

Course Title: **Web Technology**
 Course No.: ICT. Ed. 437
 Level: Bachelor
 Semester: Third

Program: BICTE
 Nature of course: Theoretical + Practical
 Credit Hour: 3 hours (2T+1P)
 Teaching Hour: 80hours (32+48)

1. Course Description

The aim of the course is to help students gain knowledge in the basic concepts of web development and build skills to develop web based application using the web tools, scripting and server side language. The goal of course is to provide application developers easy and complete understanding design of web page and integrated with MySQL and PHP which are most popular open source technologies.

2. General Objectives

After the completion of this course, the students should be able to:-

- To gain an understanding of the theories and concepts underlying web development
- To gain the skill of HTML structures and functionality.
- To develop the web based application with client side control mechanism
- To build skill to mapping of web design structure to coding using CSS
- To develop web application with server site scripting language.

3. Course Outlines:

Specific Objectives	Contents	
<ul style="list-style-type: none"> • Identify and explain different categories of HTML elements • Working with HTML tag for Text, List, Link, Table, Form and multimedia contents 	<p>Unit 1: Introduction to HTML</p> <p>1.1 Getting Started with a Simple Web Page</p> <p>1.2 Block and Inline Elements</p> <p>1.3 Presentation and Phrase Elements</p> <p>1.4 Empty and Non-empty Elements</p> <p>1.5 HTML character entities</p> <p>1.6 HTML List, Table, Links (Internal and External)</p> <p>1.7 Multimedia Contents (Image, Audio, Video and YouTube Player)</p> <p>1.8 Form Elements (text, password, file, radio, checkbox, textarea, hidden, select option, button, date, email)</p>	12
<ul style="list-style-type: none"> • Identify and explain different CSS writing styles • Make use of CSS selectors to narrow down the element selection • Apply the CSS properties to design different HTML elements 	<p>Unit 2: Cascading Style Sheet</p> <p>2.1 How CSS fit with HTML page?</p> <p>2.2 Inline, Internal and External CSS</p> <p>2.3 CSS Selectors</p> <p>2.4 CSS Properties for text, list, table, background, link formatting</p> <p>2.5 Pseudo classes: before, after, first-line, first-letter, hover, focus, active</p> <p>2.6 Custom list numbering using content property</p> <p>2.7 CSS Box Model: margin, padding and border</p> <p>2.8 Creating Layouts with display, position and float property</p> <p>2.9 Fixed and Liquid design of the page</p>	12

<ul style="list-style-type: none"> Apply CSS properties to create simple page layout 		
<ul style="list-style-type: none"> Integrate JavaScript within HTML documents Build interactive site components Make use of different JavaScript objects Demonstrate form validation concept 	<p>Unit 3: Client Side Programming with JavaScript</p> <p>3.1 How JavaScript fits into a web page?</p> <p>3.2 JavaScript Basics: Variable, operators,</p> <p>3.3 Understanding the Document Object Model (DOM)</p> <p>3.4 Accessing HTML Elements with getElementById(), getElementsByClassName(), getElementsByTagName(), getElementsByName()</p> <p>3.5 JavaScript objects: window, document, array, string, math, date</p> <p>3.6 Writing scripts to handle events</p> <p>3.7 Using JavaScript to validate user inputs</p>	<p>15</p>
<ul style="list-style-type: none"> Explain the basic concept of server side scripting Apply php variables, control statements Make use of functions and files Demonstrate to handle array, string, date data 	<p>Unit 4: Server Side Programming with PHP</p> <p>4.1 How PHP fits into a web page?</p> <p>4.2 Variables and constants</p> <p>4.3 Operators</p> <p>4.4 Working with text and numbers</p> <p>4.5 Making decisions with control statements (if, switch, loop)</p> <p>4.6 Working with arrays, strings, datetime and files</p> <p>4.7 Functions</p>	<p>10</p>
<ul style="list-style-type: none"> Design single and multipage web form to collect, store and disseminate data across web site Apply the storing function to save collected data in CSV file 	<p>Unit 5: Working with Web Form</p> <p>5.1 Creating simple web form</p> <p>5.2 Creating multipage web form</p> <p>5.3 Retrieving form data using post and get method</p> <p>5.4 Storing form data to CSV file</p> <p>5.5 Reading CSV file and displaying content as html table</p>	<p>12</p>
<ul style="list-style-type: none"> Identify and explain the use of database Demonstrate the basic database operations: CRUD Make use of session and cookie variables to remember web users Develop Bulk import facility in database for users to save time in data entry 	<p>Unit 6: Database and PHP</p> <p>6.1 Introduction to database</p> <p>6.2 Create, Retrieve, Update and Delete operation in database</p> <p>6.3 Connecting to database through PHP mysqli_connect()</p> <p>6.4 Executing Queries with mysqli_query()</p> <p>6.5 Fetching data with mysqli_fetch_assoc() and mysqli_fetch_array()</p> <p>6.6 Creating user registration and login feature</p> <p>6.7 Remembering users with cookies and session</p> <p>6.8 Converting database table to CSV file using fputcsv()</p> <p>6.9 Reading CSV file and reflecting the contents in database</p>	<p>15</p>

<ul style="list-style-type: none"> Reflecting database record into the CSV file for distribution purpose 		
<ul style="list-style-type: none"> Assign dynamic web site project 	Unit 7: Project Work Assignment	4

4. Instructional Techniques

The instructional techniques for this course are divided into two groups. First group consists of general instructional techniques applicable to most of the units. The second group consists of specific instructional techniques applicable to particular units.

4.1 General Techniques

Reading materials will be provided to students in each unit. Lecture, Discussion, use of multi-media projector, brain storming are used in all units.

4.2 Specific Instructional Techniques

Demonstration is an essential instructional technique for all units in this course during teaching learning process. Specifically, demonstration with practical works will be specific instructional technique in this course. The details of suggested instructional techniques are presented below:

Units	Practical Activities
Unit 1: Introduction to HTML	<ul style="list-style-type: none"> Selection of HTML editors Design Web page to describe web skeleton Demonstrate Text formatting Create list and insert image Create hyper link Create table Create Form Create page with multimedia contents
Unit 2: Cascading Style Sheet	<ul style="list-style-type: none"> Use inline CSS Use internal CSS Use external CSS Apply CSS selectors to select HTML elements Design Text formatting Create Fixed and Liquid page layouts
Unit 3: Client Side Programming with JavaScript	<ul style="list-style-type: none"> Demonstrate data types and variables Use function to accept the information Demonstrate control structure Apply JavaScript objects: array, string, date, window, document Demonstrate events handling Validation of form data
Unit 4: Server Side Programming with PHP	<ul style="list-style-type: none"> Use PHP variables and constants Create decision making programs using control statements Demonstrate use of array functions, string functions, date functions and file handling functions

Unit 5: Working with Web Form	<ul style="list-style-type: none"> • Design and develop web forms to collect user data • Store the collected data in CSV file • Read CSV file and display data
Unit 6: Database and PHP	<ul style="list-style-type: none"> • Create a database connection • Insert, update, delete and retrieve data through PHP • Use session and cookie variable to memorize visitors • R/W CSV file from/to reflect database
Unit 7: Project Work Assignment	<ul style="list-style-type: none"> • Prepare and Involve students to design and develop web application using HTML, CSS, JavaScript, PHP and database.

5. Evaluation

Evaluation of students' performance is divided into parts: Internal assessment (theory and practical and internal external examinations (theory and practical). The distribution of points is given below:

Internal Assessment Theory	Internal Assessment Practical	Semester Examination (Theoretical exam)	External Practical Exam/Viva	Total Points
25 Points	15 Points	40 Points	20 Points	100 Points

Note: Students must pass separately in internal assessment, external practical exam and semester examination.

5.1 Internal Assessment (25 Points) of Theoretical Part

Internal assessment will be conducted by subject teacher based on following criteria:

Attendance and learning Activities	5 points
First assignment (Written assignment)	5 points
Second assignment (Project work with presentation)	10 points
Third assignment/written examination	5 point
Total	25 points

5.2 Internal Assessment (15 Points) of practical part

Internal practical assessment will be conducted by subject teacher based on following criteria:

Attendance and learning Activities	5 points
Practical work/project work/lab work	10 points
Total	15 points

5.3 Semester Final Examination (40 Points) theoretical part

Examination Division, Dean office will conduct final examination at the end of semester.

Objective question (Multiple choice questions 10 x 1 point)	10 Points
Subjective questions (6 questions x 5 marks with 'OR' two questions)	30 Points

Total points	40
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5.4 Practical Exam/Viva (20 Points)

Examination Division, Office of the Dean will appoint an external examiner (ICT teachers working another campus) for conducting practical examination

Items	Points
Evaluation of Record Book	4
Project work/practical work presentation/skill test	10
Viva	6
Total	20

6. Recommended books and References materials (including relevant published articles in national and international journals)

Recommended Books:

Kyrnin, J. & Meloni, J.C. (2019). *Sams teach yourself HTML, CSS and JavaScript All in One* (3rd Ed.). Pearson.

Nixon, R. (2021). *Learning PHP, MySQL & JavaScript: A Step-by-Step Guide to Creating Dynamic Websites* (6th Ed.). O' Really Media.

Sklar, D. (2004). *Learning PHP 5 (1st Ed.)* O' Really Media.