

**GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)****Competency-focused Outcome-based Green Curriculum-2021 (COGC-2021)**

Semester-IV

**Course Title: Web Development using PHP**

(Course Code: 4341604)

Diploma programme in which this course is offered	Semester in which offered
Information Technology	4 <sup>th</sup> Semester

**1. RATIONALE**

PHP is a powerful tool for making dynamic and interactive database driven web pages. PHP is the widely-used as efficient open-source technology. The students of diploma in Information Technology as web developers would be able to write dynamic interactive web-based applications such as for online banking, ticket/hotels booking sites, E- Commerce using PHP and MYSQL database. After mastering this course, they may work as self-employed web page developer.

**2. COMPETENCY**

The course content should be taught and implemented with the aim to develop required skills in the students so that they are able to acquire following competency:

- **Develop interactive web-based application using PHP and MySQL**

**3. COURSE OUTCOMES (COs)**

The practical exercises, the underpinning knowledge and the relevant soft skills associated with this competency are to be developed in the student to display the following COs:

The practical experiences and relevant soft skills associated with this course are to be taught and implemented, so that the student demonstrates the following industry-oriented COs associated with the above-mentioned competency:

- Create small programs using basic PHP concepts.
- Create User defined functions in PHP programming.
- Design and develop a Web site using form controls for presenting web-based content.
- Debug the Programs by applying state management concepts and error handling techniques of PHP.
- Create dynamic web pages using PHP and MySQL database

**4. TEACHING AND EXAMINATION SCHEME**

Teaching Scheme (In Hours)			Total Credits (CI+T/2+P/2)	Examination Scheme				Total Marks
L	T	P		Theory Marks		Practical Marks		
			C	CA	ESE	CA	ESE	
0	0	4	2	0	0	25	25	50

Legends: CI-Class Room Instructions; T – Tutorial/Teacher Guided Theory Practice; P - Practical; C – Credit, CA - Continuous Assessment; ESE - End Semester Examination.

## 5. SUGGESTED PRACTICAL EXERCISES

The following practical outcomes (PrOs) that are the sub-components of the COs. *Some of the PrOs marked '\*\*' are compulsory, as they are crucial for that particular CO. These PrOs need to be attained at least at the 'Precision Level' of Dave's Taxonomy related to 'Psychomotor Domain'.*

Sr.No	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. Required
1	Write a PHP script to display Welcome message.	I	02
2	Write a PHP script to demonstrate use of global, local, static and constant variables.	I	02
3	Write a PHP script to demonstrate arithmetic operators, comparison operator, and logical operator.	I	02
4	Write a PHP program to swap two numbers with and without using third variable.	I	02
5	Write a PHP program to check the given number is odd or even.	I	02
6	Write PHP Script to print Fibonacci series in html tabular format.	I	02
7	Write a PHP Script to show different looping structure.	I	02
8	Write a PHP program to print below number triangle. 1 2 3 4 5 6 7 8 9 10	I	02
9	Write a PHP script to call by reference and call by value.	II	02
10	Write PHP Script for addition and multiplication of two 2x2 matrices.	II	02
11	Write a PHP Script for performing function that takes arguments, returns arguments, default argument and variable length argument.	II	02
12	Write PHP script to demonstrate use of various strings handling function.	II	02
13	Write a PHP script to Demonstrate Include () and require () function.	II	02
14	Write PHP script to demonstrate Array functions.	II	02
15	Write PHP script to demonstrate use of fopen(), fread(), fwrite() and fclose() File functions.	II	02
16	Create student registration form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page using GET Method.	III	02
17	Create Website Registration Form using text box, check box, radio button, select, submit button. Display user inserted value in new PHP page using POST method.	III	02
18	Write PHP script to validate form including name, email using appropriate functions.	III	02
19	Write PHP script for sending plain text email, HTML email and attachments with email.	III	02
20	Write a PHP script to explain concept of \$_REQUEST.	III	02
21	Write a PHP script to demonstrate creating, deleting, updating, retrieving and passing variable cookie data.	IV	02
22	Write two different PHP script to demonstrate passing variables with sessions.	IV	02
23	Write a PHP script to demonstrate Error Handling.	IV	02
24	Write a PHP script to connect MySQL server from your website.	V	02
25	Create a database with student table and write a PHP script to insert a record in student table.	V	02
26	Write a program to read student records from student table and display all	V	02

	these information in table format on output screen.		
27	Write a PHP script to delete and update a specific record from table.	V	02
28	Write a PHP script simple login system that allows user to add a new username if user doesn't exist in the database. also create a forgot password link, to redirect user to set up his new password on authentication.	V	02
<b>Total</b>			<b>56</b>

**Note**

- i. More **Practical Exercises** can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list.
- ii. The following are some **sample** 'Process' and 'Product' related skills (more may be added/deleted depending on the course) that occur in the above listed **Practical Exercises** of this course required which are embedded in the COs and ultimately the competency.

S. No.	Sample Performance Indicators for the PrOs	Weightage in %
1	Create webpage to solve basic mathematical problem	20
2	Create library of user defined functions in PHP	20
3	Create responsive webpages with validations.	20
4	Create webpages for state management with exception handling	10
5	Create dynamic web application using PHP and MYSQLi	30
<b>Total</b>		<b>100</b>

**6. MAJOR EQUIPMENT/ INSTRUMENTS AND SOFTWARE REQUIRED**

These major equipment/instruments and Software required to develop PrOs are given below with broad specifications to facilitate procurement of them by the administrators/management of the institutes. This will ensure conduction of practical in all institutions across the state in proper way so that the desired skills are developed in students.

S. No.	Equipment Name with Broad Specifications	PrO. No.
1	Computer with latest configuration with windows or UNIX OS with web browser	All
2	XAMPP/WAMP tool, editors like VSCODE, notepad++, sublime	All

**7. AFFECTIVE DOMAIN OUTCOMES**

The following **sample** Affective Domain Outcomes (ADOs) are embedded in many of the above-mentioned COs and PrOs. More could be added to fulfill the development of this competency.

- a) Work as a leader/a team member.
- b) Follow ethical practices.

The ADOs are best developed through the laboratory/field-based exercises. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy' should gradually increase as planned below:

- i. 'Valuing Level' in 1<sup>st</sup> year
- ii. 'Organization Level' in 2<sup>nd</sup> year.
- iii. 'Characterization Level' in 3<sup>rd</sup> year.

## 8. UNDERPINNING THEORY

The major Underpinning Theory is formulated as given below and only higher level UOs of *Revised Bloom's taxonomy* are mentioned for development of the COs and competency in the students by the teachers. (Higher level UOs automatically includes lower level UOs in them). If required, more such higher level UOs could be included by the course teacher to focus on attainment of COs and competency.

Unit	Unit Outcomes (UOs)	Topics and Sub-topics
<b>Unit-1</b>  <b>Introduction to PHP</b>	1a. State steps to Install, Configure & test Apache web server to use PHP 1b. State installation of XAMPP/WAMP and test it. 1c. Create simple PHP page using PHP structure and Syntax. 1d. Apply of ECHO and PRINT statements. 1e. State use of PHP variables, constant and data types. 1f. List and apply PHP Operators. 1g. Apply conditional and looping structures in programming	1.1 Configuration and installation of PHP, Apache Web Server, MySQL 1.2 Installing WAMP/XAMPP server 1.3 PHP Structure and Syntax 1.4 Rules of PHP syntax 1.5 PHP Echo and Print statements 1.6 PHP Constants, Variables 1.7 PHP Data Types 1.8 Scope of variables: Static, Local and Global 1.9 PHP operators 1.10 Looping Structure (for, while, do...while, for each, break and continue) 1.11 Conditional Structure (if...else, else if, switch)
<b>Unit-II</b>  <b>Functions ,array and strings</b>	2a. State the steps to create user defined functions 2b. file inclusion using function 2c. Apply the use of different types of arrays in PHP and library functions of an array. 2d. Create and accessing string and library functions of string.	2.1 User Defined function, argument function, variable function, Return function, default argument, Passing Arguments by Reference, Recursive function 2.2 Include() and require() function 2.3 Creating index based and Associative array and multidimensional Array 2.4 Accessing array Element 2.5 Library functions of an array. (Count, list, in_array, current, next, previous, end, each, sort, array_merge, array_reverse) 2.6 Creating and accessing String 2.7 Searching & Replacing String and Formatting String 2.8 String Related Library function: (Chr, ord, strtolower, strtoupper,

		strlen, ltrim, rtrim, trim, substr, strcmp, strcasecmp, ctrops, strops, strstr, str_replace, strrev)
<b>Unit-III</b> <b>Working with data and form handling</b>	3a. Create and working with files and directory. 3b. Apply PHP superglobals \$_GET, \$_POST and \$_REQUEST to collect form data 3c. PHP form validation and form Sanitization 3d. send email in PHP	3.1 Create, opening, Reading and writing file 3.2 working with directory 3.3 file uploading and downloading 3.4 Submitting form values using Get and Post Methods 3.5 Reading data from form using super globals \$_GET, \$_POST and \$_REQUEST 3.6 Validate name using preg_match() function 3.7 Validate email and URL using filter() function 3.8 Sending plain text email, Sending HTML email and Sending attachments with email
<b>Unit-IV</b> <b>Working with Cookies, Session, and Error Handling</b>	4a. Use cookie to store and retrieve data 4b. Create session variable and handle session 4c. Handle runtime errors through exception handling	4.1 Creating Cookies 4.2 Set Cookies 4.3 Destroying Cookies 4.4 Creating Session 4.5 Set Session 4.6 Destroying Session 4.7 Exception Handling in PHP using die() using custom error handling using try and catch
<b>Unit-V</b> <b>Database Connectivity using MySQLi</b>	5a. Describe/State MySQL structure and Syntax 5b. Discuss types of MySQL tables and storage engines 5c. Apply/Use various MySQL commands on database 5d. State steps to connect with database using PHP and MySQLi 5e. Write MySQL commands to Insert, Update, Delete records 5f. Introduction to PHP Framework	5.1 MySQL introduction 5.2 Creating a Database 5.3 Creating a table 5.4 Dropping Database & Tables 5.5 Adding Fields 5.6 Connection of PHP and MYSQL using MySQLi extension using PDO (PHP Data Objects) 5.7 Creating and Deleting MySQLi database using PHP 5.8 Updating, Inserting, Deleting records in the MySQLi database 5.9 Retrieving data from MySQLi database

**Note:** The UOs need to be formulated at the 'Application Level' and above of Revised Bloom's Taxonomy' to accelerate the attainment of the COs and the competency.

## 9. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Introduction to PHP	14	--- Not Applicable---			
II	Functions, array and strings	14				
III	Working with DATA and Forms	10				
IV	Cookie, Session and Error Handling	08				
V	Database Connectivity using MySQLi	10				
<b>Total</b>		<b>56</b>				

**Legends:** R=Remember, U=Understand, A=Apply and above (Revised Bloom's taxonomy)

**Note:** This specification table provides general guidelines to assist student for their learning and to teachers to teach and question paper designers/setters to formulate test items/questions assess the attainment of the UOs. The actual distribution of marks at different taxonomy levels (of R, U and A) in the question paper may vary from above table.

## 10. SUGGESTED STUDENT ACTIVITIES

Other than the laboratory learning, following are the suggested student-related **co-curricular** activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should conduct following activities in group and prepare small reports (of 1 to 5 pages for each activity). For micro project report should be as per suggested format, for other activities students and teachers together can decide the format of the report. Students should also collect/record physical evidences such as photographs/videos of the activities for their (student's) portfolio which will be useful for their placement interviews:

- A) Prepare power point presentation showing relation between PHP, APACHE and MYSQL.
- B) Develop sample web-based Application using PHP and MYSQL and present the same.
- C) Undertake micro-projects in teams.
- D) Visit a software company and discuss their practices adopted for web development.

## 11. SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:

- a) Massive open online courses (**MOOCs**) may be used to teach various topics/sub topics.
- b) Guide student(s) in undertaking micro-projects.
- c) Managing Learning Environment
- d) Guide students for open source HTML editors.

- e) Encourage students to do Group learning by sharing so that teaching can easily be enhanced.
- f) About **20% of the topics/sub-topics** which are relatively simpler or descriptive in nature is to be given to the students for **self-learning**, but to be assessed using different assessment methods.
- g) With respect to **section No.10**, teachers need to ensure to create opportunities and provisions for **co-curricular activities**.
- h) Guide students on how to address issues on environment and sustainability using the knowledge of this course
- i) Arrange expert lectures by IT experts working professionally in the area of webpage development.
- j) More focus should be given on practical work which will be carried out in laboratory sessions. If possible some theory sessions may be conducted in labs so that theory and practice can go hand in hand.
- k) Faculty should allow students to use their creativity and let them struggle to learn on their own during practical sessions. However, faculty should remain around the students and should help them when they are stuck.
- l) Arrange a webpage development competition by making groups of four students each and award the winning group. Give publicity to this competition at institute/city level.

## 12. SUGGESTED MICRO-PROJECTS

**Only one micro-project** is planned to be undertaken by a student that needs to be assigned to him/her in the beginning of the semester. In the first four semesters, the micro-project is group-based (group of 3 to 5). However, **in the fifth and sixth semesters**, the number of students in the group should **not exceed three**.

The micro-project could be industry application based, internet-based, workshop-based, laboratory-based or field-based. Each micro-project should encompass two or more COs which are in fact, an integration of PrOs, UOs and ADOs. Each student will have to maintain dated work diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. The total work load on each student due to the micro-project should be about **16 (sixteen) student engagement hours** (i.e., about one hour per week) during the course. The students ought to submit micro-project by the end of the semester (so that they develop the industry-oriented COs).

A suggestive list of micro-projects is given here. This should relate highly with competency of the course and the COs. Similar micro-projects could be added by the concerned course teacher:

- a) Develop website for your department
- b) Create web-based feedback system
- c) Develop a dynamic website for online admission process.
- d) Create a login-based web applications like Feedback Form/Address book/rating system with use of PHP and MySQLi.
- e) Create a web application library management system.
- f) Create a website for student management system which can be useful to your institute.
- g) Create a login-based web application e-book uploading and downloading.

## 13. SUGGESTED LEARNING RESOURCES

Sr. No.	Title of Book	Author	Publication with place, year and ISBN
1	Beginning PHP and MySQL, 4th Edition	W. Jason Gilmore	Apress, 2010
2	PHP: The Complete Reference	Steven Holzner	McGraw-Hill, 2017
3	Learning PHP, MySQL, JavaScript, CSS & HTML5, Fourth Edition!	Robin Nixon!	O'Reilly Media
4	Teach Yourself PHP, MySQL and Apache All in One, 5 <sup>th</sup> Edition	Julie C. Meloni,	Pearson Education, 2012
5	Beginning PHP and MySQL	W. Jason Gilmore	Apress
6	Head First PHP & MySQL	Lynn Beighley, Michael Morrison	O'Reilly Media, 2015

#### 14. SUGGESTED LEARNING WEBSITES

- i. <https://www.php.net/>
- ii. <http://www.codecademy.com/tracks/php>
- iii. <http://www.w3schools.com/PHP>
- iv. <https://www.phptutorial.net>
- v. <http://www.tutorialspoint.com/php>
- vi. <https://www.homeandlearn.co.uk/php/php.html>
- vii. <https://www.javatpoint.com/php-tutorial>
- viii. <https://www.geeksforgeeks.org/php-tutorials/>

#### 15. PO-COMPETENCY-CO MAPPING

Semester IV	Web Development using PHP (Course Code: 4341604)						
	POs and PSOs						
Competency & Course Outcomes	PO 1 Basic & Discipline specific knowledge	PO 2 Problem Analysis	PO 3 Design/ development of solutions	PO 4 Engineering Tools, Experimentation & Testing	PO 5 Engineering practices for society, sustainability & environment	PO 6 Project Management	PO 7 Life-long learning
<b>Competency</b>	<b>Develop Web Page using PHP and MYSQL</b>						
<u>Course Outcomes</u>							
CO a) Create small programs using basic PHP concepts.	2	-	-	1	-	-	1
CO b) Create User defined functions in PHP programming.	2	2	2	-	-	-	1
CO c) Design and develop a Web site using form controls for presenting web-based content.	2	2	2	-	-	-	1
CO d) Debug the Programs by applying state management concepts and error handling techniques of PHP.	2	2	2	2	1	-	1
CO e) Create dynamic web pages using PHP and MySQL database.	3	2	2	3	-	-	-

Legend: '3' for high, '2' for medium, '1' for low or '-' for the relevant correlation of each competency, CO, with PO/ PSO

#### 16. COURSE CURRICULUM DEVELOPMENT COMMITTEE

##### GTU Resource Persons

S.	Name	Institute	Email



No.			
1	Mr. Vipul Gajjar	RCTI, Ahmedabad	Vipulgajjar.bece@gmail.com
2	Mr.Krunal Prajapati	RCTI, Ahmedabad	kkprajapati.it@gmail.com
3	Mr. Dhaval R Gandhi	Dr S & S S Gandhi College of Engineering & Technology, Surat	dhavalgandhi88@gmail.com