SEMESTER V

501: INTRODUCTION TO THE INTERNET TECHNOLOGIES

Number of Credits: 5 (3L +2T)

OBJECTIVES: To provide programming techniques for different scripting languages like HTML, HTML5, Java Script etc.

PREREQUISITE: Knowledge of Internet Basics

LEARNING OUTCOME:
After completion of this course students will able to –

- To develop static web pages through HTML, HTML5 and JavaScript.
- To implement different constructs and programming techniques provided by Java Script.

TEXT BOOKS

- Web Enabled Commercial Application Development Using HTML, DHTML, JavaScript, Perl CGI by Ivan Bayross (bpb publication)
- HTML5 by Mark Pilgrim O'Reilly publication

Syllabus

UNIT I: OVERVIEW OF INTERNET AND INTRANET

Understanding internet and its need, concept of intranet, difference between internet and intranet, a brief history, internet applications, Internet Service Providers (ISP)

concept of client and server, concept of a web browser and web server, communicating on the internet, concept of domain- Physical domain, virtual domain, registering a domain, need of IP addressing, process to assign IP addresses, World Wide Web

UNIT II: INTRODUCTION TO HTML

Introduction: Overview of HTML, need of HTML, Use of it,

HTML Tags: concept of Tag, types of HTML tags, structure of HTML program

Text formatting through HTML: Paragraph breaks, line breaks, background and BGcolor attributes

Emphasizing material in a web page: Heading styles, drawing lines, text styles.

Text styles and other text effects-centering, spacing, controlling font size & color

Lists: Using unordered, ordered, definition lists

Adding Graphics To HTML Documents: Using Image tag, attributes of Image tag, changing width & height of image

UNIT III: TABLES, FRAMES AND LINKING DOCUMENTS

Handling Tables: To define header rows & data rows, use of table tag and its attributes. Use of caption tag

Linking Documents: Concept of hyperlink, types of hyperlinks, linking to the beginning of document, linking to a particular location in a document, Images as hyperlinks

Frames: Introduction To frames, using frames & frameset tags, named frames how to fix the size of a frame, targeting named frames.

Introduction to CSS: Introducing CSS, font attributes, color and background attributes, text attributes, border attributes, margin related attributes, list attributes Using class and span tag , External Style Sheets

UNIT IV: INTRODUCTION TO HTML5

Features of HTML5: MIME Types, diving in, Detection techniques,

Modernizr: An HTML5 Detection Library, Canvas, Canvas Text, Video

Video Formats, Local Storage, Web Workers, Offline Web Applications

Geolocation, Input Types, Placeholder Text, Form Autofocus, Microdata

Elements of HTML5: The Doctype, the Root Element, The <head> Element

New Semantic Elements in HTML5, Handling of Unknown Elements by the Browsers

Headers, Articles, Dates and Times, Navigation, Footers.

Drawing Surface: Introduction to Canvas, Simple Shapes, Canvas Coordinates,

paths, Text, Gradients, Images.

Video on the web: Video Containers, Video Codecs, Audio Codecs

UNIT V: INTRODUCTION TO JAVASCRIPT

Introduction to scripting: overview of Java Script, advantages, client side java Script, capturing user input, writing JavaScript into HTML

Basic JavaScript Techniques: Data types, literals, variables and operators, Java Script arrays, dense array, operators, expressions

Java Script Programming Construct: Assignment, data declaration, if, switch, while, for, do while, label, break, Continue, function call, return, with, delete, method invocation.

UNIT VI: JAVASCRIPT TECHNICAL ISSUES

JavaScript Functions: Types of functions in Java Script- Built in functions, User defined functions, function declaration, passing parameters, variable scope, return values, recursive functions.

Dialog boxes: Alert dialog box, prompt dialog box, confirm dialog box, window objects

JavaScript Document Object Model: Understanding JDOM

Cookies: Concept of cookies, setting a cookie, supply values to cookies.

UNIT VII: USING FORM OBJECTS

Forms Used By Web Site: Form object, properties of form elements, methods of form element, form object's Method

Different elements : text, password, button, submit, reset, checkbox, Radio, Text Area, select & option, Other built-in Object-String object, math object, date object,

User defined objects: creation, instances, objects within objects

502: Object Oriented Analysis and Design

No. of credits: 5 (3L + 2T)

Objectives: The course aims at developing skills to analyze and design a software system using Object Oriented Analysis and Design (OOAD) and UML. And use these skills in Unified Process (UP) environment.

Learning Outcomes: At the end of the course, student should be able to

A) Understand and describe the Object Oriented concepts
B) Describe Object Oriented Analysis and Design(OOAD) concepts and apply them to solve problems
C) Prepare Object Oriented Analysis and Design documents for a given problem using Unified Modeling Language
D) Describe the activity carried out in each and every phase of Rational Unified Process(RUP)

Text Book:

1. Craig Larman (2004), Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development, 3rd Edition, Pearson Education.

Reference Books:

1. Martin Fowler (2003), UML Distilled, 3rd Edition, Pearson Education.
2. Roger Pressman(2009), Software Engineering: A Practitioner's Approach, Roger Pressman, ; 7th edition, McGraw-Hill
3. Brett D. McLaughlin (2006), Head First Object-Oriented Analysis and Design , 1 edition, O'Reilly

Syllabus

Unit 1: (6L)

Introduction to OO Concepts, Object, Abstraction, Class, Encapsulation,

Message Sending, Inheritance and Polymorphism, Association, Aggregation,

Concept of analysis and design, introduction to Object Oriented an Analysis and Design(OOAD),

review of Software Development Life Cycle(SDLC),

Iterative development and Rational Unified Process(RUP), Phases of RUP

Unit 2: (6L)

Understanding Inception and requirement, writing requirements in context, use case modeling, relating use cases to user goals and elementary business process, use cases for adding values and functional requirement, actors, actor types and goals in use cases, writing use cases in UI-free style, moving from inception to elaboration.

Unit 3: (6L)

Elaboration Iteration 1 emphasize and requirement, System behavior, System Sequence Diagrams, Inter-System SSDs, SSDs and Use Cases, System Events and the System Boundary, Naming System Events and Operation, SSD with Use Case Text, SSDs within the UP, UP Artifacts

Unit 4: (6L)
Domain Modeling, Conceptual Class Identification, Resolving Similar Conceptual Classes-Register vs. "POST", Specification or Description Conceptual Classes, UML Notation, Models, and Methods: Multiple Perspectives Lowering the Representational Gap, Domain Models Within the UP, Finding and adding association, Common Associations List and Guidelines, Association Roles, Naming Associations, finding attribute and its types, UML Attribute Notation, attributes and foreign Keys, Multiplicity

Unit 5 : (6L)
Use cases and operation contracts, pre and post conditions, contracts leads to domain model, contracts usefulness and guidelines, contract operations and UML, contracts within UP, GRASP: Designing Objects with Responsibilities, Patterns of General Principles in Assigning Responsibilities, Object Design and CRC Cards, Use Case Realization with GRASP Patterns, Determining visibility, Design Class Diagrams(DCD), from elaboration iteration 1 to 2, Iteration 2 emphasize and requirements, Refinement of Analysis-oriented Artifacts in this Iteration 2.

Unit- 6: (7L)
Elaboration Iteration 3 requirements and emphasis, Use case relationships (include, extend and generalize); Concrete, Abstract, Base, and Addition Use Cases, Modeling generalization, conceptual superclass and subclass, abstract conceptual class, modeling

changing states, Class Hierarchies and Inheritance in Software, Association Classes, aggregation and composition, Association Role Names, Roles as Concepts vs. Roles in Associations, Derived Elements, Qualified and Reflexive Associations, Ordered Elements, Using Packages to Organize the Domain Model

Unit 7: (8L)

Modeling behavior in statechart diagram, events, states, and transitions in statechart Diagrams, statechart diagrams in the UP, Use Case State chart Diagrams, classes that benefit from statechart diagrams, external and Interval events, additional statechart diagram notation, Activity diagrams, activity diagrams Vs Statechart diagrams, concept of interface, interface realization, using stereotypes in UML, collaboration diagrams , putting sequence diagram as collaboration diagrams, component and deployment diagrams.

503: Combinatorics Aand Graph Theory

No. of credits:4 (4L + 2T)

Objectives.

To gain a fundamental knowledge of the basic probability concepts which can be described or applied in real life phenomena? Acquire skills in handling situations involving more than one random variable and functions of random variables.- Understand and characterize phenomena which evolve with respect to time in a probabilistic manner. To expose basic characteristic features of a queuing system and acquire skills in analyzing queuing models.

Recommended books :

1.Fundamentals of Statistics S.C.Gupta VI Edition

2. Discrete Mathematics Schaum's outlines

3.Discrete Mathematics and its Applications VII Edition Kenneth Rosen

4.Discrete Mathematics N Ch SN Iyengar

UNIT I **Permutation and Combinations**:

Rule of sum and product, Permutations, Combinations, Algorithm for Generation of Permutation and Combinations. Pigeonhole Principle, Inclusion-Exclusion Principle

UNIT I **I Probability Theory**:
Axioms of probability ,Sample space, Conditional probability,- Total probability, Independent Events, Binomial distribution, Random Variable Baye's theorem

UNIT III **Random Variable**:

Random variable concept, Probability distribution of a discrete random variable, continuous random variable, Probability Density function of Continuous random variable, Distribution function OR Cumulative probability function

UNIT **IV Basic Concept of Graph**:

Introduction, Graphs and Multigraphs, subgraphs, Isomarphic Graphs, Homomarphic Graphs, Paths, Connectivity ,labeled Graphs, Weighted Graphs ,Complete graphs, Planer Graphs,

UNIT V : **Directed Graphs**:

Introduction, Directed Graphs, Rooted Trees, Represented of Directed Graphs, Incidence and Adjacency Matrices, Eulerian and Hamiltonian Graphs, Coloring of Graphs

UNIT VI **Application of Graphs:**

Bridges of Konigsberge, Travelling Salesmen Problem, Seating Arrangement problem ,Crossing of river problem, Sheep cabbage problem, Utilities problem

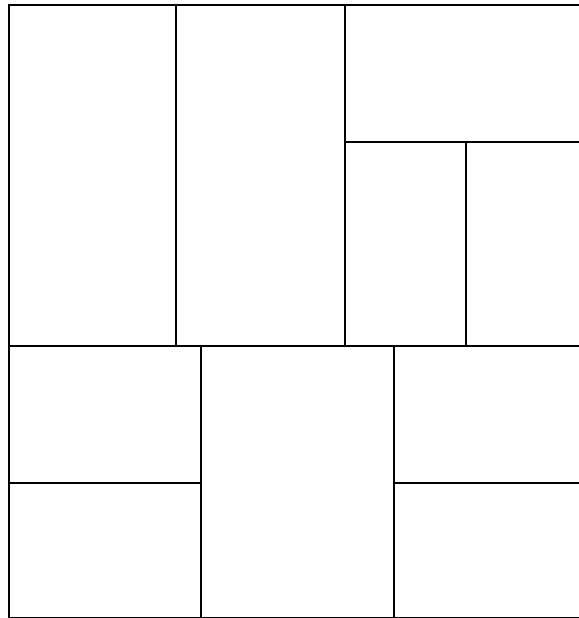UNIT V II **Graph Algorithms**:

Shortest Algorithms: Warshall's Algorithm, Depth-First Algorithm and Breadth-First searches, Dijkstra's Algorithm

Lab on Internet Technology and C# Programming

No. of credits: 4 (4P)

Introduction to Web Technologies

1. Write an HTML program to form the following frame structure.

2. Design a form using HTML that accepts information about your qualification, extra curricular activities, achievements, Skill sets, Hobbies and expectations for a particular job profile.

3. Design the registration form for a web site and when the user clicks on submit button the login form should be appeared on the screen.

4. Design a style sheet to give following effects.

- The first letter of the paragraph should have 150% font size
- The first line of the paragraph should have purple as background color and white as the fore color.

5. Design a CSS(inline) that displays the regular text at the center with green as background color and white as fore color and should be bold; using class.

6. Design a web page to display the following output.

- List of subjects
  - semester III
    - C++
    - Dot.Net
  - semester IV
    - Java
    - Industrial projects

Internet programming

1. HTML
e. VBScript
f. JavaScript
g. DHTML

7. Write HTML code to display time table of your class.

8. Write HTML code to display the mark sheet of entered seat number.

9. Write an HTML code to accept the student's academic information of last year using the <form>.

10. Create a table using HTML code to display the following table:

	Sem III	Sem IV
MCA II	Software Engineering	UML & Design Patterns
	Networking	Unix & Linux internals
	Object Oriented Programming	Internet Programming

11.Create the table in HTML as follows:

Course					
BCA I		BCA II		BCA III	
Sem I	SemII	SemIII	Sem IV	Sem V	Sem Vi
Sub11	Sub21	Sub31	Sub41	Sub51	Industrial
Sub12	Sub22	Sub32	Sub42	Sub52	Project
Sub13	Sub23	Sub33	Sub43	Sub53	Work
Sub14	Sub24	Sub34	Sub44	Sub54	
Sub15	Sub25	Sub35	Sub45	Sub55	

12. Create purchase order form using JavaScript.

13. Create online examination form using JavaScript.

14. Write JavaScript to display table of numbers 2-10. (use form and form elements)

15. Write JavaScript code which contains 'show' button. When user clicks on show button, first 10 terms of Fibonacci series will be displayed in textbox on another HTML page. This page contains button 'back'. With this button user can come back to original page.

16. Write JavaScript code which will accept a number in dropdown list box. When you click on button '→' the accepted number will get added to textbox. Maximum 10 numbers can be accepted in list box.

17. Write JavaScript code to demonstrate feedback form.

18. WAP using JavaScript to display Date and Time in Message Box

19. Write JavaScript to find factorial of a given number.

20. Write JavaScript that finds occurrences of letter "m" in the string entered by user in textbox and replace it with "a" and write string to page.

21. Create a form which accepts any mathematical expression, evaluate that expression and displays the result of it.

22. Create HTML form that has number of textboxes. When form runs fill the textboxes with data. Write JavaScript code that verifies that all the textboxes have been filled. If a textbox has been left empty, pop up an Alert indicating which textbox has been left empty. When Alert's OK button is clicked on, set focus on empty textbox. If all textboxes are filled display 'Thank you' message.

23. Create a HTML form that has a number of textboxes. When the form runs in the browser fill the textboxes with data. Write the JavaScript code which verifies that all textboxes have been filled. If the textbox has been left empty, popup an Alert indicating which textbox has been left empty. When alert's OK button is clicked on, set focus to that specific textbox.

24. Develop a HTML form which accepts mathematical expression in one textbox and display its result in another textbox after clicking on a button showing mathematical operations.

25. Create a form having textboxes, radio buttons and check boxes and reset button. On clicking the reset button the entire form should be reset.

Lab Assignment on C# Programming.

1.Write a Program in C# to Check whether a number is Palindrome or not.

2. Write a Program in C# to demonstrate Command line arguments Processing.

3. Write a Program in C# to find the roots of Quadratic Equation.

4. Write a Program in C# to demonstrate boxing and UnBoxing.

5. Write a Program in C# to implement Stack operations.

6. Write a program to demonstrate Operator overloading.

7. Write a Program in C# to find the second largest element in a single dimensional array.

8. Write a Program in C# to multiply to matrices using Rectangular arrays.

9. Find the sum of all the elements present in a jagged array of 3 inner arrays.

10. Write a program to reverse a given string using C#.

11. Using Try, Catch and Finally blocks write a program in C# to demonstrate error handling.

12. Design a simple calculator using Switch Statement in C#.

13. Demonstrate Use of Virtual and override key words in C# with a simple program

14. Implement linked lists in C# using the existing collections name space.

15. Write a program to demonstrate abstract class and abstract methods in C#.

16. Write a program in C# to build a class which implements an interface which already exists.

17. Write a program to illustrate the use of different properties in C#.

18. Demonstrate arrays of interface types with a C# program.

Semester-VI

506: Introduction to Linux Operating System

No of Credits: 02 (L: 0 T : 1 P:04)

Objectives:

The student would be able
1) To obtain knowledge of how to manage files in Linux system.
2) To understand Linux commands and write shell programming.
3) To grasp the concepts of User Management in Linux.
4) To control the system running Ubuntu operating system.

Learning Outcome:

The course is to provide the knowledge of the Linux Operating System. This course intends to teach various features that will help the students to use and learn the working of Ubuntu /Red Hat operating system.

Reference Books:

1. Linux for Beginners: An Introduction to the Linux Operating System and Command Line
2. Linux: The Complete Reference, Sixth Edition Paperback – 21 Nov 2007 by Richard Petersen (Author) , McGraw Hill Education (India) Private Limited

Unit No 1: Introduction to Linux Operating system, various flavors of Linux O.S., The benefits of Linux, The realities of Running Linux, Learning to use and Install Linux, Booting Any one flavor of Linux like ubuntu, red hat etc, Starting up ,Logging in, Exploring the desktop ,Working with virtual desktops, Getting Everything up and running ,Viewing your hardware , Getting online Using an Ethernet Card ,Joining wireless network ,Configuring Email and instant messaging, Adding a Printer , Configuring a local printer, Configuring a network printer, Setting up digital imaging devices, Transferring photos from digital camera, Configuring scanner, Configuring Bluetooth, Configuring sound cards

Unit No 2 : Securing computer using Ubuntu/Red Hat and personalizing Ubuntu/Red Hat , Securing Computer Windows security vs. Linux Security , Root and ordinary users ,Personalizing Ubuntu//Red Hat Changing the look and feel Altering the theme, Changing individual theme components, Changing the wallpaper, Configuring input devices, Configuring mouse options, Changing keyboard settings and shortcuts, Personalizing login details, Changing login picture , Personalizing Ubuntu/ Red Hat, Adding and removing desktop items, Adding shortcut, Creating a shortcut, Creating a link, Adding and removing menus, Adding all menus to a panel, Adding the applications menu to a panel, Deleting a menu, Setting power saving features.

Unit No 3: Managing File , Understanding file system concept , Drive references, Case sensitivity, File access and storage, Using Nautilus, Menu bar, Toolbar , Location bar, Zoom controls, View as icons/list Places pane, Launching files and running programs, Accessing removable storage devices, Ejecting media from drives, Introducing the Bash Shell, What is the Bash Shell?, Getting started with shell , Running programs, Running the shell via a virtual console, Getting help, Working with files, Listing files, Copying files, Moving files, Deleting files Changing and creating directories.

Understanding Linux files and users, Real files and virtual files, Users and file permissions, Viewing permissions, Altering permissions, The file system explained, Mounting, Using the mount command , Mounting a Drive manually Removing a mounted system, File Searches Using the find command, Using the locate command Using where is command

Unit No 4: Working with Text files, controlling the system, Multimedia, Viewing the text files, Using the cat command , Using the less command, Using the head and tail commands , Using a command line text editor, Understanding vi modes, Using vi to edit the file, Creating a new text file using vi, Searching through files,

Unit No 5 : Using grep to find text , Filter commands, e.g. head, tail, cut, paste, sort, tr etc. Using regular expressions, Comparing text files, Viewing the processes, Controlling processes, Killing processes, Controlling zombie processes, Using other commands to control processes, Controlling jobs, Piping and directing output , Piping the outputs of commands , Redirecting output.

Unit No 6: Multimedia, Digital Music, Playing the music files, listening to audio cds, Movies and multimedia, watching videos, installing codecs, installing real player Back video , Image Editing , Introducing the GIMP, Editing images with the GIMP, Making color corrections , Cropping and cloning Sharpening , Applying filters

Unit No 7: What is Shell, Different types of shells, Shell as command processor, shell variables, creating command substitution, various shell scripts using   functions, conditionals, loops, customizing environment.