

16CS302 WEB TECHNOLOGIES

Hours Per Week :

L	T	P	C
3	1	2	5

Total Hours :

L	T	P	CS	WA/RA	SSH	SA	S	BS
45	15	30	5	5	40	8	5	2



Course Description and Objectives:

This course offers the basic concepts used to develop static web pages and it also provides knowledge of Internet programming concepts, Web Servers and Web Application Servers, Design Methodologies with concentration on Object-Oriented concepts. The objective of this course is to build web applications using ASP and client side script technologies and also to build XML applications that span multiple domains.

Course Outcomes:

The student will be able to:

- develop a dynamic webpage using Java script and DHTML.
- write a well formed / valid XML document.
- connect a Java program to a DBMS and perform insert, update and delete operations on DBMS table.
- write a server side Java application called Servlet to catch form data sent from client, process it and store it in the database.
- write a server side Java application called JSP to catch form data sent from client and store it in the database.

SKILLS:

- ü Perform client side validation using Java script.
- ü Store and retrieve data using JDBC.
- ü Generate dynamic contents using Servlets.
- ü Generate dynamic contents using JSPs.
- ü Overcome problems in Servlets and JSP using Struts Programs.
- ü Develop a working system of web application or web site.

ACTIVITIES:

- Choose a real time problem to develop a web application or web site.
- Identify number of web pages to be created.
- Choose a template for the web site.
- Develop each web page using the template and HTML, CSS languages.
- Install a web server like tomcat.
- Publish the developed web pages to the web server.
- Identify which pages from the above web site needs to be dynamically generated.
- Upgrade those pages to either servlets or JSP.
- Connect to DBMS.

UNIT - 1**L-09,T-03**

INTRODUCTION TO HTML AND JAVASCRIPT: HTML- HTML Common tags, Block level and inline Elements, Lists, Tables, Images, Forms, Frames, Cascading style sheets, CSS Properties; Java Script-Introduction to Java script, Objects in Java script, Dynamic HTML with Java script.

UNIT - 2**L-09,T-03**

JDBC: Data base, Database schema, A brief overview of the JDBC process, JDBC driver types, JDBC Packages, Database connection, Associating the JDBC-ODBC bridge with database, Creating, Inserting, Updating and deleting data In database tables, Result set, Metadata.

UNIT - 3**L-09,T-03**

WEB SERVERS AND SERVLETS: Tomcat web server, Introduction to Servlets, Advantage of servlets over "Traditional" CGI, Basic servlet structure, Simple servlet generating plain text, Compiling and installing the servlet, Invoking the servlet, Lifecycle of a servlet, The servlet API, Reading servlet parameters, Reading initialization parameters, Context parameters, Handling Http request & responses, Using cookies-session tracking, Servlet with JDBC.

UNIT - 4**L-09,T-03**

INTRODUCTION TO JSP: The Problems with servlet, The anatomy of a JSP Page, JSP Processing, JSP application development, Generating dynamic content, Using scripting elements, Implicit JSP objects, Declaring variables and methods, Sharing data between JSP pages, Users passing control and data between pages, JSP application design with JDBC, JSP application design with MVC.

UNIT - 5**L-09,T-03**

SEMANTIC WEB THE FUTURE OF THE INTERNET: Introduction, The syntactic web, The semantic web, How the semantic web will work, What the semantic web is not, What will be the side effects of the semantic web.

ONTOLOGY IN COMPUTER SCIENCE: Defining the term ontology, Differences among taxonomies, thesauri, ontologies, taxonomies versus ontologies, Thesauri versus, Classifying ontologies, Classifying ontologies according to a semantic spectrum, Classifying ontologies according to their generality, Classifying ontologies according to the information represented, Web ontology description languages, Ontologies, Categories, Intelligence.

KNOWLEDGE REPRESENTATION IN DESCRIPTION LOGIC: Introduction, An informal example, The family of attributive languages, Concept descriptions; Terminologies - Assertions, Inference problems, Inference problems for concept descriptions inference problems for assertions.

LABORATORY EXPERIMENTS**Course Outcomes:**

Student will be able to:

- understand computers communication over network.
- send data to and from a server.
- create a web page and display it on browser.
- develop a web site.

List of Experiments:

Total Hours: 30

1. Create a HTML page having four frames named
 - a. top
 - b. center
 - c. bottom
 - d. left

The top frame should contain company logo and title. The bottom frame should contain copy right information. The left frame should contain various links like Home, Products, Services, Branches, About us, etc. When clicked on those links, the contents should appear in the display on to center frame.

2. Create a HTML document to demonstrate Form Elements that includes Form, input-text, password, radio, checkbox, hidden, button, submit, reset, label, text area, select, option, file upload.
3. Write a HTML program with at least two <h1>, two images, two buttons and appropriate CSS to display
 - a. All <h1> with font-size 12pt, and bold in Verdana font using Inline CSS.
 - b. All with border color yellow, thickness 10px using Document Level CSS
 - c. All <input type='button'> should change background color to red on mouse over them using External CSS.
4. Design a HTML page having a text box and four buttons viz Factorial, Fibonacci, Prime, and Palindrome. When a button is pressed an appropriate java script function should be called to display the following:
 - a. factorial of that number
 - b. fibonacci series up to that number
 - c. prime numbers up to that number
 - d. is it palindrome or not?
5. Write Java script programs to demonstrate the following objects with atleast five methods:
 - a. Math.
 - b. String.
 - c. Array.
 - d. Date.
6. Write a Java script program to display message on OnBlur and OnFocus events.
7. Create an XML document where CSEBooks is the root tag, it consists of 5 books named as(book1, book2, book3, book4, book5) whose copies of books are 10 and provide the child tag such as author, title, pages, price for all books.
8. For the above program, provide an associate DTD.
9. Create an XML document where automobiles is the root tag, it consists of 5 vehicles

named as (vehicle1, vehicle2, vehicle3, vehicle4, vehicle5) and use attributes type, model, engine number, color, cc.

10. For the above program, provide an associated Schema.
11. Write a Java program to connect to a database server using JDBC and insert 10 students information of user choice in to student table.
12. Write a Java program to display all records in the student table.
13. Develop a simple Servlet to display Welcome to Servlet.
14. Develop a Servlet to validate user name and password with the data stored in Servlet configuration file. Display authorized user if she/he is authorized else display unauthorized user.
15. Demonstrate Life cycle of Servlet.
16. Develop a Servlet to validate user name and password stored in the database. Display authorized user is she/he is authorized else display unauthorized user.
17. Write a Servlet program to store student details sent from registration form in to the database.
18. Write JSP Program to store student information sent from registration page into database.
19. Develop a program to validate username and password that are stored in database using JSP.
20. Write an appropriate JSP page to insert, update and delete data in student table in a single application with proper linking of JSP pages and session management.

TEXT BOOKS:

1. Jon Duckett, "Beginning Web Programming with HTML, XHTML, and CSS", WROX, 2nd edition, 2008.
2. Marty Hall and Larry Brown, "Core Servlets and Java Server pages Vol. II", 2nd edition, Pearson, 2007.
3. K K Breitman, M A Casanova and W Truskowski, "Semantic Web: Concepts, Technologies and Applications", Springer, 2009.

REFERENCE BOOKS:

1. Robert W Sebesta, "Programming the World Wide Web", 4th edition, Pearson, 2006
2. Paul J Deitel, Harvey M Deitel and Abbey Deitel, "Internet and World Wide Web – How to program", 5th edition, Deitel, 2009.