GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Engineering
Level: UG
Subject Code: BE04052011
Subject Name: Web Programming

w. e. f. Academic Year:	2024-25
Semester:	4
Category of the Course:	Professional Core Course

Prerequisite:	Programming, Basic knowledge of Internet and Client Server system is required
Rationale:	Today's world is driven by Internet based applications. The rationale behind this course is to impart the knowledge of web programming among students. This course covers web programming for both client-side and server-side to develop complete web based applications for various requirements.

Course Outcomes:

Sr. No.	CO statement	Marks% weightage
CO-1	Use the various HTML tags with appropriate styles to display the various types of contents effectively.	20%
CO-2	Develop the dynamic web pages using HTML, CSS and JavaScript by applying web design principles to make pages effective.	20%
CO-3	Use modern JavaScript concepts like ES6 features for efficient coding.	20%
CO-4	Develop the server side PHP scripts using various features for creating customized web services.	25%
CO-5	Write the server side scripts for designing web based services with database connectivity.	20%

Teaching and Examination Scheme:

Teaching - Learning Scheme (in Hours per Semester)					Total Credits = TH/30	Assessment Pattern and Marks					Total Marks
						Theory		Tutorial / Practical			
L	T	P	PBL*	TH		ESE (E)	PA (M)	PA (I)	PBL (I)	ESE (V)	
45	0	30	15	90	03	70	30	20	30	50	200

Content:

Sr. No.	Content	Total Hrs
1	**Introduction to WEB & Web Design** Basics of WWW, HTTP protocol, Client-Server architecture, Introduction to web server installation and configuration Concepts of effective web design, Web design issues including Browser, Bandwidth and Cache, display resolution, Look and Feel of the Website, Page Layout and linking, User centric design, Sitemap, Planning and publishing website, Designing effective navigation	06

2	**Basics of HTML and CSS** Structure of HTML page, HTML tags for data formatting, tables, links, images, meta tags, frames, html form tags, media, APIs, HTML5 tags and validation. Need for CSS, Syntax and structure, CSS rules for Backgrounds, Colors and properties, manipulating texts, Fonts, borders and boxes, Margins, Padding Lists, CSS Positioning. Animations, Tool-Tips, Style images, Variables, Media Queries, Wildcard Selectors (*, ^ and $) in CSS, Working with Gradients, Pseudo Class, Pseudo elements, basic of frameworks like Bootstrap	08
3	**Client-Side Scripting using JavaScript** Syntax of JavaScript, Execution of JavaScript, Internal, Embedded and External JavaScript, JavaScript: variables, arrays, functions, conditions, loops, Pop up boxes, JavaScript objects and DOM, JavaScript inbuilt functions, JavaScript validations and Regular expressions, Event handling with JavaScript, Callbacks in JavaScript, Function as arguments in JavaScript.	10
4	**Advanced JavaScript (ES6+)** let/const, arrow functions, classes, promises, async/await, modules, destructuring, spread/rest operators, Introduction to JSON, JSON handling, Include API calls using Fetch/Axios	07
5	**Server-Side Programming with PHP** Difference between Client side and Server-side scripting, Structure of PHP page, PHP Syntax: variables, decision and looping with examples, PHP and HTML, Arrays and Functions, String, Form processing, File uploads, Dates and time zone, Working with Regular Expressions, Exception Handling, Basic concepts of Session and State, State management using query string, hidden form controls, Cookies, Session variables	10
6	**Database programming with PHP and MySQL** Basic MySQL commands, PHP functions for database connectivity, Implementation of CRUD operations using PHP, Prepared Statement and stored procedure execution in PHP	04
	TOTAL	**45**

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
7	**14**	**21**	**7**	**7**	**14**

R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Web Technology, Moseley and Savaliya, Wiley India
2. HTML & CSS: Design and Build Websites – Jon Duckett, John Wiley & Sons
3. HTML 5 Black Book 2Ed, Kogent Learning Solutions Inc, dreamtech
4. Learning PHP, MySQL, JavaScript, CSS & HTML5 – Robin Nixon, O'Reilly
5. Web Design, Joel Sklar, Cengage Learning
6. Learning PHP, MySQL, JavaScript, CSS & HTML5, 3rd Edition, Robin Nixon, O'Reilly
7. A Step-by-Step Guide to Creating Dynamic Websites by Robin Nixon Publisher: O'Reilly Media
8. Internet and World Wide Web How to program, P.J. Deitel & H.M. Deitel, Pearson
9. JavaScript for impatient programmers, Dr. Axel Rauschmayer
10. PHP: The Complete Reference by Steven Holzner, McGrawhill

List of Experiments:

Practical list should be prepared based on the content of the subject with following guidelines in mind.

1. Entire syllabus should be covered.
2. Practical list should be designed with real life examples.
3. List should be prepared to cover individual concepts and integration of different concepts on real life problems.

Major Equipment: Computers with Internet, Visual Studio Code or any IDE

List of Open Source Software/learning website:

1. HTML:
   a. https://developer.mozilla.org/en-US/docs/Web/HTML
   b. https://www.w3schools.com/html/
   c. https://www.tutorialspoint.com/html/index.htm

2. CSS:
   a. https://developer.mozilla.org/en-US/docs/Web/CSS
   b. https://www.manning.com/books/css-in-depth
   c. https://www.w3schools.com/css/
   d. https://www.tutorialspoint.com/css/index.htm

3. Java Script:
   a. https://javascript.info/
   b. https://github.com/getify/You-Dont-Know-JS
   c. https://www.w3schools.com/js/
   d. https://www.tutorialspoint.com/javascript/index.htm

4. PHP:

a. https://www.w3schools.com/php/
b. https://www.tutorialspoint.com/php/index.htm

- **List of suggested activities for Problem Based Learning:**

Sl. No.	Name of the activity	No. of hours	Evaluation Criteria
1	Assignment writing. Numerical based assignment is preferable.	5 assignments of 3h each. Total = 15h	Based on the assignment submitted.
2	Problem solving/Coding using C, C++, Python, SCILAB, MATLAB, MS-EXCEL or any other relevant software	5 small coding-based problems of 3h each. Total = 15h	Based on the coding solution submitted.
3	Technical Video based learning related to the subject	Duration of video = 5h Report preparation & Presentation = 10h Total = 15h	Report /presentation based on the video learning outcomes.
4	Discussion on research paper based on relevant subject	3 research paper = 15h	Summarize research paper and evaluation critical parameters
5	Poster/chart/power point preparation on technical topics	Duration = 10 h	Based on poster/chart preparation and presentation skills
6	Application/Software development	Duration = 15 h	Depending on the complexity of the Application/Software
7	Group Discussion on emerging/trending technical topics based on subject	Duration = 1 h each	Based on performance in group discussion, technical depth, knowledge etc.
8	Seminar / Presentation	Duration for study and preparation=5h Report writing=3h Presentation=2h Total=10h	Topic can be selected technical content beyond syllabus
9	Real world case studies-based learning	Duration of data collection/study = 5h Report preparation = 10h Total = 15h	Based on in-depth study, technical depth, data collected, fact finding, etc.
10	Working/non-working model on technical topics	Working = 12 h Non- working = 8 h	Based on inter department/external evaluation
11	Self-learning on-line course	Minimum duration of the course should be 15h.	Examination based assessment at the end of course. Based on the certificate

			produced.
12	Complex problem solving	Maximum 3 problem. Study of the problem and solution finding, Total = 15h	Based on the depth of the solution submitted.
13	Industry/Research laboratory visit	Visit = 5h, Report preparation = 5h Total = 10h	Based on report submitted. Report should contain observations and calculations based on industry/ lab data.
14	Videos on Industrial safety aspects based on subject	Duration of video = 5h Report preparation = 5h Total = 10h	Based on quiz/report submitted
15	Industrial exposure for 2-3 days to observe and provide tentative solutions on society/environment /health/any other issue	Duration = 15 h for industrial exposure Problem identification and tentative solution = 10 h Total = 20 h	Based on evaluation of critical problems and solutions

Note:

- All the suggested activity should be related to the subject.
- Min 3 activities must be carried out as per the availability of faculties and students.
- The number of hours is suggestive. Faculty can sub-divide the number of hours based on the activity. However, total number of hours is fixed.
- Rubrics for the evaluation can be prepared by the faculty.