Program Name : **Computer Engineering Program Group**

Program Code : **CO/CM/IF/CW**

Semester : **Sixth**

Course Title : **Web Based Application development with PHP**

Course Code : **22619**

1. RATIONALE

PHP is a general purpose, server-side scripting language run a web server that's designed to make dynamic pages and applications. PHP as a web development option is secure, fast and reliable. In the growing field of Web technology it is essential for every Diploma pass outs to learn PHP Language to help them build interactive web applications. This course is designed to inculcate web based applications development skills in students using server side scripting with PHP.

2. COMPETENCY

The aim of this course is to help the student to attain the following industry identified competency through various teaching learning experiences:

- **Develop simple web-based application using PHP language.**

3. COURSE OUTCOMES (COs)

The theory, 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:

a) Develop program using control statement.
b) Perform operations based on arrays and graphics.
c) Develop programs by applying various object oriented concepts.
d) Use form controls with validation to collect user's input.
e) Perform database operations in PHP.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme			Credit (L+T+P)	Examination Scheme													
				Theory							Practical						
L	T	P		Paper Hrs.	ESE		PA		Total		ESE		PA		Total		
					Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
3	-	2	5	3	70	28	30*	00	100	40	25@	10	25	10	50	20	

(*): Under the theory PA, Out of 30 marks, 10 marks are for micro-project assessment to facilitate integration of COs and the remaining 20 marks is the average of 2 tests to be taken during the semester for the assessment of the UOs required for the attainment of the COs.
***Legends: L**-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit, **ESE** - End Semester Examination; **PA** - Progressive Assessment*

5. COURSE MAP (with sample COs, PrOs, UOs, ADOs and topics)

This course map illustrates an overview of the flow and linkages of the topics at various levels of outcomes (details in subsequent sections) to be attained by the student by the end of the course, in all domains of learning in terms of the industry/employer identified competency depicted at the centre of this map.

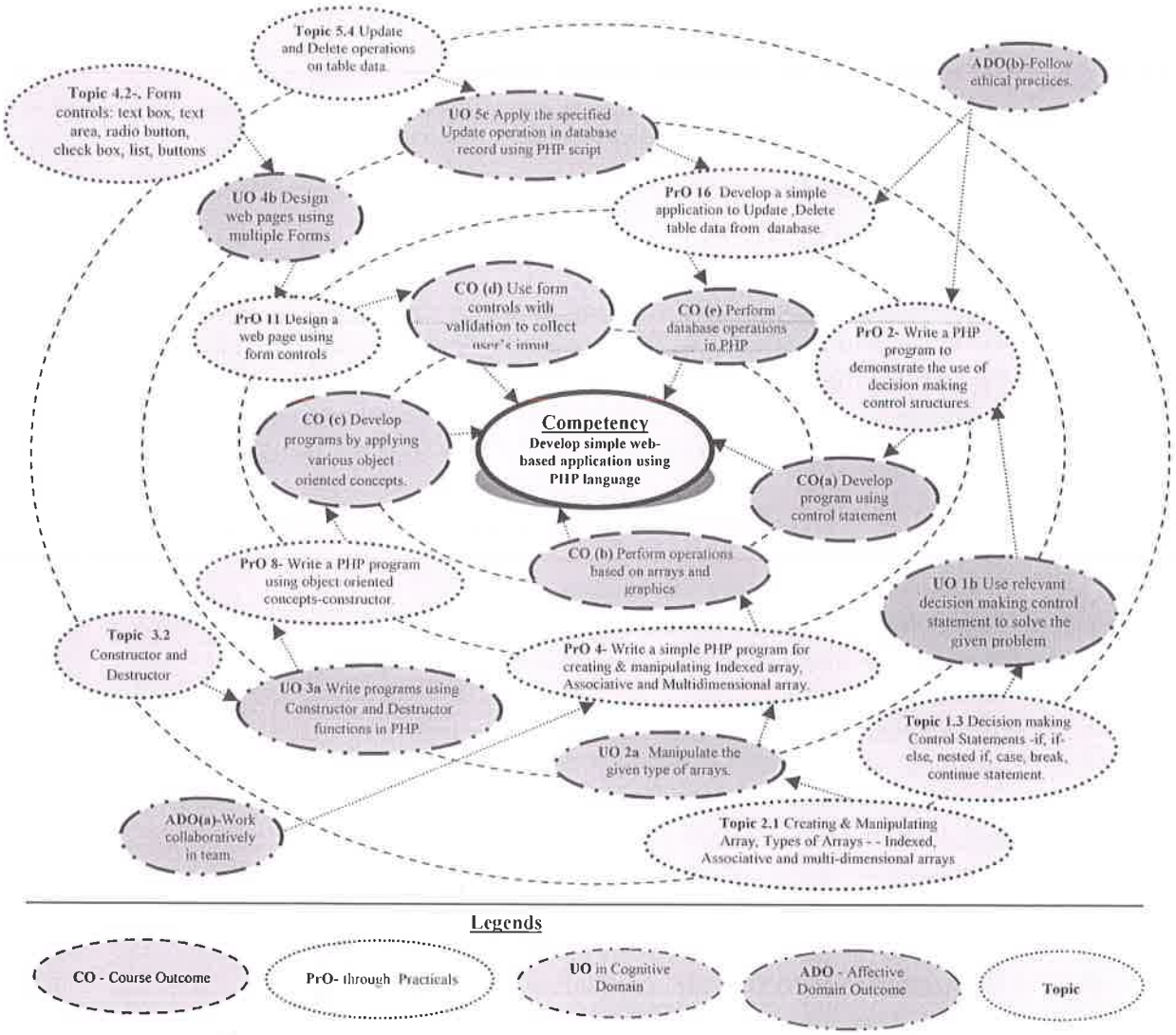

Figure 1 - Course Map

6. SUGGESTED PRACTICALS/ EXERCISES

The practicals in this section are PrOs (i.e. sub-components of the COs) to be developed and assessed in the student for the attainment of the competency.

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. Required
1	a. Install and configure PHP, web server, MYSQL b. Write a program to print "Welcome to PHP". c. Write a simple PHP program using expressions and operators.	I	02*
2	Write a PHP program to demonstrate the use of Decision making control structures using- a. If statement b. If-else statement c. Switch statement	I	02*
3	Write a PHP program to demonstrate the use of Looping structures using- a. While statement, b. Do-while statement c.For statement d. Foreach statement	I	02*

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. Required
4	Write a PHP program for creating and manipulating- a. Indexed array b. Associative array c. Multidimensional array	II	02
5	a. Write a PHP program to– i. Calculate length of string. ii. Count the number of words in string -without using string functions. b. Write a simple PHP program to demonstrate use of various built-in string functions.	II	02*
6	Write a simple PHP program to demonstrate use of Simple function and Parameterized function.	II	02
7	Write a simple PHP program to create PDF document by using graphics concepts.	II	02
8	Write a PHP program to- a. Inherit members of super class in subclass. b. Create constructor to initialize object of class --by using object oriented concepts	III	02*
9	Write a simple PHP program on Introspection and Serialization.	III	02
10	Design a web page using following form controls: a. Text box, b. Radio button, c. Check box, d. Buttons	IV	02*
11	Design a web page using following form controls: a. List box, b. Combo box, c. Hidden field box	IV	02*
12	Develop web page with data validation.	IV	02*
13	Write simple PHP program to - a. Set cookies and read it. b. Demonstrate session Management.	IV	02*
14	Write a simple PHP program for sending and receiving plain text message (e-mail).	IV	02*
15	Develop a simple application to- a. Enter data into database b. Retrieve and present data from database.	V	02*
16	Develop a simple application to Update, Delete table data from database.	V	02*
	Total		**32**

Note:

i. A suggestive list of PrOs is given in the above table. More such PrOs can be added to attain the COs and competency. All the above listed practical need to be performed compulsorily, so that the student reaches the 'Applying Level' of Bloom's 'Cognitive Domain Taxonomy' as generally required by the industry.

ii. The 'Process' and 'Product' related skills associated with each PrO are to be assessed according to a suggested sample given below:

S. No.	Performance Indicators	Weightage in %
1	Write appropriate code to generate desired output in Web application	30

S. No.	Performance Indicators	Weightage in %
2	Debug, Test and Execute the programs	30
3	Presentation of Output	20
4	Able to Answer to oral questions	10
5	Submission of report in time	10
	Total	**100**

The above PrOs also comprise of the following social skills/attitudes which are Affective Domain Outcomes (ADOs) that are best developed through the laboratory/field based experiences:

a) Work collaboratively in team.
b) Follow ethical practices.

The ADOs are not specific to any one PrO, but are embedded in many PrOs. Hence, the acquisition of the ADOs takes place gradually in the student when s/he undertakes a series of practical experiences over a period of time. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy' should gradually increase as planned below:

- 'Valuing Level' in 1st year
- 'Organization Level' in 2nd year.
- 'Characterization Level' in 3rd year.

7. MAJOR EQUIPMENT/ INSTRUMENTS REQUIRED

The major equipment with broad specification mentioned here will usher in uniformity in conduct of practicals, as well as aid to procure equipment by authorities concerned.

S. No.	Equipment Name with Broad Specifications	PrO. S. No.
1	Hardware : Computer system (Any computer system, preferably i3 - i5 with basic configuration)	All
2	Operating system : Windows / Linux	
3	Any database tool such as MySQL, MariaDB or any equivalent tool	15,16

8. UNDERPINNING THEORY COMPONENTS

The following topics/subtopics should be taught and assessed in order to develop UOs in cognitive domain for achieving the COs to attain the identified competency. More UOs could be added.

Unit	Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub-topics
Unit – I Expressions and control statements in PHP	1a Write simple PHP program to solve the given expression. 1b Use relevant decision making control statement to solve the given problem 1c Solve the given iterative problem using relevant loop statement.	1.1 History and Advantages of PHP, , Syntax of PHP. 1.2 Variables, Data types, Expressions and operators, constants 1.3 Decision making Control statements - if, if-else, nested if, switch, break and continue statement. 1.4 Loop control structures-while , do-while , for and foreach

Unit	Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub-topics
Unit– II Arrays, Functions and Graphics	2a Manipulate the given type of arrays to get the desired result. 2b Apply implode, explode functions on the given array. 2c Apply the given string functions on the character array. 2d Scale the given image using graphics concepts/ functions.	2.1 Creating and Manipulating Array, Types of Arrays- Indexed , Associative and Multi-dimensional arrays 2.2 Extracting data from arrays, implode, explode, and array flip. 2.3 Traversing Arrays 2.4 Function and its types –User defined function, Variable function and Anonymous function. 2.5 Operations on String and String functions:str_word_count(),strlen(),strrev(),strpos(),str_replace(), ucwords(),strtoupper(), strtolower(),strcmp(). 2.6 Basic Graphics Concepts, Creating Images, Images with text, Scaling Images, Creation of PDF document.
Unit-III Apply Object Oriented Concepts in PHP	3a Write constructor and destructor functions for the given problem in PHP. 3b Implement inheritance to extend the given base class. 3c Use overloading / overriding to solve the given problem. 3d Clone the given object.	3.1 Creating Classes and Objects 3.2 Constructor and Destructor 3.3 Inheritance, Overloading and Overriding, Cloning Object. 3.4 Introspection, Serialization
Unit –IV Creating and validating forms	4a Use the relevant form controls to get user's input. 4b Design web pages using multiple Forms for the given problem. 4c Apply the given validation rules on form. 4d Set/ modify/ delete cookies using cookies attributes. 4e Manage the given session using session variables.	4.1 Creating a webpage using GUI Components, Browser Role-GET and POST methods, Server Role 4.2 Form controls: text box, text area, radio button, check box, list, buttons 4.3 Working with multiple forms : - A web page having many forms - A form having multiple submit buttons. 4.4 Web page validation. 4.5 Cookies - Use of cookies, Attributes of cookies, create cookies, modify cookies value, and delete cookies. 4.6 Session - Use of session, Start session, get session variables, destroy session. 4.7 Sending E-mail.
Unit-V Database Operations	5a Create database for the given problem using PHP script. 5b Insert data in the given database using PHP script. 5c Apply the specified update operation in database record	5.1 Introduction to MySQL – Create a database. 5.2 Connecting to a MySQL database : MySQL database server from PHP 5.3 Database operations: Insert data, Retrieving the Query result 5.4 Update and delete operations on table

Unit	Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub-topics
	using PHP script. 5d Delete the given record from the database using PHP script.	data.

Note: To attain the COs and competency, above listed UOs need to be undertaken to achieve the 'Application Level' of Bloom's 'Cognitive Domain Taxonomy'

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	Expressions and control statements in PHP	06	02	02	08	12
II	Arrays, Functions and Graphics	10	02	04	10	16
III	Apply Object Oriented Concepts in PHP	12	02	04	10	16
IV	Creating and validating forms	12	02	04	06	12
V	Database operations	08	02	04	08	14
Total		**48**	**10**	**18**	**42**	**70**

Legends: *R=Remember, U=Understand, A=Apply and above (Bloom's Revised taxonomy)*
Note*: This specification table provides general guidelines to assist student for their learning and to teachers to teach and assess students with respect to attainment of 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 classroom and 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 reports of about 5 pages for each activity, also collect/record physical evidences for their (student's) portfolio which will be useful for their placement interviews:

a) Prepare journal of practicals.
b) Undertake micro-projects.

11. SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES (if any)

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

a) Massive open online courses (***MOOCs***) may be used to teach various topics/sub topics.
b) ***'L' in item No. 4*** does not mean only the traditional lecture method, but different types of teaching methods and media that are to be employed to develop the outcomes.
c) About ***15-20% of the topics/sub-topics*** which is relatively simpler or descriptive in nature is to be given to the students for ***self-directed learning*** and assess the development of the COs through classroom presentations (see implementation guideline for details).
d) With respect to item No.10, teachers need to ensure to create opportunities and provisions for ***co-curricular activities***.

e) Guide student(s) in undertaking micro-projects.
f) Demonstrate students thoroughly before they start doing the practice.
g) Encourage students to refer different websites to have deeper understanding of the subject.
h) Observe continuously and monitor the performance of students in Lab.

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. However, in the fifth and sixth semesters, it should be preferably be ***individually*** undertaken to build up the skill and confidence in every student to become problem solver so that s/he contributes to the projects of the industry. In special situations where groups have to be formed for micro-projects, 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 duration of the micro-project should not be less than ***16 (sixteen) student engagement hours*** during the course. The student ought to submit micro-project by the end of the semester to develop the industry-oriented COs.

A suggestive list of micro-projects is given here. Similar micro-projects could be added by the concerned faculty:

a) Develop web application for- Sending plain text email, Sending HTML message, Sending e-mails with attachment
b) Develop web application for Library Management system. – Add book , Display list of book , Search book .
c) Develop web application for Student Feedback System.
d) Develop web application for Employee Pay Management System.

(Any other micro-projects suggested by subject faculty on similar line.)

13. SUGGESTED LEARNING RESOURCES

S. No.	Title of Book	Author	Publication
1	Programming PHP	Rasmus Lerdorf, Kevin.T and Peter M.	O'Reilly, USA, ISBN -978-1-449-39277-2, 2013
2	The Complete Reference PHP (Third Edition covers PHP)	Holzner, Steven	McGraw hill, New Delhi, ISBN 9780070223622, 2008.
3	PHP and MySQL	McGrath, Mike	McGraw Hill, New Delhi, ISBN-13: 978-1259029431
4	Advance Web Technology	Dr. Rajedra Kawle	Devraj Publication , ISBN- 978-93-86492-01-2

14. SOFTWARE/LEARNING WEBSITES

a) https://www.w3schools.com/php/default.asp
b) https://www.guru99.com/what-is-php-first-php-program.html
c) https://www.tutorialspoint.com/php/
d) https://tutorialehtml.com/en/php-tutorial-introduction/
e) www.tizag.com/phpT/
f) https://books.goalkicker.com/PHPBook/
g) https://codecourse.com/watch/php-basics


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