GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering
Level: Diploma
Branch: Computer Engineering
Subject Code: DI04007011
Subject Name: Introduction to Web Development

W.E. F. Academic Year:	2025-26
Semester:	4th
Category of the Course:	PCC

Prerequisite:	Basic Knowledge of Computer Programming, HTML, CSS and Internet.
Rationale:	Web development has become an essential competency in the digital era, where websites and applications play a central role in communication, commerce, and information sharing. This subject provides students with an introduction to the principles and practices of developing dynamic and interactive websites using PHP. PHP is a foundational server-side language that powers a large percentage of websites, including major platforms like Word Press and Facebook. PHP enables the creation of database-driven applications and supports the functionality to build everything from small blogs to large-scale e-commerce sites. Through this course, students will gain an understanding of client-server interaction, form processing, data handling, and integration with databases. The knowledge and skills acquired in this subject will serve as a foundation for more advanced studies and will enhance employability in the field of web development. Furthermore, it will equip students with the capability to design and implement their own functional web applications for academic, professional, or entrepreneurial purposes.

Course Outcome:

After completion of the course, students will be able to:

No	Course Outcomes	RBT Level
01	Apply basic PHP syntax and structures to create simple web pages.	Apply
02	Use PHP functions, arrays, and strings to write efficient code.	Apply
03	Handle and validate user inputs using forms in PHP.	Apply
04	Manage user data across multiple pages using sessions and cookies in PHP.	Apply
05	Connect PHP with the MySQLi Database and perform common database operations.	Apply

Revised Bloom's Taxonomy (RBT)

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Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial/Practical		
L	T	PR	C	ESE (E)	PA (M)	PA (I)	ESE (V)	
0	2	4	4	0	0	20	30	50

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Introduction to PHP ● Introduction to PHP, History and Advantages of PHP ● Client-Server Environment, 3-Tier Architecture for a Web Application ● Installation and configuration of XAMPP/WAMP/LAMP server ● Embedding PHP in web pages: File Structure and Syntax ● PHP echo and print statements, Comments ● PHP Datatypes, Variables, Constants, and Expressions ● PHP Operators ● PHP Conditional Structures (if, if-else, else-if, switch-case) ● PHP Looping Structures (for, while, do…while, foreach), break and continue statements	12	20
2.	PHP Functions, Arrays and Strings ● Defining and calling user-defined PHP functions ● Arguments, default arguments, passing arguments by value and reference, returning value ● PHP Variable scopes, accessing global variables in functions ● Using PHP built-in functions: Mathematical functions, Date-time functions ● Introduction to PHP Arrays and types of arrays: Indexed, Associative and Multidimensional arrays ● Creating, manipulating, and traversing different types of arrays ● Array-related library functions: count, list, in_array, current, next, previous, end, each, sort, array_merge, array_reverse	12	20

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	● PHP Strings: single quoted, double quoted, heredoc syntax, nowdoc syntax ● Creating & accessing, searching, replacing, and formatting strings, encoding and escaping ● String-related library functions: chr, ord, strtolower, strtoupeer, strlen, ltrim, rtrim, trim, substr, strcmp, strcasecmp, ctrops, strops, stristr, str_replace, strrev		
3.	Working with Data and Forms ● Creating Forms using Form Controls: text box, text area, radio button, check box, button, list, dropdown, upload, color, date, etc. ● Submitting form data using GET and POST ● Reading form data using $_GET, $_POST, $_REQUEST, $_FILES, $_SERVER, $_ENV, $_GLOBALS ● Validate form data using: strip(), isset(), empty(), isnumeric(), strlen(), htmlspecialchars(), filter_var(), etc. ● Working with directories in PHP ● Reading and writing text files in PHP ● Uploading and downloading files in PHP ● Sending plain text email, HTML email, and attachments in email	10	15
4.	Working with Cookies & Sessions, Exception Handling ● Cookies: creating and setting cookies, accessing cookies and destroying cookies ● Session: creating a session, setting session variables, accessing session data, and destroying a session ● Exception Handling in PHP using try, throw, catch, and finally blocks	10	15
5.	Database Connectivity using MySQLi ● Introduction to Database Connectivity and MySQLi ● Managing database using phpMyAdmin ● Establishing Connection with Database and Executing MySQLi Queries ● Creating, altering and deleting tables ● Performing CRUD operations ● Preventing SQL Injection using prepared statements	16	30

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● Developing a simple MVC application with MySQLi and OOP			
	Total	**60**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
--- Not Applicable ---					

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

Sr. No.	Title of Book	Author	Publication with place, year, and ISBN
1	PHP: The Complete Reference	Steven Holzner	McGraw Hill Education ISBN-13: 978-0070223622
2	Head First PHP & MySQL: A Brain-Friendly Guide	Lynn Beighley, Michael Morrison	O'Reilly ISBN-13: 978-0596006303
3	Learning PHP, MySQL & JavaScript with j Query, CSS & HTML5	Robin Nixon	Shroff Publishers & Distributers Private Limited – Mumbai ISBN-13: 978-9352130153
4	PHP and MySQL Web Development	Laura Thomson, Luke Welling	Pearson Education ISBN-13: 978-9332582736
5	PHP Cookbook	David Sklar, Adam Trachtenberg	O'Reilly ISBN-13: 978-1449363758

(b) Open source software and website:

1. https://www.apachefriends.org/
2. https://www.php.net/
3. http://www.codecademy.com/tracks/php
4. https://www.phptutorial.net
5. http://www.tutorialspoint.com/php

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6. https://www.homeandlearn.co.uk/php/php.html
7. https://www.tutorialrepublic.com/php-tutorial/
8. https://www.geeksforgeeks.org/php-tutorials
9. https://www.freecodecamp.org/news/the-php-handbook/

Suggested Course Practical List:

1. Install and configure a local web server using XAMPP/WAMP/LAMP.
2. Create a web page using PHP that displays a welcome message.
3. Develop simple PHP web applications using variables, constants, and operators.
4. Develop PHP web applications using control structures.
5. Develop PHP web applications using looping structures.
6. Develop PHP web applications using user-defined functions.
7. Develop PHP web applications that demonstrate the use of indexed, associative arrays, and multidimensional arrays.
8. Develop PHP web applications to process data stored in arrays.
9. Develop PHP web applications to demonstrate array functions.
10. Develop PHP web applications to demonstrate string functions.
11. Develop a PHP web application to display a user registration form and show data filled out by the user after submission.
12. Update the Practical-10 web application to validate user data.
13. Develop a simple PHP web application to collect user feedback and store the feedback in a text file.
14. Develop a PHP web application to upload an image file into the server and display a thumbnail of the uploaded image.
15. Develop a simple PHP web application for newsletter subscription and send a confirmation email. (Plain & HTML email)
16. Develop a PHP web application to demonstrate the use of Session in PHP. (e.g. in a login system, the user should be able to view a protected page after logging in.)
17. Develop a PHP web application to demonstrate the use of Cookies in PHP.
18. Develop a PHP web application to demonstrate the use of Exception handling in PHP.
19. Perform database operations using phpMyAdmin (Create/delete database & tables and run SQL queries).
20. Develop a simple Blog web application that allows users to create, read, update, and delete blogs (CURD operations).
21. Develop a simple MVC web application using PHP for Contact Management with add, search, update, and delete operations (CURD operations with prevention of SQL Injection).

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22. Develop a simple To-Do List web application using PHP with the help of AI code generation tools such as GitHub Copilot, ChatGPT, Gemini, etc.
23. Develop a simple Inventory Management web application and host it on a web server.

List of Laboratory/Learning Resources Required:

1. Computer with the latest configurations with Windows/Linux OS.
2. XAMPP/WAMP/LAMP/MAMP servers.
3. Text editors such as VS Code, Sublime, Atom, etc.
4. Web Browsers such as Chrome, Firefox, Edge, Safari, etc.

Suggested Project List:

1. Develop a web application to send plain text emails, send HTML messages, and send mail with attachments.
2. Develop a web application to generate Word documents or PDFs automatically from an Excel file or a database.
3. Develop a web-based Library Management Application with add books, search books, issue books, and return books functionalities.
4. Develop a Two-Factor Authentication (2FA) system.
5. Develop a web application for e-commerce.
6. Develop a web application for the Restaurant Management System.
7. Develop a web application for the Hotel Management System.
8. Develop a web application for Movie reviews and suggestions.
9. Develop a web application for the Online Quiz System.
10. Develop a web application for the Student Feedback Management System.
11. Develop a web application for the Employee Pay Management System.
12. Develop a web-based ChatBot system using LLM APIs.
13. Develop a Fitness Club Management System.
14. Develop a web application for the Hospital Management System.
15. Develop a web application for the Online Blood Bank.
16. Develop an application to scrap website information.

Suggested Activities for Students:

a) Prepare a journal of practicals.
b) Undertake Micro/Mini-projects in groups.
c) Survey different web technologies and the websites that use them.
d) Register and attend various MOOCs available on Swayam, edX, Coursera, Udemy, etc. to further enhance their learning.

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e) Participate in coding competitions like hackathons, on CodeChef, etc.

f) Contribute to open-source web development projects.

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