Web Technology I

Course Title: Web Technology I   **Credit: 3**

Course No: CSIT.316   **Number of period per week: 3+3**

Nature of the Course: Theory + Lab

Year: Third, Semester: Fifth

Level: B. Sc. CSIT

1. Course Introduction

This course presents many of the core technologies that the Web is based upon. These core technologies include: Hypertext Markup Language, Cascading Style Sheets, XML and XML Schemas, and Client-side Programming Using JavaScript. Besides this, it presents basic concepts behind HTTP and Server-side Programming.

2. Objectives

On completion of this course students should be able to:

- describe the components of the Internet and Web technology;
- explain the basics of Internet technology, such as http and the World Wide Web, HTML, XML, and Java Scripts;
- create WWW pages to serve as front-end to client/server, Internet applications;
- effect client-side programming using tools such as JavaScript

3. Specific Objectives and Contents

Specific Objectives	Contents
• Understand WWW and internet fundamentals • Explore the concepts of IP addresses and domain names • Explain HTTP and other application layer protocols	**Unit I: Web Fundamentals** **(4 Hrs)** 1.1. Internet and its services, World Wide Web, URL, Web Server, Web Browser, Web Page, Web Site, Dynamic and Static Pages, ISP, W3C 1.2. IP addresses and Domain Names, Web Hosting and its Types 1.3. HTTP: Overview, Parameters, Messages, Requests, Response, Methods, Status Codes, Header Fields 1.4. Overview of FTP, SMTP, MIME, POP
• Understand HTML elements, tags and attributes • Discuss different HTML tags and their attributes • Apply HTML tags and attributes to design web pages	**Unit II: Hypertext Markup Language** **(6 hr)** 2.1. HTML Overview, Tags, Elements, Attributes, Structures of HTML Documents 2.2. Basic Tags: Headings, Paragraph, Center, Line Break, Horizontal Line, Non-breaking Spaces, Pre 2.3. Formatting Tags, Phrase Tags, Meta Tag, Comments, Images, Tables, Lists

• Create web pages having different layouts	2.4. Hyperlinks (Text Links, Image Links, Email Links, Download Links), Intra-page Links, Frames, Iframes, Blocks, Background, Color, Fonts, Forms, Embedded Multimedia, Marquees, Header 2.5. HTML Layouts: Using Tables, DIV & Span Tags, HTML Style Sheets, HTML Entities, Events
• Understand XHTML and HTML5 • Differentiate HTML from XHTML • Explain features of HTML5 and XHTML	**Unit III: XHTML & HTML5** **(4 hr)** 3.1. XHTML: Overview, Syntax, HTML vs. XHTML, Doctypes, Attributes, Validations, Events 3.2. HTML5: Overview, Features, Syntax, Document Structure, Web Forms 2.0, MathML, Canvas, Audio, Video, Events
• Understand concepts and importance of CSS and Web page designing • Apply different selectors while creating style sheets • Apply different formatting features with CSS • Explain CSS Box model, and dimensions	**Unit IV: Cascading Style Sheets** **(6 hr)** 4.1. Introduction, Advantages, Syntax, Inserting Style Sheets: Inline, Internal, External 4.2. Selectors: Type Selector, Universal Selector, Descendent Selector, Class Selector, ID Selector, Child Selector, & Attribute Selector, Grouping Selectors 4.3. CSS Colors, Background, Fonts, Text, Images, Links, Tables, Borders, Margins, Lists, Padding, Cursor, Outlines, Dimensions, Scrollbars, CSS Box Model 4.4. CSS Visibility, Positioning, Layers, Pseudo-classes and Pseudo-elements
• Understand role of java script in web page designing • Discuss syntax and features of java script • Apply java script in handling cookies and • Understand DOM tree and its traversal • Handle different events using java script	**Unit V: JavaScript (6 Hrs)** 5.1. Overview, Why Java Script?, Syntax, Variables, Operators, Screen Output and Keyboard Input, Selection Statements, Loops 5.2. Functions, Events, Handling Cookies, Page Redirect, Dialog Boxes 5.3. JavaScript Objects: Number, Boolean, String, Array, Date, Math, RegExp 5.4. Events & Event Handling, DOM, Element Access in JavaScript, DOM Tree Transversal & Modification
• Validate web forms by using java script • Design dynamic pages using java script • Exemplify error handling with java script • Explore the concepts behind jquery	**Unit VI: Advanced JavaScript (6 Hrs)** 6.1. Form Validation & Pattern Matching, Error Handling, Animations, Image Map 6.2. Positioning Elements, Moving Elements, Element Visibility, Changing Colors & Fonts 6.3. Dynamic Content, Stacking Element, Locating Cursor, Reacting to Mouse Click, Dragging and Dropping Element 6.4. Jquery: Overview, Basics, Selectors, Attributes, Traversing, DOM, Events, Interactions
• Understand purpose of XML	**Unit VII: Extensible Markup Language (8 Hrs)**

	and XML tags • Discuss XML DOM and XML processing • Describe XML syntax, features and Validations • Create XML documents and DTD • Write XML schema and understand its importance • Explore concepts behind Xpath, and XSLT	7.1. XML Overview and Syntax, XML Documents, XML Tags, Elements and Attributes, Comments, Character Entities, White Spaces, XML Processing, XML CSS, Encoding and Validation 7.2. XML DOM, XML Tree Structure, XML Namespaces, XML Processors 7.3. DTD Overview, Syntax, Components, Entities and Validations 7.4. XML Schema Overview, Syntax, Validation, Simple and Complex Types, String, Date Time, Numeric Types 7.5. Xpath Overview, Expression, Nodes, Absolute and Relative Paths, Axes, Operators, Wildcard, Predicates 7.6. XSLT Overview, Syntax, template, value-of, for-each, sort, if, choose
	• Discuss different web services and standards • Explain need and importance of server side scripting • Discuss Ruby and Ruby on Rails • Apply Rails for form processing and database manipulation	**Unit VII: Web Services & Server Side Scripting (5 Hrs)** 7.7. Web Services: Introduction, Characteristics, Components, Standards, Examples 7.8. Server Side Scripting Languages, Overview, Examples, Web Servers 7.9. Introduction of Ruby, Introduction to Rails Framework, Document Request, Sample Form Processing with Rails, Database Connectivity

Evaluation System

Undergraduate Programs							
External Evaluation	**Marks**	**Internal Evaluation**	**Weight age**	**Marks**	**Practical**	**Weight age**	**Mark**
End semester examination		Assignments	20%		Practical Report copy	25%	
(Details are given in the separate table at the end)	60	Quizzes	10%	20	Viva	25%	20
		Attendance	20%		Practical Exam	50%	
		Internal Exams	50%				
Total External	60	Total Internal	100%	20		100%	20
Full Marks 60+20+20 = 100							

External evaluation
1. **End semester examination:**

It is a written examination at the end of the semester. The questions will be asked covering all the units of the course. The question model, full marks, time and others will be as per the following grid.

2. **External Practical Evaluation:**
   After completing the end semester theoretical examination, practical examination will be held. External examiner will conduct the practical examination according to the above mentioned evaluation. There will be an internal examiner to assist the external examiner. Three hours time will be given for the practical examination. In this examination Students must demonstrate the knowledge of the subject matter.

Full Marks: 100, Pass Marks: 45, Time: 3 Hrs

Nature of question	Total questions to be asked	Total questions to be answered	Total marks	Weightage
Group A: multiple choice	20	20	$20 \times 1 = 20$	60%
Group B: Short answer type questions	8	6	$6 \times 8 = 48$	60%
Group C: Long answer type questions	3	2	$2 \times 16 = 32$	60%
			100	100%

Each student must secure at least 50% marks in internal evaluation in order to appear in the end semester examination. Failed student will not be eligible to appear in the end semester examinations.

Internal evaluation

Assignment: Each student must submit the assignment individually. The stipulated time for submission of the assignment will be seriously taken.

Quizzes: Unannounced and announced quizzes/tests will be taken by the respective subject teachers. Such quizzes/tests will be conducted twice per semester. The students will be evaluated accordingly.

Attendance in class: Students should regularly attend and participate in class discussion. Eighty percent class attendance is mandatory for the students to enable them to appear in the end semester examination. Below 80% attendance in the class will signify NOT QUALIFIED (NQ) to attend the end semester examination.

Presentation: Students will be divided into groups and each group will be provided with a topic for presentation. It will be evaluated individually as well as group-wise. Individual students have to make presentations on the given topics.

Mid-term examination: It is a written examination and the questions will be asked covering all the topics in the session of the course.

Discussion and participation: Students will be evaluated on the basis of their active participation in the classroom   discussions.

Instructional Techniques: All topics are discussed with emphasis on real-world application. List of instructional techniques is as follows:

- Lecture and Discussion
- Group work and Individual work
- Assignments
- Presentation by Students
- Quizzes
- Guest Lecture

Students are advised to attend all the classes and complete all the assignments within the specified time period. If a student does not attend the class (es), it is his/her sole responsibility to cover the topic(s) taught during that period. If a student fails to attend a formal exam/quiz/test, there won't be any provision for re-exam. Unless and until the student clears one semester he/she will not be allowed to study in the following semesters.

Laboratory Work

Student should write programs and prepare lab sheet for all of the units in the syllabus. Students should be able to write HTML and CSS scripts by using various tags & different controls and able to design web pages having different layouts. Besides this, students should be able to perform client side validation by using java scripts and should also be able to create XML documents, DTDs, & XML schemas. The lab work should be practiced for minimum of 3 lab hours per week.

Prescribed Text

1. Robert. W. Sebesta, "*Programming the World Wide Web*", Fourth Edition, Pearson Education, 2007.

References

1. Deitel, Deitel, Goldberg, "*Internet & World Wide Web How To Program*", Third Edition, Pearson Education, 2006.
2. Jeffrey C.Jackson, "Web *Technologies--A Computer Science Perspective*", Pearson Education, 2006.
3. Kogent, *HTML5 Black Book: Covers CSS3, Javascript, XML, XHTML, AJAX, PHP and JQuery*, Wiley