cookies, Disabling Sessions

ACIVE SERVER PAGES (ASP)

Introduction, Advantages of Using ASP, First ASP Script, Processing of ASP Scripts with Forms, Variables and Constructs, Subroutines, Include / Virtual , ASP Cookies, ASP Objects, Connecting to Data with ASP.

Text Book:

Web Technology – A Developer's Perspective by N.P Gopalan, J.Akilandeseswari.

Books for Reference:

- Web Technologies - TCP / IP To Internet Application Architectures by Achyut S Godbole, AtulKahate.
- Web Technologies by Vipin Kumar A.B. Publication 2008 publisher
- Web Technologies by Computer Science Perspective) by Jeffry C. Jakson 2005 – pearson publication.

SEMESTER V			
CORE –ELECTIVE I – CLIENT SERVER TECHNOLOGY			
Code: 15UCSE53	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Objectives:

- To introduce the power, advantages and complex issues of client-server computing. To know the evolution of the computing environment.
- To understand the computing environment that satisfies the organizational needs of allocating application processing between workstation (the client) and server processors.
- The student will be exposed to terminology, concepts, and client/server programming techniques.

UNIT-I

Client/Server Computing – Advantages of Client / Server Computing – Technology Revolution – Connectivity – Ways to improve Performance – How to reduce network Traffic

UNIT-II

Components of Client/Server Applications – The Client: Role of a Client – Client Services – Request for Service.

Components of Client/Server Applications – The Server: The Role of a Server – Server Functionality in Detail – The Network Operating System –What are the Available Platforms – The Server Operating system.

UNIT-III

Components of Client/Server Applications – Connectivity: Open System Interconnect – Communications Interface Technology – Inter process communication – WAN Technologies.

UNIT-IV

Components of Client/Server Applications–Software: Factors Driving demand for application software development – Rising Technology Staff costs – Need to improve Technology – Need for Common Interface across Platforms – Client/Server System Development Methodology.

Components of Client/Server Applications–Hardware : Hadware/Network Acquisition – C-Level Processing Units – Machintosh, notebooks, Pen –UNIX Workstation – x-terminals – Disk, Tape,Optical Disks, NIC and UPS.

UNIT-V

Components of Client/Server applications–Service and Support: System Administration.

The Future of Client/Server Computing: Enabling Technologies – Transformational Systems.

Text Book:

Client/Server Computing, Patrick Smith, Steve Guenferich **,**2ndedition,Prentice Hall of India Private Limited, New Delhi (Chapters 1-8 & 10)

Books for Reference:

- Client Server Computing , Devendra Kumar ,Publisher: Global Vision Publishing House
- An Introduction To Client Server Computing ,YashpalSingh ManishVarshney, AjeetKumar Publisher: A. B. Publication

SEMESTER VI			
CORE – ELECTIVE II– CLOUD COMPUTING			
Code: 15UCSE61	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :4**

Objectives:

- Understand core concepts of cloud computing
- Learn the fundamental concepts about data centers to understand the tradeoffs in power, efficiency and cost
- Understand use of cloud storage in storage systems such as Amazon S3 and EBS
- Analyze various cloud programming models and apply them to solve problems on the cloud

UNIT I: UNDERSTANDING CLOUD COMPUTING

Cloud computing - cloud types- the cloud cube model- deployment models-service models-characteristics of cloud computing-assessing the role of open standards.

UNIT II: CLOUD ARCHITECTURE

The cloud computing stack – composability – infrastructure – platforms – virtual appliances – communication protocols – Connecting to the cloud: The Jolicloud net book OS – Chromium OS the browser as an operating system.

UNIT III: DEVELOPING CLOUD SERVICES

Infrastructure as a service (IaaS) – IaaS workloads- Platform as a service (PaaS) – Software as a service (SaaS)– Identity as a service (IDaaS) – Compliance as a service(CaaS).

UNIT IV: VIRTUALIZATION AND CLOUD APPLICATIONS

Virtualization technologies – load balancing and virtualization – advanced load balancng – the Google cloud – Google Analytics – Google translate- Google Toolkit –Google APIs-windows azure service – windows Azure App fabric.

UNIT V: CLOUD STORAGE

Cloud storage – unmanaged cloud storage – managed cloud storage – creating cloud storage systems – working with Amazon storage systems: Amazon Elastic compute cloud(EC2)-Amazon simple storage system(S3) – Amazon Elastic block store(EBS)- cloud front.

Text book:

1.Barrie Sosinsky, **Cloud Computing Bible**, Wiley India Pvt. Ltd, 2012. New Delhi.

Chapters:1,3, 4, 5(pgs:94-99),8(pgs:162-173),10 (pgs:201-216),15 (pgs:316-321),9(pgs:185-199)

Books for Reference:

- Michael Miller, **Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online**, Que Publishing, Second Edition, August 2008.
- Haley Beard, **Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLA**s, Emereo Pvt. Limited, July 2008.

SEMESTER VI			
CORE – ELECTIVE II– XML			
Code: 15UCSE62	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :4**

Objectives :

- To impart knowledge of creating XML documents
- To study the XML schema and XML as a database

UNIT I:

Introduction: About XML **–**The New Kinds On The Block-Displaying XML –XML in the Real World-Well Formed and Valid Documents: Well Formed Documents-DTD : The valid Document.

UNIT II:

Cascading Style Sheets: External and Internal Style Sheets – Setting Color and Background Text and font Manipulation.

UNIT III:

Valid XML Schema: XML Schema-XML as aDatabase – XML Data –The Document Content Description Proposal.

UNIT IV:

Name Spaces and XML Linking: Identifying and Declaring Namespaces – Need for Namespaces – User Agent Behavior – Namespace Application – XML Links and Pointers – Linking in HTML - Simple Links in XML – Extended Links – Uses for extended out of Line Links – X pointers – Pointer syntax.

UNIT V:

Document Object Model : Introduction – An XML Document as a tree – An XML document as an object Collection –The DOM interface

Text Book:

Boumphrey,StephenMohr,PaulHoule and others ,"XML Applications",WroxPressLtd,Schroff Publishers &Distributors Pvt Ltd. Chapters 1 to 6.

Books for Reference:

- Elliotte Rusty Harold, "XML Bible", IDG Books India (P) Ltd.
- Beginning XML –David Hunter

SEMESTER VI			
CORE – ELECTIVE II– CRYPTOGRAPHY & NETWORK SECURITY			
Code: 15UCSE63	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :4**

Objectives:

- Introduce the student to fundamental aspects of security in a modern networked environment.
- Be familiar with cryptography in the specific context of network / internetwork security.
- Computational issues in implementing cryptographic protocols and algorithm.

UNIT – I

Security problems in computer networks – kinds of security breaches – security services – conventional encryption model – classical encryption techniques.

UNIT – II

Block cipher – design principles – Data Encryption Standard (DES) – triple DES – International Data Encryption Algorithm (IDEA) – RC2, RC5 – Blowfish – CAST 128 – Confidentiality using conventional encryption.

UNIT – III

Principle of public key cryptosystems – RSA Algorithm – Elliptic curve cryptography – message authentication and Hash function – MD5 message digest Algorithm – Secure Hash Algorithm(SHA-1).

UNIT – IV

Digital signatures and Authentication protocols –Kerberos – X.509 directory Authentication service – E-mail security – Pretty Good privacy, S/MIME – IP Security –Web security.

UNIT – V

Intruders – Intrusion techniques – Intrusion detection – viruses and related threats – worms – Firewalls.

Text Book:

William Stallings, "Cryptography and Network Security: Principles and practice", Pearson Education Inc, Third Edition.

Books for Reference:

- Cryptography and Network Security", Behrouz A Forouzan, Tata McGraw-Hill Publishing Company Limited, Special Indian Edition 2007.
- Cryptography and Network Security , Kumar ,Krishna Publication.
- Cryptography & Network Security by AtulKahate , Tata McGraw-Hill.

SEMESTER V			
SBE – MULTIMEDIA LAB III			
Code: 15UCSS51	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :3**

Objectives:

- To have general understanding about Movie animation and essentials.
- To make the students use Scripting technology
- To make the students to work with Text and Graphics

FLASH:

1. Create a Movie which includes Text Effects(Blur, Masking and Reflecting)
2. Create a Movie which includes

i. frame by frame animation

ii animation using guided path

3. Create a movie which includes an object animation using Motion Tweening (Jumping the Ball)
4. Create a movie which include Animation using Multi Layer
5. Create a movie using shape Tweening.
6. Create a movie which includes Image / Text Morphing
7. Design a Commercial advertisement banner.
8. Create scrollbars in a text.
9. i. Morphing ii. Create Buttons
10. Flash Slide Presentation

PAGE MAKER:

1. Design of ID Card (3" X 2") /Visiting Card (3.5" X 2")
2. Design of an attractive Invitation Card (5.5 " X 8") / Letter pad (7.5" X 9")
3. Preparation of a small booklet with 6 pages (3.5" X 4.5").
4. Design a handbill(5.5" X 8.5") / advertisement.
5. Design your college progress card / a Receipt bill with counter foil.

SEMESTER- IV			
Allied - Practical– IV	**Web designing Lab**		
Code: 18UCSAR4	**Hrs / week :3**	**Hrs / Semester: 45**	**Credits :2**

List of Practicals :

1. Create a web page of your College.
2. Create a web page to display your marks in the following table format.

Reg No.	Name	SEMESTER I							
		Language		English		C		HTML	
		Int	Ext	Int	Ext	Int	Ext	Int	Ext

3. Write an HTML code to display a list of five cars in a frame, Link each one to a brief description in second frame. The left frame should display the list and the right frame should display the paragraph about the frame.
4. Write HTML program to create E-Mail registration form.
5. Design a Web page using CSS which includes the following:
    i. Use Different fonts and styles
    ii. Set the background image
    iii. Define styles for links as A: link, A: visited , A: active and A: hover
6. Write a VB Script to prepare EB Bill.
7. Write a VB Script to prepare Pay Bill for an Organization.
8. Write a Java Script to design a simple calculator to perform sum, product, difference and quotient operations.
9. Write a JavaScript to validate the following fields:
    i. Name (should contain alphabet and the length should not be less than 6 characters)
    ii. Password (should not be less than 6 characters length)
    iii. Email id (must follow the pattern)
    iv. Mobile No (should contain 10 digits)

SEMESTER- IV			
Core V	**Python Programming**		
Code: 18UCSC41	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :4**

Vision:

To develop the skill of analysing a problem and solving it using computers.

Mission:

To design, debug and test a robust system using Python.

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	explain what is python and why it is a powerful	2	Un
CO-2	distinguish various python objects	1	An
CO-3	apply decision and repetition structures in program design.	1	An
CO-4	demonstrate the use of Python lists and dictionaries	1	Ap
CO-5	demonstrate how to read and write files Programs in Python	2	Ap
CO-6	develop Python programs using files.	5	Cr
CO-7	identify the errors in csv files using and rectify.	6	Ap
CO-8	write python programs to solve problems	10	Cr

SEMESTER- IV			
Core V	**Python Programming**		
Code: 18UCSC41	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :4**

Unit I:

Introduction and overview :

Introduction, What is Python, Origin, Comparison, Comments, Operators, Variables and Assignment, Numbers, Strings, Lists and Tuples, Dictionaries, if Statement, while Loop, for Loop and the range() Built-in Function, Files and the open() Built-in Function, Errors and Exceptions, Functions, Classes, Modules.

Syntax and Style:

Statements and Syntax, Variable Assignment, Identifiers, Basic Style Guidelines, Memory Management, Python Application Examples.

Unit II:

Python Objects

Python Objects, Standard Types, Other Built-in Types, Internal Types, Standard Type Operators, Standard Type Built-in Functions, Categorizing the Standard Types, Unsupported Types.

Numbers and Strings :

Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers, Operators, Built-in Functions. Sequences: Strings, Lists, and Tuples, Sequences, Strings, Strings and Operators, String-only Operators, Built-in Functions, String Built-in Methods, Special Features of Strings.

Unit III:

Lists :

Operators, Built-in Functions, List Type Built-in Methods, Special Features of Lists, Tuples, Tuple Operators and Built-in Functions, Special Features of Tuples.

Conditionals and Loops:

if statement, else Statement, else if Statement, while Statement, for Statement, break Statement, continue Statement, pass Statement, else Statement.

Unit IV:

Files and Input/output: File Objects, File Built-in Function, File Built-in Methods, File Built-in Attributes, Standard Files, Command-line Arguments, File System, File Execution, Persistent Storage Modules

Unit V:

Regular Expressions :

Introduction/Motivation, Special Symbols and Characters for REs, REs and Python.

Programming Exercise: Check for data error in CSV files: Numeric Check, Alphanumeric Check, Email Check, Date Check.

Text Book:

1. Chun, J Wesley, Core Python Programming, 2nd Edition, Pearson, 2007 Reprint 2010.

Books for Reference:

1. Barry, Paul, Head First Python, 2nd Edition, O Rielly, 2010.
2. Lutz, Mark, Learning Python, 4th Edition, O Rielly, 2009.

SEMESTER- V			
Core – VII– Operating Systems			
Code: 18UCSC51	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Vision:

To study about the resource manager and how to use the resources efficiently

Mission:

Use various scheduling algorithms for process scheduling. How to avoid deadlock situation.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	Define Operating System Structure and the various operations , process of operating system	1	Re
CO-2	Analyze the Various Scheduling Algorithms of Process Management	6	An
CO-3	Explain the concept of Deadlock.	6	Re
CO-4	Implement the various allocation methods of Memory Management	6	Ap
CO-5	Access Methods and File allocation Methods	6	Re
CO-6	Compare the scheduling algorithms of disk	6	An
CO-7	Discuss about open source software	9	Un
CO-8	Compare Linux with other operating system	6	An

Unit I:

Introduction and System Structures: Operating system definition, computer system organization, and architecture, structure and operations, process, memory and storage management.

Unit II:

Process Management: Process concepts, scheduling and operations on processes. Process Scheduling: Basic concepts, scheduling criteria, scheduling algorithms, Synchronization: Background, critical section problems, Peterson's Solution, Synchronization Hardware, Classic problem of synchronization.

Unit III:

Deadlock: Deadlock: System model, deadlock characterization, methods for handling deadlock, deadlock prevention, avoidance and detection, Recovery from deadlock.

Memory Management: Memory Management Strategies: Background, swapping, Memory allocation, Paging, Structure of the page table.

Unit IV:

File system: File system: File concept, Access methods, File system structure, allocation methods and free-space management. Disk structure, disk scheduling algorithms and management RAID structure.

Unit V:

Open Source

Introduction to Linux: What is Linux? – A Brief History of Linux – System features – Differences between Linux and other Operating Systems .

Some Basic Linux Commands:Directory oriented commands, file oriented commands, Process oriented commands, General Purpose Commands.

Text Books:

1. A. Silberschatz, P.B. Galvin and G. Gagne, Operating System Concepts, 8th Edition, Wiley India, 2011.

2. Linux complete - Grant Taylor , BPB Publications. 1998 (Chapter 1).

Books for Reference:

1. Stalling William, Operating Systems: Internals and Design Principles, 7th Edition, Prentice Hall, 2011.

2. Dietel, Operating Systems, 3rd Edition, Pearson Education,2004.

3. A.S. Tanenbaum, Modern Operating Systems, 3rd Edition, Prentice Hall, 2007.

SEMESTER- V			
Core – VIII – Programming With PHP and MySQL			
Code: 18UCSC52	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Vision:

Create dynamic webpages

Mission:

Use open source software PHP and MYSQL to create dynamic web pages.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	Explain the variable usage in PHP	1	Un
CO-2	Creating forms with conditional statements	1	Cr
CO-3	Describe about arrays, files, cookies and functions.	2	Un
CO-4	Create an application using file operation	4	Cr
CO-5	Implement the concept of oracle in Mysql query	7	Ap
CO-6	Explain the concept Grouping data, filtering, Aggregate function	7	Un
CO-7	Explain the concept of the sub queries, joining tables,set operator and full text searching	7	Ap
CO-8	Develop PHP program with database connectivity .	7	Cr

Unit I :

Introduction:

Introduction- Open source PHP – PHPhistory- features-variables-statementsoperators-conditional statements-if-switch-nesting conditions-merging forms withconditional statements-loops-while-do-for – loop iteration with break andcontinue.

Unit II:

Arrays and Functions:

Arrays- Creating an array- modifying array-processing array-groupingform with arrays- using array functions- creating user defined functions- usingfiles- sessions- cookies- executing external programs- Creating sampleapplications using PHP.

Unit III:

File Handling:

Opening files using fopen - looping over a files content with feof- reading text from a file using fgets - closing a file- reading character with fgetc- reading whole file with file_get_contents- reading a fle into into an array with file-checking if a file exists-fscanf-parse_ini_file- Getting file information with stat-fseek- copying files with copy-deleting files-writing to a file-reading and writing binary files –locking files

Unit IV:

MySQL:

Effectiveness of MySQL -MySQL Tools-Prerequisites for MySQL connection-Databases and tables- MySQL data types-Creating and manipulating tables-Insertion-updation and deletion of rows in tables -Retrieving data- Sorting andfiltering retrieved data -Advanced data filtering-Data manipulation functions-Aggregate functions -Grouping data- Sub queries-Joining Tables- Set operators-Full text searching.

Unit V:

PHP with MySQL:

Working MySQL with PHP-database connectivity- usage of MYSQLcommands in PHP-processing result sets of queries- handling errors-debuggingand diagnostic functions-validating user input through Database layer andApplication layer- formatting query output with Character- Numeric- Date andtime –sample database applications.

Text Books:

1. VIKRAM VASWANI- “PHP and MySQL”- Tata McGraw-Hill- 2005

2. BEN FORTA - ”MySQL Crash course “ SAMS- 2006.

3. Steven Holzner,The Complete reference PHP, Tata McGraw Hill,2008

Books for Reference:

1. Tim Converse- Joyce Park and Clark Morgan- ”PHP 5 and MySQL”-Wiley India reprint- 2008.

2. Robert Sheldon- Geoff Moes- ”Beginning MySQL”-Wrox- 2005.

3. Alexis Leon and Mathews Leon- “Database Management Systems”-Vikas- 2008.

SEMESTER VI			
Core – IX– Android Programming			
Code: 18UCSC61	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :4**

Vision:

To create android apps

Mission:

To create apps using various layouts and views

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	Distinguish different mobile techniques	2	Re
CO-2	Install Android SDK	5	Ap
CO-3	Design User Interface	5	Cr
CO-4	Modify app to include multimedia content	10	An
CO-5	Create app to access SD card	10	Cr
CO-6	Create app with Google Maps	10	Cr
CO-7	Design app with SQLite database	10	Cr
CO-8	Deploy Mobile app	10	Ap

Unit I:

Getting started with Android Programming: What is Android?- Android versions- Features and architecture of Android- Android Devices in the market- Obtaining the required tools- Android Studio- Android SDK- Creating Android Virtual Devices (Avds)- Android Developer Community- Launching Android Application.

Using Android Studio for Android development : Exploring IDE- Using Code Completion- Debugging Application -Setting Break points- Publishing Application- Generating a Signed APK

Unit II:

Activities, Fragments and Intents: Understanding activities - applying styles and themes to an activity- Hiding the activity title- Displaying a dialog Window and a Progress dialog- Linking activities using intents- returning results from an Intent- Passing data using an Intent Object- Fragments - adding Fragments dynamically - life Cycle of a Fragment- interactions between Fragments- Understanding the Intent Object - Using Intent Filters- Displaying notifications

Getting to know the Android User Interface: Understanding The Components of a Screen- Views and View groups - Frame layout - Linear layout (Horizontal) and linear layout(Vertical)- Table layout- Relative layout - Frame layout- Scroll view- Adapting to Display Orientation- Anchoring Views - Managing Changes to Screen Orientation - Persisting State information during changes in configuration- detecting orientation changes-

Controlling the orientation of activity- Utilizing the Action Bar- adding action Items to Action Bar- Creating the User Interface programmatically- listening for UI Notifications

Unit III:

Designing user Interface with views: Using basic views - Text view - Button, Image button, Edit text, Checkbox, Toggle button, Radio button, and Radio group Views- Progress bar View- Auto complete text view View- Using Picker Views- Time picker View- Date picker View- using List Views To Display Long Lists- List view View- Using The Spinner View- understanding Specialized Fragments- using List fragment- Dialog fragment- Preference fragment

Displaying Pictures and Menus With Views: Using Image Views to Display Pictures- Image view - Image switcher- Grid view- Using Menus With Views- Creating the helper Methods- Options Menu- Context, Web view

Unit IV:

Data persistence: Saving And Loading User Preferences- Accessing Preferences Using An Activity- Programmatically Retrieving And Modifying the Preferences Values- Persisting Data to Files- Saving To Internal Storage- Saving To External Storage (SD Card)-Choosing the Best Storage option- Creating and using Databases- Creating Dbadapter Helper Class- Using the Database Programmatically

Content Providers: Sharing Data In Android- Using a Content Provider- Predefined Query String Constants- Projections- Filtering- Sorting- Creating Your Own Content Providers- Using The Content Provider

Unit V:

Messaging: SMS Messaging- Sending SMS Messages Programmatically- Sending SMS Messages using Intent- Receiving SMS messages- Caveats and warnings- Sending Email

Location-Based Services: Displaying Maps- Creating the Project- obtaining the Maps API Key- Displaying Map- Zoom Control- Changing Views- navigating to a specific location- Getting the location that was touched- Geo coding and reverse Geo coding- Getting location data- Monitoring location

Text Books:

J. F.DiMarzio ,Beginning Android Programming with Android Studio, John Wiley &sons, Inc, Fourth Edition

Books for Reference:

1. Ed Burnette, Hello, Android: Introducing Google's Mobile Development Platform, Pragmatic.2009.
2. Jerome (J.F) DiMarzio , Android - A programmer's Guide, TataMcgraw Hill,2010.
3. JhonHarton, Android Programming for Beginners ,Packt Publishing, 2015

SEMESTER VI			
Core – X– Software Engineering			
Code: 18UCSC62	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Vision:

Be successful professionals in the field with solid fundamental knowledge of Software Engineering on creating more complex software systems.

Mission:

Prepare students with a thorough understanding of software engineering Techniques and important concepts such as software processes from software specification through system evolution with ethical values to solve real world problems.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	Describe the concepts of Software Engineering.	1	Un
CO-2	Describe Software Life Cycle Model	1	Un
CO-3	Discuss Project Management	2	Ap
CO-4	Discuss software Requirement and specification	2	Ap
CO-5	Explain Software Design Process	3	Un
CO-6	Describe User Interface Designing	3	Un
CO-7	Explain software Testing and Software Reliability and	3	Un
CO-8	Discuss Software Quality Management System	3	Un

Unit I:

Introduction:- Evolution – From an Art form on Engineering Discipline: Evolution of an Art into an Engineering Discipline. – Software Development of Projects: Program versus Product – Emergence of Software Engineering: Early Computer Programming – High Level Language Programming – Control Flow-based Design – Data Structure Oriented Design – Object Oriented Design.

Software Life Cycle Models:- A few Basic Concepts – Waterfall Model and its Extension: Classical Waterfall Model – Iterative Waterfall Model – Prototyping Model – Evolutionary Model. – Rapid Application Development (RAD): Working of RAD. –Spiral Model. (12L)

Unit II :

Software Project Management:- Responsibilities of a Software Project Manager – Project Planning- Project Estimation Techniques-Risk Management. Requirements Analysis and Specification:- Requirements Gathering and Analysis – Software Requirements Specifications (SRS):Users of SRS Document – Characteristics of a Good SRS Document – Important Categories of Customer Requirements – Functional Requirements – How to Identify the Functional Requirements? – Organisation of the SRS Document. (12L)

Unit III:

Software Design:- Overview of the Design Process: Outcome of the Design Process – Classification of Design Activities. – How to Characterize a good Software Design?

Function-Oriented Software Design:- Overview of SA/SD Methodology – Structured Analysis – Developing the DFD Model of a System: Context Diagram – Structured Design – Detailed Design. (12L)

Unit IV:

User Interface Design:- Characteristics of a good User Interface - Basic Concepts – Types of User Interfaces – Fundamentals of Components based GUI Development: Window System.

Coding and Testing:- Coding – Software Documentation – Testing: Basic Concepts and Terminologies – Testing Activities. – Unit Testing – Black-box Testing: Equivalence Class Partitioning – Boundary Value Analysis. – White-box Testing. (12L)

Unit V:

Software Reliability and Quality Management:- Software Reliability: Hardware versus Software Reliability. – Software Quality – Software Quality Management System – ISO 9000: What is ISO 9000 Certification? – ISO 9000 for Software Industry – Shortcomings of ISO 9000 Certification. – SEI Capability Maturity Model: Level 1 to Level 5. Software Maintenance:- Characteristics of Software Maintenance: Characteristics of Software Evolution – Software Reverse Engineering. (12L)

Text Book:

1. RajibMall,Fundamentals of Software Engineering Fourth Edition ,PHI Learning Private Limited 2015.

Books for Reference:

1. Ian Sommerville , Software Engineering 9th Edition , Pearson Education Asia.

2.R.S.Pressman, Software Engineering: A Practitioner‘s Approach (7th Edition), McGraw-Hill, 2009.

3. K L James , Software Engineering 2nd Edition , PHI.

SEMESTER VI			
Core – XI– Computer Networks			
Code: 18UCSC63	**Hrs / week :5**	**Hrs / Semester:75**	**Credits :4**

Vision:

Gain fundamental knowledge about computers and devices communicate.

Mission:

Analyse different network models, various topologies and various protocols.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	Define Network and the various types of Network	1	Re
CO-2	Demonstrate the model of Network	1	An
CO-3	Analyze the structure of Switch and the Protocols.	2	An
CO-4	Discuss Connection devices by using Wired LANs	2	Ap
CO-5	Discuss the Network layer and Transport Layer in routing and TELNET	6	Re
CO-6	Describe the various routing algorithms in network layer	8	Un
CO-7	Define Network Security and other aspects of Security	5	Re
CO-8	Acquire the basic knowledge of layers of OSI model	5	Re

Unit I :

Introduction: Data communications-Networks- Network Types- Internet History- Standards and Administration.

Network Models : Protocol Layering- TCP/IP Protocol suite- The OSI Model.

Transmission Media: Guided Media- Unguided Media: Wireless

Unit II:

Switching: Introduction- Packet switching – Structure of a switch.

Data Link control :DLC Services- Data Link Layer Protocols –HDLC.

Media Access Control : Random Access- Controlled Access.

Unit III:

Wired LANs: Ethernet -: Ethernet Protocol – Standard Ethernet - Fast Ethernet- Gigabit Ethernet - 10Gigabit Ethernet.

Wireless LANS: Bluetooth.

Connecting Devices and Virtual LANs: Connecting Devices – Virtual LANs.

Unit IV:

Network layer: Unicast Routing : Introduction – Routing Algorithms- Unicast Routing Protocols.

Next Generation IP : Ipv6 Addressing

Introduction to Transport Layer: - Introduction – Transport-Layer Protocols.

Application Layer : Standard Client – Server Protocols: FTP- Electronic mail-TELNET Secure Shell –Domain Name System.

Unit V:

Quality of Services : Data- flow characteristics Flow control to improve QOS-Integrated Services.

Cryptography and Network Security: Introduction – Confidentiality-Other aspects of Security .

Text Book:

1. BehrouzA.Foruzan,"Data Communications and Networking ", McGraw Hill Education Private Ltd., Fifth Edition 2013.

Unit I: Chapter 1.1-1.5, 2.1-2.3,7.1,7.3

Unit II: Chapter 8.1-8.4, 11.1-11.3, 12.1-12.2

Unit III: Chapter 13.1-13.5, 15.3, 17.1-17.2

Unit IV : Chapter 20.1-20.3, 22.1,23.1-23.2, 26.2-26.6

Unit V : Chapter 30.1-30.3, 31.1-31.3

Books forReference:

1. Andrew S.Tenanbaum,"Computer Networks", Fourth Edition, PHI,2002.
2. R.S.Rajesh, K.S.Easwarakumar&R.Balasubramanian, Computer Networks, Vikas Publishing House ,2012
3. James F. Kurose, Keith W.Ross, Computer Networking , Fifth Edition,Pearson,2010.

SEMESTER V			
Core – Practical V – PHP& MySQL Lab			
Code: 18UCSCR5	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :3**

List of Practicals :

1. Creating simple webpage using PHP.
2. Write programs using conditional-looping statements in PHP.
3. Use of looping statements in PHP
4. Creating programs using arrays.
5. Creating user defined functions.
6. File manipulation using PHP.
7. Creating simple table with constraints.
8. Insertion-Updation and Deletion of rows in MYSQL tables.
9. Searching of data by different criteria.
10. Sorting of data.
11. Demonstration of joining tables.
12. Usage of subqueries.
13. Validating Input.

SEMESTER VI			
Core – Practical VI – Android Programming Lab			
Code: 18UCSCR6	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :3**

List of Practicals :

1. Creating “Hello world” Application.
2. Creating an Application that displays message based on the screen orientation.
3. Create an application that displays custom designed Opening Screen.
4. Create menu in Application.
5. Play an audio, based on the user event.
6. Read/ write the Local data.
7. Display Map based on the Current location.
8. Create / Read / Write data with database (SQLite).
9. Hello world – windows app.
10. Create a Tiles based app.
11. Design a Lock Screen in the existing app.
12. Learn to deploy both android and windows Applications.

SEMESTER- V			
Core – Integral I – Data Mining			
Code: 18UCSI51	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Vision:

To analyse the data for KDD

Mission:

Use market basket analysis, clustering techniques to identify the hidden pattern in the data.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	Define data mining process and the various data mining techniques	1	Re
CO-2	Apply market basket analysis	7	Ap
CO-3	Compare different classification methods	7	An
CO-4	Implement cluster analysis	7	Ap
CO-5	Create an ODS	7	Cr
C0-6	Discuss about data warehousing	6	Re
CO-7	Compare and contrast OLAP AND OLTP	7	An
CO-8	Describe various search engines .	10	Un

Unit I:

Introduction: What is Data Mining?-Why Data Mining now!-The Data Mining Process-Data Mining Applications-Data Mining Techniques.

Association Rules: Introduction-basics-The Task and a Naïve Algorithm-The Apriori Algorithm-Improve the efficiency of the Apriori Algorithm.

Unit II:

Classification: Introduction-Decision tree-Building a Decision Tree-Overfittingand pruning-Decision Tree Rules- Naïve Bayes Method-Estimating Predictive Accuracy of Classification Methods-Improve Accuracy of classification methods-other evaluation criteria for classification methods.

Unit III:

Cluster Analysis: What is Cluster Analysis?- Desired features of Cluster Analysis-Types of Data –Computing Distance- Types of Cluster Analysis Methods-Partition

Methods-Hierarchical Methods-Density based methods- Quality and validity of cluster analysis methods.

Unit IV:

Web Data Mining: Introduction-Web Terminology and characteristics- Locality and Hierarchy in the web-Web Content mining- Web usage mining.

Search Engine: Introduction-Search Engine Functionality- Search Engine Architecture.

Unit V:

Data Warehousing: Introduction-Operational Data Stores-Data Warehouses-Data Warehouse Design-Guidelines for Data Warehouse Implementation-Data Warehouse Metadata.

Online Analytical Processing (OLAP): Introduction- OLAP- Characteristics of OLAP Systems-Multi Dimensional View and Data Cube-Data Cube Implementation- Data Cube Operations.

Text Book:

1. G.K.Gupta, Introduction to Data Mining with Case Studies, Prentice Hall of India, 2008. Chapters: 1.1-1.5, 2.1-2.5, 3.1-3.4, 3.6-3.12, 4.1- 4.8, 4.10,5.1-5.5, 6.1, 6.3-6.4, 7.1-7.2, 7.4-7.7, 8.1-8.3, 8.5-8.8.

Booksfor Reference:

1. Margaret H.Dunham; S.Sridhar, Data Mining Introductory and Advanced Topics, Pearson Education, 2007.
2. Alex Berson and Stephen J. Smith, Data Warehousing, Data Mining, OLAP, TMH Publication ,1997 .

SEMESTER VI			
Core – Integral II– Cloud Computing			
Code: 18UCSI61	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Vision:

Attain knowledge about how to design and build cloud environments to enhance performance and cost reduction

Mission:

Learn about various service models PaaS, SaaS, IaaS and data centres. To analyse cloud storage systems.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	Define cloud computing	1	Re
CO-2	Describe the characteristics of cloud	2	Un
CO-3	Identify the technical foundations of cloud system architecture	2	An
CO-4	Characterize the distinction between infrastructure , platform, software and service	7	An
CO-5	Illustrate the use of load balancing techniques	7	Ap
CO-6	Attempt to generate new ideas and innovations in cloud computing	7	Cr
CO-7	Compare and contrast the various web services	10	An
CO-8	Demonstrate the usage of mail services	10	An

Unit I:

Understanding cloud computing:

Cloud computing - cloud types- the cloud cube model- deployment models-service models-characteristics of cloud computing-assessing the role of open standards.

Assessing the value proposition:

Measuring the cloud's value – the laws of cloudonomics –cloud computing obstacles – measuring cloud cost – avoiding capital expenditures

Unit II:

Cloud Architecture:

The cloud computing stack – composability – infrastructure – platforms – virtual appliances – communication protocols – Connecting to the cloud: The Jolicloud net book OS – Chromium OS the browser as an operating system.

Developing Cloud Services:

Infrastructure as a service (IaaS) – IaaS workloads- Platform as a service (PaaS) – Software as a service (SaaS)– Identity as a service (IDaaS) – Compliance as a service(CaaS).

Unit III:

Virtualization and CloudApplications:

Virtualization technologies – load balancing and virtualization – advanced load balancing – the Google cloud

Cloud Security:

Securing the cloud –security service boundary –security mapping- securing data –brokered cloud storage access-encryption-auditing and compliance

Unit IV:

Google Web Services:

Google Analytics – Google translate- Google Toolkit –Google APIs

Amazon Web Services:

working with Amazon Elastic compute cloud(EC2)- Amazon simple storage system(S3) – Amazon Elastic block store(EBS)- cloud front.

Microsoft Web Services:

Windows azure platform – windows Azure App fabric.

Unit V:

Cloud Storage:

Cloud storage definition – unmanaged cloud storage – managed cloud storage – creating cloud storage systems – backup types - cloud backup features

Webmail Services:

Cloud mail services- Google Gmail- Mail2Web – Windows Live Hotmail- Yahoo Mail

Textbook:

1.Barrie Sosinsky, **Cloud Computing Bible**, Wiley India Pvt. Ltd, 2012. New Delhi.

Books for Reference:

1. Michael Miller, Cloud Computing: Web-Based Applications That Change the WayYou Work and Collaborate Online, Que Publishing, Second Edition, August 2008.

2.Aley Beard, Cloud Computing Best Practices for Managing and MeasuringProcesses for On-demand Computing, Applications and Data Centers in the Cloud with SLAs, EmereoPvt. Limited, July 2008.

SEMESTER IV			
Core Skill Based	**Web Technology**		
Code: 18UCSS41	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Vision:

To design web sites.

Mission:

Using authoring and scripting languages to build websites

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO addresssed	CL
CO-1	understand Internet standard and Internet protocols	5	Un
CO-2	demonstrate sockets, RMI in JAVA networking	2	Ap
CO-3	develop dynamic web pages using JavaScript (client side programming).	7	Cr
CO-4	design dynamic web pages using VBScript	7	Cr
CO-5	design interactive web pages using DHTM	7	Cr
CO-6	discuss how XML DTDs differ from XML schemas	6	An
CO-7	identify and correct problems related to concurrency in server-side programs	10	Un
CO-8	create dynamic webpages using Server side scripting servlet and JSP	7	Cr

SEMESTER IV			
Core Skill Based	**Web Technology**		
Code: 18UCSS41	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Unit I:

Introduction:

What is Internet? History of Internet, Internet Services and Accessibility, Uses of Internet, Protocols, Web Concepts, Internet Standards

Internet protocols:

Introduction, Internet Protocols, Host Names, Internet Applications and Application Protocols

Unit II:

Java network programming:

Introduction, UDP/IP and TCP/IP Communications, I/O Streams, Sockets, Multicast Sockets, Remote Method Invocation, Protocol Handler, Content Handlers

Javascript:

Introduction, Language Elements, Objects of Javascript, Other Objects, Arrays

Unit III:

Vbscript:

Introduction, Embedding VBScript Code in an HTML Document, Comments, Variables, Operators, Procedures, Conditional Statements, Looping Constructs, Objects and VB Script, Cookies.

Dynamic Html (DHTML):

Introduction, Cascading Style Sheets (CSS), DHTML Document Object Model and Collections, Event Handling, Filters and Transactions, Data Binding

Unit IV:

Extensible Mark-Up Language (XML):

Introduction, HTML vs XML, Syntax of the XML Document, XML Attributes, XML Validation, XML DTD, The Building Blocks of XML Documents, DTD Elements, DTD Attributes, DTD Entities, DTD Validation, XSL, XSL Transformation, XML Namespaces, XML Schema

Common Gateway Interface (CGI):

Introduction, Server – Browser Interaction, CGI Scripts Structure, The CGI.pm Module, Perl Variables, CGI Environment Variables, Processing Forms, Sending Mail, Validating the Form Data, Handling Checkboxes, Server Side Includes (SSI), CGI Server Side and Client Side Applets, CGI Security Issues

Unit V:

Servlets:

Introduction, Advantages of Servlets over CGI, Installing Servlets, The Servlet Life Cycle, Servlet API, A Simple Servlet, Handling HTTP GET Requests, Handling HTTP POST Requests, Cookies, Session Tracking, Multi – tier Application Using Database Connectivity, Servlet Chaining

Java Server Pages: (JSP)Introduction, Advantages of JSP, Developing First JSP, Components of JSP, Reading Request Information, Retrieving the Data Posted from a HTML File to a JSP File, JSP Sessions, Cookies, Disabling Sessions

Text Book:

1. N.P.Gopalan, J.Akilandeseswari, Web Technology – A Developer's Perspective, PHI,2007

Books for Reference :

1. Achyut S Godbole, AtulKahate, Web Technologies - TCP / IP To Internet Application Architectures, Tata McGraw - Hill Education,2008.
2. Vipin Kumar, Web Technologies, A.B. Publication publisher, 2008
3. Jeffry C. Jakson, Web Technologies by Computer Science Perspective, pearson publication, 2005

SEMESTER- VI	
Self Study Course III– ASP.NET	
Sub Code: 18UCSSS3 (compulsory)	**Credits :2**

Vision:

To create dynamic webpages.

Mission:

Use DotNET technology to create server side web applications.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	Understand the Microsoft .NET Framework and ASP.NET page structure	2	Un
CO-2	Compare C# and VB programming Languages	5	An
CO-3	Build and debug well-formed Web Forms with ASP. NET Controls.	6	Cr
CO-4	Understand the Visual studio .NET environment	6	Un
CO-5	Create and Use Viewstate, Query String and cookies	7	Cr
CO-6	Implement appropriate data transfer between pages	7	Ev
CO-7	Use Microsoft ADO.NET to access data in web Application	10	Ap
CO-8	Develop dynamic Websites	10	Cr

Unit I:

The.Net Framework- The .NET Programming Framework-VB.NET, C#, and the .NET Language- The Common Language Runtime-The .NET Class Library-ASP.NET-Visual Studio.NET.

Learning The .Net Language-Data Types-Declaring Variables-Scope and Accessibility-Variable Operations-Object-Based Manipulation-Conditional Structures-Loop structures-Functions and Subroutines

Unit II:

Asp.Net Applications- ASP.NET Applications-Code-Behind-The Global.asax Application File-Understanding ASP.NET Classes-ASP,NET Configuration

Web Form Fundamentals- A Simple Page Applet-Improving the Currency converter-A deeper Look at HTML Control Classes-The Page Class-Assessing HTML Server Controls.

Unit III:

Web Controls-Stepping Up to Web Controls-Web Control Classes-Auto Post Back and Web Control Events-A Simple Web Page Applet-Assessing Web Controls.

Using Visual Studio .Net-The promise of Visual Studio. NET-Starting a Visual Studio .NET Project-The Web Form Designer-Writing Code-visual Studio .NET Debugging-Working Without Visual Studio .NET.

Unit IV:

State Management-The Problem of State-Viewstate-Transferring Information-Custom cookies-Session State-Session State Configuration-Application State.

Tracing And Logging-Logging Exceptions-Error Pages-Page Tracing

Unit V:

Database Connectivity: Overview of ADO.NET:9 Introducing ADO.NET and data Management− characteristics of ADO.NET –The ADO.NET Object Model. ADO.NET Data Access SQL Basics –The SQL Select Statement – The SQL Update Statement – The SQL Insert Statement − The SQL Delete Statement–Creating a connection –Defining a Select Command – Updating Data – Accessing Disconnected Data –Updating Disconnected Data –Data Binding –Introducing Data Binding –Single Value Data Binding –Repeated Value Data Binding –Data Binding with Databases−The DataLiIst, DataGrid and Repeater.

Text Book:

1. MATHEW MACDONALD, The Complete Reference ASP.NET, TMH 2002

Books for Reference:

1. G. Andrew Duthie,Microsoft ASP.NET Step by step, Microsoft Press, 2003
2. Kogent Learning Solutions Inc., ASP.NET 2.0 Black book, DreamTechPress, 2006.
3. NitinPandey ,” Microsoft ASP.NET”, PHI,2002
4. MridulaParihar, YeshSingal and NitinPandey, “Visual Studio .Net Programming”, PHI, 2002
5. C. Muthu,”ASP.NET”, 2nd Ed., Vijay Nicole Imprints Pvt.Ltd., 2008.

SEMESTER- IV			
Allied – IV	**Big Data Analytics**		
Course Code: 21UCSA41	**Hrs / week :3**	**Hrs / Semester: 45**	**Credits :3**

Objectives:

- To make the students understand Big Data Analytics
- To understand the various algorithms in Big Data Analytics

Course Outcome:

CO No.	**Upon completion of this course, students will be able to**	**PSO addressed**	**CL**
CO-1	understand the concept of Big Data	1	Un
CO-2	describe Big data Analytics	4	Un
CO-3	explain Big Data Analytics Process	4	Un
CO-4	understand Machine Learning	6	Un
CO-5	understand artificial Intelligence	6	Un
CO-6	explain the Applications of Big Data	5,8	Ap

SEMESTER- IV			
Allied – IV	**Big Data Analytics**		
Course Code: 21UCSA41	**Hrs / week :3**	**Hrs / Semester: 45**	**Credits :3**

Unit I:

From Data to Big Data: Introduction - No analytics without data - Databases - Raw data - Text-Images, audios and videos - The Internet of Things - From bytes to yottabytes: the data revolution - definition - The 3Vs model - Why now and what does it bring?

Big Data: Introduction - Beyond the 3Vs - From understanding data to knowledge – Improving decision-making - Things to take into account - Data complexity - Data quality: Not all data are the right data - Data security - Big data and businesses - Opportunities - Challenges

Unit II:

Building an Understanding of Big Data Analytics: Introduction - Before breaking down the process. What is data analytics? - Before and after big data analytics - Traditional versus advanced analytics: What is the difference? - Advanced analytics: new paradigm - New statistical and computational paradigm within the big data context

Why Data Analytics and When Can We Use It? Introduction - Understanding the changes in context - When real time makes the difference - What should data analytics address? - Analytics culture within companies - Big data analytics application.

Unit III:

Data Analytics Process: Introduction - Understanding data analytics is good but knowing how to use it is better- First phase: find the data - Second phase: construct the data - Third phase: go to exploration and modelling - Fourth phase: evaluate and interpret the results -Fifth phase: transform data into actionable knowledge - Disciplines that support the big data analytics process .

Unit IV:

Machine Learning: Introduction – descriptive analysis – prescriptive analysis – artificial Intelligence –Machine learning definition – how does it work – data scientist

Unit V:

Applications and Examples: Introduction – The duo big data/ML: examples of use – Netflix-,Amazon –proof that data are a source of creativity

Text book:

Soraya Sedkaoui *Data Analytics and Big Data* -, Wiley – ISTE 2018.

Books for Reference :

1. Michael Minelli, Michele Chamboss, Ambiga Dhiraj , "*Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for today's businesses*" John Wiley , 2014.
2. *Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data*,EMC Education Services.
3. Avid Loshin, "*Big data analytics: From Strategic planning to enterprise integration with tools, techniques, NoSQL, and Graph*, Elsevier,2013

SEMESTER- III			
Allied-Practical III	**Data Structures Lab**		
Course Code: 21UCSAR3	**Hrs / week : 2**	**Hrs / Semester: 30**	**Credits : 1**

1. Searching (Sequential and Binary)
2. Implement linked list and perform the following operations
   i. Add a node as first node ii. Add a node as last node iii.Add a node as middle node
3. Implement Linked list and perform the following operations.
   i. Delete the first node ii. Delete the last node iii Delete the middle node

4.Implement a stack using Linked List and perform the push and pop operations.

5.Implement a queue using Circular list and perform enqueue and dequeue operations.

6.Implement binary tree using Linked and perform the following traversal.

i. Inorder Traversal ii. Preorder Traversal iii. Post order Traversal

7. Merge sort.
8. Quick sort.

SEMESTER- IV			
Allied - Practical– IV	**Web designing Lab**		
Course Code: 21UCSAR4	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits :1**

1. Create a web page of your College.
2. Create a web page to display your marks in the following table format.

Reg No.	Name	SEMESTER I							
		Language		English		C		HTML	
		Int	Ext	Int	Ext	Int	Ext	Int	Ext

3. Write an HTML code to display a list of five cars in a frame,Link each one to a brief description in second frame. The left frame should display the list and the right frame should display the paragraph about the frame.

4.Write HTML program to create E-Mail registration form.

5. Design a Web page using CSS which includes the following:
   i. Use Different fonts and styles
   ii. Set the background image
   iii. Define styles for links as A: link, A: visited , A: active and A: hover
6. Write a Java Script to prepare EB Bill.
7. Write a Java Script to design a simple calculator to perform sum, product, difference and quotient operations.
8. Write a JavaScript to validate the following fields:
   i. Name (should contain alphabet and the length should not be less than 6 characters)
   ii. Password (should not be less than 6 characters length)
   iii. Email id (must follow the pattern)
   iv. Mobile No (should contain 10 digits)

SEMESTER- IV			
CORE IV	**RDBMS with PHP and MySQL**		
Code: 21UCSC41	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Objectives

- To understand the basic elements of a relational database management system
- To identify the data models for relevant problems
- To design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respect data
- To create dynamic web pages and websites.
- To connect webpages with database.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	explain the DBMS	1	Un
CO-2	describe Data models	2	Un
CO-3	explain the variable usage in PHP	1	Un
CO-4	creating forms with conditional statements	1	Cr
CO-5	describe about arrays, files, cookies and functions.	2	Un
CO-6	create an application using php and mysql	4	Cr

SEMESTER- IV			
CORE IV	**RDBMS with PHP and MySQL**		
Code: 21UCSC41	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Unit-I

Data base System Applications, Purpose of Database Systems-Data Models – Entity Relationship Model Constructs: Entities, Attributes & Relationships, Types of entities, Types of Attributes, Types of Relationships, Degree of Relationship: Unary, Binary & Ternary. Cardinality Constraints, Examples

Unit- II

Normalization – Introduction, Non loss decomposition and functional dependencies, First, Second, and third normal forms – dependency preservation, Boyee/Codd normal form. Higher Normal Forms - Introduction, Multi-valued dependencies and Fourth normal form, Join dependencies and Fifth normal form

Unit- III

Introduction to SQL -Introduction, SQL Environment, Data Definition Commands: Create, Alter, Drop, Truncate. Data Integrity Controls: Primary Key Constraint, Unique Key Constraint, Not Null Constraint, Foreign Key Constraint, Check Constraint. Data Manipulation Commands: Insert, Update, Delete. Data Control Commands: Commit, Rollback. SQL Operators: Arithmetic, Logical, Relational and Special Operators.

Unit-IV

Introduction to PHP- history- features-variables- statements-operators-conditional statements-if-switch-nesting conditions-merging forms with conditional statements-loops-while-do-for – loop iteration with break and continue- Arrays: Creating an array- user defined functions- using files- sessions- cookies

Unit-V

Working MySQL with PHP-database connectivity- usage of MYSQL commands in PHP- processing result sets of queries-formatting query output with Character- Numeric- Date and time –sample database applications.

Text Books:

1. Raghurama Krishnan*,Data base Management Systems*,Johannes Gehrke, TATA McGrawHill 3rd Edition.
2. Vikram Vaswani ,*How to Do Everything with PHP & MySQL,* TATA McGrawHill

Books for Reference:

1. Elmasri Navathe ,*Fundamentals of Database Systems*, Pearson Education.
2. C.J. Date, A.Kannan, S.Swami Nadhan,*An Introduction to Database systems*, Pearson, Eighth Edition

3.Martin Gruber,*Understanding SQL,*Manish Jain for BPB publications

4.Steven Holzner,*The complete Reference*,TATA McGraw-Hill Edition

5.Alexis Leon Mathews,*Database Management Systems*,Leon Vikas

SEMESTER- III			
Allied III	**Data Structures**		
Course Code: 21UCSA31	**Hrs / week : 3**	**Hrs / Semester: 45**	**Credits : 3**

Objectives:

- To understand the concepts of basic data structures such as stack, Queues and Linked list.
- To make the students understand the basic algorithms for searching and sorting.
- To represent real world problems using different data structures and solve them using best algorithms

Course Outcome:

CO No.	**Upon completion of this course, students will be able to**	**PSO addressed**	**CL**
CO-1	compare various search methods	4	An
CO-2	implement hashing methods	4	Ap
CO-3	discuss applications of stack	1	Un
CO-4	create an expression tree for an expression and evaluate it.	2	Cr
CO-5	implement heap concepts	4	Ap
CO-6	compare and contrast sorting methods	4	An

SEMESTER- III			
Allied III	**Data Structures**		
Course Code: 21UCSA31	**Hrs / week : 3**	**Hrs / Semester: 45**	**Credits : 3**

Unit I:

Introduction: Pseudo code – The Abstract Data Type – A Model for an Abstract Data Type Algorithms Efficiency.

Searching: List Searches – Hashed List Searches – Collision Resolution

Unit II:

Linked Lists: Linear List Concepts – Linked List Concepts – Linked List Algorithms – Processing a Linked List – Complex Linked List Structures

Unit III:

Stacks and Queues: Basic Stack operations – Stack Linked List Implementation – Stack Applications – Queue operations – Queue Linked List Design

Unit IV:

Trees: Basic Tree Concepts – Binary Trees – Binary Tree Traversals – Application of Binary tree – General Trees – Binary search Trees – Insertion ,Deletion

Unit V:

Heap and Sorting: - Heap Definition-Heap Structure – Basic Heap Algorithms. – Heap Data Structures – Heap Algorithms - General sort concepts – Quick sort – External sorts.

Text Book:

1. RichardF.Gilberg&Behrouz A. Forouzan. .*Data Structures A Pseudo code Approach with C++*. Thomson Brooks /Cole. 4thReprint, 4thedition 2006.

Chapters 11,2.1,2.3,2.4,3.1- 3.,3.6, 4.1-4.3 ,5.1 ,5.2,7.1 -7.5 ,8.1,9.1 -9.5,11.1,11.4(Quick sort only),11.5 , 12.1 -12.5

Books for Reference:

1. Ellis Horowitz &SartajSahni.*Fundamentals of Data Structures*.GalGotia publications. 2006.
2. Adam Drozdek.*Data Structures & Algorithm in Java* .Ingram .third edition2008.
3. Alfred V.Aho,JohnE.Hopcroft,Jeffrey D Ullman .*Data Structures & Algorithms*. New Delhi : Pearson Education India. 1st edition2002.
4. SeymourLipschutz. *Data Structures. New* Delhi: McGraw Hill .Schaum's Outline Series .Revised First Edition 2014.

SEMESTER- III			
Core – Practical III	**Java Programming Lab**		
Course Code: 21UCSCR3	**Hrs / week : 3**	**Hrs / Semester: 45**	**Credits : 2**

1. Implement Overloading Constructor and Overloading Method
2. Writing a Program to apply method Overriding concept.
3. Development of Java Packages
4. To create and implement an interface.
5. To create a thread i. Using Thread class ii. Using runnable interface
6. To create an applet with four Checkboxes with labels and a Text area object.
7. To create a window with a checkbox group with boxes for the colors, Violet, Indigo, Yellow, Orange, Red, Blue and Green. When the button is selected the background color must change accordingly.
8. To demonstrate the use of choice box.
9. To throw the following exception, i. Negative Array Size ii. Array Index out of bounds
10. To illustrate mouse event handling.
11. To create a File menu with options new, save, and close, edit menu with options cut, copy and paste.

SEMESTER IV			
Core – Practical IV	**PHP& MySQL Lab**		
Course Code: 21UCSCR4	**Hrs / week :3**	**Hrs / Semester: 45**	**Credits :2**

1. Creating a simple webpage using PHP.
2. Write programs using conditional-looping statements in PHP.
3. File manipulation using PHP.
4. Creating a simple table with constraints.
5. Insertion, Updation and Deletion of rows in MYSQL tables.
6. Searching for data by different criteria.
7. Sorting of data.
8. Demonstration of joining tables.
9. Usage of subqueries.
10. Validating Input.

SEMESTER –III			
Part –IV Non Major Elective - Introduction to Computers			
Course Code: 21UCSN31	**Hrs/week: 2**	**Hrs/Sem. : 30**	**Credits: 2**

Objectives

- Acquire knowledge on basic concepts, functions of computer system.
- Understand the various software and networking concepts.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSOs addressed	CL
CO-1	understand the various type of computers	1	Un
CO-2	practicing with the concept number system	1	Ap
CO-3	understand the input and output devices of computer and there uses	1	Un
CO-4	explain basic concepts of computer software and the various types of software	2	Un
CO-5	classify operating system software and their functions	1	Un
CO-6	outline the concepts of computer networking and the devices used in computer networking	6	Un

SEMESTER –III			
Part –IV Non Major Elective - Introduction to Computers			
Course Code: 21UCSN31	**Hrs/week: 2**	**Hrs/Sem. : 30**	**Credits: 2**

Unit I:

Introduction to Computers – Types Of Computers – Characteristics of Computers – Word Length – Speed – Storage – Accuracy – Automation – Diligence.

Five Generations Of Modern Computers – Introduction – First Generation(1945-1956) – Second Generation Computers(1956-1963) Third Generation Computers(1964-1971) - Fourth Generation Computers(1971-Present) - Fifth Generation Computers(Present and Beyond)

Unit II:

Classification Of Computer System – Introduction – Microcomputers– Personal Computers(PCs) – Workstations – Portable Computers – Minicomputers – Mainframes – Supercomputers – Network Computers.

Number System – Introduction – Decimal Number System – Binary Number System – Binary-Decimal Conversion – Decimal-Binary Conversion – Binary Addition\Subtraction – Gray Code – Excess-3 Code – ASCII Code – Hart Disk – Floppy Disk.

Unit III:

Input Devices – Keyboard – Mouse – Scanners – Joystick – Trackball – Light pen – graphic tablet – Barcode reader – Pointing stick – Webcam – Touchpad – Stylus .

Output Devices – Monitor – Printer – Headphones – Sound Card – GPS – Inkjet printing – Cathode-ray tube – Plotter – Projector.

Unit IV:

Introduction to Computer Software – Introduction – Operating System – Compilers & Interpreters – Word Processors – Database Management System(DBMS) – Image Processors

Operating System – Introduction – Functions of an Operating System – Classification Of Operating Systems – Introduction to UNIX , Windows NT, Mac OS , DOS , And Linux.

UNIT V:

Computer Networks – Introduction – Telecommunication Processors – Communication Processors

Types of Networks - Telecommunication Software – Network Protocols – Network Architecture – Communication Media.

Text Books:

1. Alexis Leon & Mathews Leon. *Introduction To Computers*. India: McGraw Hill Education Private Limited. Fifth Reprint, Edition 2008.

Books for Reference :

1. Dr.P.Velmani.,(Assistant Professor),M.C.A.,M.Phil.,Ph.D. *Computers Bascis to Advancements*. India: Chess Educational Publishers. First Edition.

2. Peter Norton's. *Introduction to computers* .India: New Delhi: Tata McGraw-Hill. Edition 2004

SEMESTER-IV			
Part IV Non Major Elective	**Introduction To Internet**		
Course Code:21UCSN41	**Hrs/week:2**	**Hrs/sem:30**	**Credits: 2**

Objectives:

- Introduction about internet and applications.
- Awareness on Social Networks.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSOs addressed	CL
CO-1	outline the History of Internet	1	Un
CO-2	understand about E-mail and how it works	6	Un
CO-3	compare different types of browser and its tools	6	Ev
CO-4	explain Blogging and it's functions	7	Ev
CO-5	describe Electronic Publishing and applications	6	Un
CO-6	explain Social Networking and awareness on Social Networking	8	Un

SEMESTER-IV			
Part IV Non Major Elective	**Introduction To Internet**		
Course Code:21UCSN41	**Hrs/week:2**	**Hrs/sem:30**	**Credits: 2**

Unit I:

Introduction to Internet –A brief History of Internet – How does Internet Work – What is special about the Internet . **How Internet works** – Introduction – People and Organizations –Hardware .

Unit II:

Introduction- Dial-up Connection- Dedicated Lines- ISDN-DSL-Cable Modem-Satellite Internet- Cellular broadband-Wireless Broadband- Wired and Wireless Broadband Internet Access-Choosing the best Internet Connection.

Unit III:

World Wide Web – Introduction-Internet and Web- How the Web Works- A Brief History of WWW. **Web Browsers and Web Browsing** – Types of Browser – Web Browsing.

Unit IV:

Websites and Web pages - Introduction-Web Design-Creating a website-Web Hosting-Website Promotion-**Blogging**-Introduction-What is a Blog-Why Blog-History of Blogs-State of the Blogosphere-Why is Blogging so popular-Blog Search Engines and Communities-Authors, Books and Blogs-Blogs and Employment-Pitfalls to avoid while Blogging-Is Blogging Good or Bad.

Unit V:

Electronic Publishing - Introduction- Electronic Publishing(E-Publishing) - E-book Readers-Economics of E-Publishing-Application of E-publishing- E-publishing--Advantages and Disadvantages.

Social Networking-Introduction-Social Networking Timeline-Why Social Networking-Dangers of Social Networking-Getting Connection.

Text Book:

1. Alexis Leon & Mathews Leon. *Internet for Everyone*. India: Leon Press.15th Anniversary Edition.

Books for Reference:

1.*Computer Literacy*, Department of Foundation Courses in collaboration with School of Computing Sciences

2.Vikas Gupta. *Internet and Web design*, India: Rematch Press I. Edition 2003.

3.Rajeev Gupta B.Tech. *Internet Guide,* India: Copyright reserved Nipun Publications. First Edition November 2000.

SEMESTER- III			
Skill Based Elective	**Microprocessors**		
Course Code: 21UCSS31	**Hrs / week : 2**	**Hrs / Semester: 30**	**Credits : 2**

Objectives:

- To acquire fundamental knowledge on hardware and software concepts of microcomputer and
- microprocessors architecture and design.
- To provide assembly language programming Techniques.

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	explain basic components and structure of Microprocessor and Microcomputers	1	Un
CO-2	describe 8085 Microprocessor and Memory Interfacing.	1	Un
CO-3	classify the various 8085 Microprocessor instruction set.	1	Un
CO-4	develop Assembly language Programs for various arithmetic operations	2	Ap
CO-5	develop Assembly language Programs for time delays	1	Ap
CO-6	. understand stack and subroutine operations in 8085	2	Un

SEMESTER- III			
Skill Based Elective1	**Microprocessors**		
Course Code: 21UCSS31	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits : 2**

Unit I:

Microprocessor, Microcomputers, and Assembly Language:

Microprocessors-Microprocessor Instruction Set and Computer Languages-From Large Computers to Single Chip Micro Controllers.

Unit II

Introduction to 8085 Assembly Language Programming:

Instruction Classification – Instruction Format -How to Write, Assemble and Execute a Simple Program8085 Microprocessor Architecture And Memory Interfacing: The 8085 MPU- Memory Interfacing – Interfacing the 8155 memory section.

Unit III:

Introduction to 8085 Instructions:

Data transfer operations-Arithmetic Operations-Logic Operation – Branch Operations – Writing Assembly Language Programs-Debugging a Program

Unit IV:

Programming Techniques With Additional Instructions:

Programming Techniques: Looping, Counting, and Indexing- Additional Data Transfer and 16bit Arithmetic Instruction- Arithmetic Operations Related to Memory-Logic Operations: Rotate, Compare-Dynamic Debugging.

Unit V:

Counters And Time Delays:

Counters and Time Delays-Hexadecimal Counter-Modulo ten Counter-Generating Pulse Waveforms-Debugging Counter and Time Delay Programs.

Stacks And Subroutines:

Stack-Subroutine-Restart, Conditional Call and Return Instruction-Advanced Subroutine Concepts.

Text Book:

1. Ramesh Gaonkar. *Microprocessor Architecture. Programming, And Applications With The 8085*. Bangalore. Shree Hari publications .6th edition. 2020

Books for Reference:

1. P Mathur. *Introduction to Microprocessors*. India:Tata McGraw Hill. Third edition 2018.

2.Walter A.Triebel,AvtarSing.*The 8088 and 8086 microprocessors (programming, interfacing, software, hardware and Applications.* New Delhi:Pearson 2002 .

3.Kumar K. Udaya.*The 8085 Microprocessor* .India:Pearson Education. 1st Edition 2008.

SEMESTER- III			
Skill Based Elective 2	**E- Commerce**		
Course Code: 21UCSS32	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits: 2**

Objectives:

- To understand and ascertain the importance E-Commerce
- Acquire knowledge about E-marketing and E-advertising
- To Identify the key security threats in the E-commerce environment.

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	Explain what is E-Commerce	6	Un
CO-2	Compare different business models of E-commerce	6	An
CO-3	Differentiate E-marketing versus traditional marketing	4	Ap
CO-4	Facilitate online marketing	5	Ap
CO-5	Implement E-advertising	5,8	Cr
CO-6	Devise security for E-Commerce	3	Cr

SEMESTER- III			
Skill Based Elective 2	**E-Commerce**		
Course Code: 21UCSS32	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits : 2**

Unit -I

E – Commerce: Meaning, definition, features, functions of E-Commerce, Scope, Benefits and limitations of E-Commerce — E-commerce opportunities and challenges for Industries.

Unit –II

Business Models for E-commerce: The Birth of Portals – E-Business Models – Business-to Consumer (B2C) – Business-to-Business (B2B) – Consumer-to Consumer (C2C) – Consumer to-Business (C2B) – Brokerage Model – Value Chain Model – Advertising Model.

Unit –III

E-marketing – Traditional Marketing Vs. E-Marketing – Impact of E-commerce on markets – Marketing issues in E-Marketing – Online Marketing

Unit –IV

E-advertising – Internet Marketing Trends – E-Branding – Marketing Strategies.
E-Commerce Legal Framework – Rights and Obligations in the World of E-commerce

Unit –V

E-Security: Security for E-commerce – Security Design – Analysing risk – E-Banks and Security

Text book:

P.T. Joseph, SJ, 'E-Commerce - An Indian Perspective', Third edition, PHI Publishing Co. Ltd., Newdelhi

Books for Reference:

1. Kamlesh K. Bajaj and Debjani Nay, 'E-Commerce - The Cutting Edge of Business' - Tata McGraw Hill Publishing Co. Ltd., New Delhi, 2000.
2. Turban, Efraim, and David King, "Electronic Commerce: A Managerial Perspective", 2010, Pearson Education Asia, Delhi.
3. Smantha Shurety, "E–Business with Net Commerce", Addison – Wesley, Singapore.

Websites:

https://forms.iimk.ac.in/libportal/ebook/EB8.pdf

https://backup.pondiuni.edu.in/storage/dde/dde_ug_pg_books/E-%20Commerce.pdf

SEMESTER- IV			
Skill Based Elective 1	**DTP Lab**		
Course Code: 21UCSS41	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits: 2**

1. Create a rolling ball animation.
2. Create a ball bouncing in the same place.
3. Create a bouncing ball across the screen.
4. Create multiple ball bouncing with multiple colours.
5. Create an object falling to the ground.
6. Create a morphing animation.
7. Create a moving character.
8. Create an animation with sound.

SEMESTER- IV			
Skill Based Elective 2	**Cyber Security**		
Course Code: 21UCSS42	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits: 2**

Objectives:

- To understand the basic concepts of Cyber Ethics, Virtues and Values
- To design and develop a security architecture for society.
- To learn about how to maintain the Confidentiality, Integrity and Availability of a data

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	identify how security issues in cyberspace raise ethical concerns	3	Un
CO-2	adapting Artificial Intelligence Ethics	6,8	Cr
CO-3	acquire the knowledge of Cyber laws, regulations in information Society	3	Un
CO-4	identify and explore the different types of Cyber Crimes	8	Un
CO-5	appraise the Cyber offences	5	Ev
CO-6	assess Cyber Bullying and digital literacy for protecting children from bullying.	8	Ap

SEMESTER- IV			
Skill Based Elective 2	**Cyber Security**		
Course Code: 21UCSS42	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits: 2**

Unit-I:

Cyber Ethics: Ethics in Cyber Society: Core Values and Virtues: Definitions, Specificities of Cyberspace, Dimensions of Cyber Ethics in Cyber Society, Core Values and Virtues, Cyber Ethics by norms, Laws and Relations.

Unit-II:

Artificial Intelligence Ethics: "AI for Good". Cyber Ethics as Business Ethics. Cyber Law and Cyber Ethics: Importance of Cyber Law, The Significance of Cyber Ethics, and Cyber Crime is Unethical and Illegal, The need for Cyber Regulation.

Unit-III:

Ethics in the Information Society, Technologies Need Standards, Rules and Regulations, Technology
Ethics, Legal Ethics, the Nine P's of Ethics in Information Society.

Unit-IV:

Cyber Crime: Cybercrime offences, Computer Related Offences, Content Related offences, Government Efforts in Cyber security, Cyber security in the Academic world. Critical Thinking of Citizens: Ethics in Digital Age, Acting Responsibly in the Digital World, Three Dilemmas: Ethical Intelligence in Practice.

Unit-V:

Cyber Bullying: Introduction – Cyber Bullying, Peoples in Cyber Bullying, Signs of Cyber Bullying, Suicidal Tendencies, Role of Children and Duty of parents, Limiting Access of Technology, Child Bullying. Child Protection Online: Prevention through Education for Digital Literacy and Safety.

Text Book:

1. ChristophStuckelberger, PavanDuggal. *Cyber Ethics 4.0, Serving Humanity with Values*. Globethics.net Global series no 17, 2018.

Books for Reference:

1. Diane Bailey.*Cyber Citizenship and Cyber Safety: Cyber Ethics*.USA:The Rosen Publishing group 2008.
2. Kizza, Joseph Migga, Ethical and Social Issues in the Information Age, 5th edition, Springer, 2015.
3. Bynum, Terrel Ward &Rogerson, Simon, eds: *Computer Ethics & Professional Responsibility: Introductory Text & Readings*. Blackwell 2004.

SEMESTER- III	
Self Study 1 Computer Architecture	
Course Code:21UCSSS1 (Compulsory)	**Credits : 2**

Objectives:

- To study basic computer organization.
- To understand the basic Arithmetic operations algorithms.
- To understand the memory organization.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	discuss the organization of basic computer	1	Un
CO-2	explain various types of instructions.	1	Un
CO-3	explain general register organization and stack organization	1	Un
CO-4	explain algorithms for arithmetic operations of various integer number systems	1	Un
CO-5	explain algorithms for arithmetic operations of floating number systems	1,4	Un
CO-6	discuss memory hierarchy with different types of memories.	1,2	Un

SEMESTER- III	
Self Study 1	**Computer Architecture**
Course Code:21UCSSS1(Compulsory)	**Credits : 2**

Unit I:

Basic computer organization and design :

Instruction codes –computer registers –computer instructions –timing and control –instruction cycle-memory reference instructions

Unit II:

Central processing Unit:

General register organization –stack organization-instruction formats –addressing modes- data transfer and manipulation-program control-Reduced Instruction Set Computer.

Unit III:

Computer Arithmetic:

Addition and subtraction – multiplication algorithms-division algorithms

Unit IV:

Computer Arithmetic:

floating point arithmetic operations- Decimal Arithmetic unit- Decimal Arithmetic operations

Unit V:

Memory organization:

Memory hierarchy –main memory –auxiliary memory-associative memory – cache memory – virtual memory

Text Book :

1. M. Morris Mano .*Computer System Architecture.* New Delhi: Pearson Education. Third Edition 2017 .

Books for Reference:

1. P.V.S. Rao .*Computer system Architecture* .New Delhi: PHI Learnings.Second Printing. 2011
2. John P.Hayes .*Computer Organization and Architecture.* India: Tata McGraw Hill. Third Edition 2002
3. John D. Carpinelli*Computer Systems Organization & Architecture.* India: Tata McGraw Hill. First edition 2002.

SEMESTER IV	
Self Study (optional)	**Web Technology**
Course Code: 21UCSSS2	**Credits :2**

Objectives:

- Understand the principles of creating an effective Web page.
- Learn the language of the web:HTML and CSS
- Develop basic programming skills using javaScript.
- Be able to embed social media content into webpages

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	understand Internet standard and Internet protocols	1	Un
CO-2	demonstrate JavaScript	6	Ap
CO-3	develop dynamic web pages using JavaScript (client side programming).	5	Ap
CO-4	design interactive web pages using DHTML	5	Ap
CO-5	discuss how XML DTDs differ from XML schemas	1	An
CO-6	design a simple website	6	Ap

SEMESTER IV	
Self Study (optional)	**Web Technology**
Course Code: 21UCSSS2	**Credits :2**

Unit I:

Introduction What is Internet? History of Internet, Internet Services and Accessibility, Uses of Internet, Protocols, Web Concepts, Internet Standards

Unit II:

Internet protocols Introduction, Internet Protocols, Host Names, Internet Applications and Application Protocols

Unit III:

Javascript Introduction, Language Elements, Objects of Javascript, Other Objects, Arrays

Unit IV:

Dynamic HTML(DHTML) Introduction, Cascading Style Sheets (CSS), DHTML Document Object Model and Collections, Event Handling, Filters and Transactions, Data Binding

Unit V:

Extensible Mark-Up Language (XML) Introduction, HTML vs XML, Syntax of the XML Document, XML Attributes, XML Validation, XML DTD, The Building Blocks of XML Documents, DTD Elements, DTD Attributes, DTD Entities, DTD Validation, XSL, XSL Transformation, XML Namespaces, XML Schema

Text Book:

1. N.P.Gopalan, J.Akilandeseswari*, Web Technology – A Developer's Perspective*, PHI,2007

Books for Reference:

1. Achyut S Godbole, AtulKahate, *Web Technologies - TCP / IP To Internet Application Architectures*, Tata McGraw - Hill Education,2008.
2. Vipin Kumar, *Web Technologies,* A.B. Publication publisher, 2008
3. Jeffry C. Jakson, *Web Technologies by Computer Science Perspective*,pearson publication, 2005