

**Nirma University  
Institute of Technology**

**Computer Science & Engineering Department**

**Course Policy Document**

**B.Tech. in Computer Science & Engineering**

**Semester: VI****Academic Year: 2022-23****Term: EVEN**

<b>Course Code &amp; Name</b>	<b>:</b>	2CSDE69 LAMP Technology
<b>Credit Details</b>	<b>:</b>	Lecture-2, Tutorial-0, Practicals-2 <b>Credits-3</b>
<b>Course Co-ordinator</b>	<b>:</b>	Prof. Ajaykumar Patel
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## 1. **Introduction to Course**

### 1.1 Importance of the course

LAMP is an archetypal model of web service solution stacks, named as an acronym of the names of its original four open-source components: the Linux operating system, the Apache HTTP Server, the MySQL relational database management system (RDBMS), and the PHP programming language. The LAMP components are largely interchangeable and not limited to the original selection. As a solution stack, LAMP is suitable for building dynamic web sites and web applications.

### 1.2 Objective of the Course

- ✓ The main focus of offering this course is to learn fundamentals for open source technologies (LAMP technologies).
- ✓ This course will provide platform for students to design and develop applications using open source technologies.

### 1.3 Pre-requisite:

No prior knowledge required.

## 2. **Course Learning Outcomes (CLO)**

CLOs are clear statements of the expectations for student achievements in the course.

**After successful completion of the course, a student will be able to –**

1. describe and interpret the basics of open source and LAMP technologies
2. manage web server for different application scenarios
3. design and develop applications using open source technologies.

## 3. **Syllabus**

<b>Syllabus:</b>	<b>Teaching Hours</b>
<b>Unit I</b> <b>Introduction to LAMP Technology:</b> Characteristics and Advantage of LAMP, Installation and Configuration of LAMP stack. Understanding of Apache Web Server, Understanding and setting of various configuration files of LAMP stack, Configuring nginx server.	<b>02</b>

<b>Unit II</b> <b>PHP Programming fundamentals:</b> Understanding syntax and variables of PHP, Control statements and functions, passing information between PHP pages, String Handling, arrays, improving PHP/MySQL efficiency.	<b>12</b>
<b>Unit III</b> <b>MySQL:</b> Introduction to MySQL, Creation of MYSQL database, Creating tables, Implementation of DDL and DML queries on MYSQL database. phpmyadmin to manage MySQL database. MySQL database administration.	<b>06</b>
<b>Unit IV</b> <b>Object Oriented programming with PHP :</b> What Is Object-Oriented Programming?, Basic PHP Constructs for OOP, Advanced OOP Features, OOP Style in PHP, String and Regular Expression Functions, Handling Session and Cookies in PHP	<b>06</b>
<b>Unit V</b> <b>File Handling:</b> Understanding PHP File Permissions, File Reading and Writing Functions, File system and Directory Functions.	<b>04</b>

### 3.1. Self-Study

The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

Topics/content for self-study are as listed below:

1. Regular Expression Functions
2. Date and Time Functions
3. Network Functions

Students are expected to study above mentioned topics on their own. These topics will not be taught in the classroom. Students should refer to books available in the library for the same.

### 3.2. References

Suggested Readings^:

1. PHP MYSQL Bible: Steve Suehring, Tim Caverse, Joyce Park, John Wiley & Sons
2. Beginning PHP6, Apache, MySQL Web Development: Timothy Boronczyk, Elizabeth Naramore, Jason Gerner, Yann Le Scouarnec, Jeremy Stolz, Michael K. Glass, Wiley
3. Eric Filson, Erick Rosebrock, Setting up LAMP: Getting Linux, Apache, MySQL, and PHP Working Together, SyBex

4. Jason Gerner, Elizabeth Naramore, Morgan L. Owens, Matt Warden, Professional LAMP Linux, Apache, MySql and PHP5 Web development , Wiley
5. James Lee , Brent Ware, Open Source Development with LAMP: Using Linux, Apache, MySQL, Perl, and PHP , Pearson Education

^this is not an exhaustive list

Note: The latest edition of books should be referred.

#### 4. Laboratory details

Laboratory experiments/ exercises should be completed as per the given schedule. It is expected that a student does the same with full understanding of the concept, procedure and application involved.

Laboratory work will be based on above syllabus with following 10 experiments to be performed.

Each experiment will be of 10 marks. Evaluation for 100 marks will be done throughout the semester as part of the Continuous Evaluation scheme. The assessment of Laboratory work is as under:

Total Marks	Continuous Evaluation			Semester End /Viva voce Evaluation	
100 marks	No. of Practicals	Max. Marks	Weightage	Max Marks	Weightage
	10	100	75%	25	25%

Sr. No.	Week No.	List of Experiments	Hour (s)	Mapped CLO
1	1	<b>(A)</b> Configure and understanding of LAMP and XAMPP server <b>(B)</b> Design a personal profile web page, which contains form to enter personal, academic, co-curricular information, using basic concept of HTML, CSS and JavaScript. Also validate each field.	02	2

2	2	<p><b>(A)</b> Write a PHP function to check whether entered number is Harshad number or not. Harshad Number has following property: A number that is divisible by the sum of its own digits. For example, 1729 is a Harshad number because <math>1 + 7 + 2 + 9 = 19</math> and <math>1729 = 19 \times 91</math>. More generally, a Harshad number in a given number base, is an integer that is divisible by the sum of its digits when written in that base.</p> <p><b>(B)</b> Write a PHP function that check whether user entered number is special number or not. For example, Consider the number is 59. First, find the sum of all digits (<math>5+9=14</math>). Second, find multiplication of all digits (<math>5*9=45</math>). Then find addition of sum and multiplication of all digits (<math>14+45=59</math>). If it is same as number itself, than it is a special number.</p> <p><b>(C)</b> Write a PHP function that check whether number Kaprekar Number or not. Consider an n-digit number k. Square it and add the right n digits to the left n or n-1 digits. If the resultant sum is k, then k is called a Kaprekar number. For example, 9 is a Kaprekar number since <math>9^2 = 81</math>, and <math>8 + 1 = 9</math> and 297 is a Kaprekar number since <math>297^2 = 88209</math> and <math>88 + 209 = 297</math>.  <math>45^2 = 2025</math> and <math>20 + 25 = 45</math>.  <math>55^2 = 3025</math>, and <math>30 + 25 = 55</math>  <math>703^2 = 494209</math> and <math>494 + 205 = 703</math>.  <math>2728^2 = 7441984</math> and <math>744 + 1984 = 2728</math>  <math>5292^2 = 28005264</math> and <math>28 + 005264 = 5292</math>  <math>857143^2 = 734294122449</math> and <math>734694 + 122449 = 857143</math>.</p> <p><b>(D)</b> Write a PHP function to check whether number is Automorphic Number or not. Automorphic numbers are numbers of "n" digits whose squares end in the number itself. For instance, the square of 1 is 1; the square of 5 is 25; the square of 6 is 36; the square of 25 is 625.</p>	04	1
3	5	<p><b>(A)</b> Write a PHP Code which asks user to enter a paragraph and perform the following operations:</p> <ul style="list-style-type: none"> <li>Find total no of sentences in the paragraph and the total number of words in each sentence.</li> <li>Find the total number of characters in the entire paragraph and find out the occurrence of each character in the paragraph and display the information in proper format.</li> <li>Search a word (entered by the user) in the paragraph and print the position of the word (if found) or print appropriate message.</li> </ul> <p><b>(B)</b> Write a PHP Code which takes a string (maximum 80 characters terminated by a full stop. The words in this string are assumed to be separated by one or more blanks.  Arrange the words of the input string in descending order of their lengths. Same length words should be sorted alphabetically. Each word must start with an uppercase letter and the sentence should be terminated by a full stop.  SAMPLE DATA:  INPUT:  "This is human resource department."</p>	04	3

		<p>OUTPUT: Department Resource Human This Is.</p> <p>INPUT: "To handle yourself use your head and to handle others use your heart."</p> <p>OUTPUT: Yourself Handle Handle Others Heart Head Your Your And Use Use To To.</p>		
4	7	<p><b>(A)</b> Write a PHP program for the following scenario: Given an array of N integers, and an integer K, find the number of pairs of elements in the array whose sum is equal to K. The values of N, K and array elements must be scanned from the user. Sample example: Input: N = 4, K = 6 arr[] = {1, 5, 7, 1} Output: Number of pairs in the array: 2 Pairs: [1,5],[5,1]</p> <p><b>(B)</b> Write a PHP program to display and count a total number of duplicate elements in the one-dimensional array. The size of array must be scan from the user. Sample example: Input the number of elements to be stored in the array :5 Input 5 elements in the array: element - 0: 5 element - 1: 1 element - 2: 1 element - 3: 2 element - 4: 2 Expected Output: Total number of duplicate elements found in the array is: 2 Duplicate elements:1,2</p>	02	1
5	9	<p><b>(A)</b> Derive a class square from class Rectangle. Create one more class circle. Create an interface with only one method called area(). Implement this interface in all the classes. Include appropriate data members and constructors in all classes. Write a program to accept details of a square, circle and rectangle and display the area.</p> <p><b>(B)</b> Define a class Rectangle with its length and breadth. Provide appropriate constructor(s), which gives facility of constructing rectangle object passing value of length and breadth externally to constructor. Provide appropriate accessor &amp; mutator methods to Rectangle class. Provide methods to calculate area &amp; to display all information of Rectangle. Create five Rectangle objects and call appropriate methods.</p>	04	1

6	11	<p><b>(A)</b> Create a vehicle service request form. Validate the form using PHP validators and display error messages.</p> <p><b>(B)</b> Create a form for student semester grade report. Validate the form using PHP validators and display error messages.</p>	04	3
7	13	<p>Create tables in the database which contain the details of items of different category. Design following web pages in PHP using database concepts:</p> <ol style="list-style-type: none"> <li>1) Add category</li> <li>2) Delete category</li> <li>3) Update category</li> <li>4) Display all category</li> <li>5) Add item details</li> <li>6) Delete item details</li> <li>7) Update item details</li> <li>8) Design a page in which user enter a specific category and display item(s) details belonging to entered category.</li> </ol>	04	2
8	15	<p><b>(A)</b> Write a PHP program to store page views count in SESSION, to increment the count on each refresh, and to show the count on web page.</p> <p><b>(B)</b> Write a menu driven program to perform the following stack and queue related operations:</p> <ol style="list-style-type: none"> <li>i. Insert an element in stack</li> <li>ii. Delete an element from stack</li> <li>iii. Display the contents of stack</li> <li>iv. Insert an element in queue</li> <li>v. Delete an element from queue</li> <li>vi. Display the contents of queue</li> </ol> <p>Also use concept of COOKIE.</p>	02	1
9	17	<p><b>(A)</b> Using regular expressions check for the validity of entered email-id. The @ symbol should not appear more than once. The dot (.) can appear at the most once before @ and at the most twice or at least once after @ symbol. The substring before @ should not begin with a digit or underscore or dot or @ or any other special character. (Use explode and ereg function.)</p> <p><b>(B)</b> Using regular expressions validate mobile number and password.</p>	02	1
10	18	<p><b>(A)</b> Write a PHP program for the uploading the images in a directory.</p> <p><b>(B)</b> Write a PHP program to display the information about the directory or file like (filename, file type, file size, Date &amp; Time).</p> <p><b>(C)</b> Write a program to read a flat file student.dat and display the data from file in tabular format also calculate the percentage.</p>	02	3

\* Schedule is based on academic calendar.

## Lab Practical Submission

**LAMP Technology Lab Practicals have to be submitted hand-written / online in following format in file pages/ word/ PDF document:**

Date:

Roll No. and Name:

Course Code and Name:

Practical No.

AIM:

Methodology followed:

For offline: Theoretical Principles used: explain them in your own way by explaining theory and using small examples

For Online: PHP Pages and Web Pages with proper comments

Input:

Output:

Conclusion:

Signature of Teacher:

## 5. Tutorials/ Term assignments/ Innovative assignments/ Term paper (as applicable) details

☐ Innovative Assignment:

- Student has to designed the **web application**.
- Group (3 Students per group)

## 6. Assessment Policy

6.1 Component wise Continuous Evaluation (CE), Laboratory and Project Work (LPW) & Semester End Examination (SEE) weightage

<b>Assessment scheme</b>	<b>CE</b>			<b>LPW</b>		<b>SEE</b>
<b>Component weightage</b>	<i>0.4</i>			<i>0.2</i>		<i>0.4</i>
	<i>Class Test</i>	<i>Sessional Exam</i>	<i>Innovative Assignment</i>	<i>Continuous Evaluation 75%</i>	<i>Viva Voce 25%</i>	

6.2 Assessment Policy for Continuous Evaluation (CE)



Assessment of Continuous Evaluation comprises of three components.

1. Class Test will be conducted as per academic calendar.
2. Sessional Exam will be conducted as per academic calendar.
3. Innovative Assignment will be developed by the students.

### 6.3 Assessment Policy for Laboratory and Project Work (LPW)

Assessment of Laboratory and Project Work comprises of two components.

1. Continuous assessment for laboratory experiments will be conducted. There will be 10 experiments, each carrying weightage of 10 marks. At the end of the course total marks obtained out of 100 will be converted according to weightage assigned. Assessment of Experiment will be carried out based on parameters like understanding of the experiment performed, originality, logic, involvement of the student, regularity, discipline and timely submission of practical.
2. A Viva voce examination for LPW component will be conducted as per academic calendar. It will carry a weightage of 25 marks.

### 6.4 Assessment Policy for Semester End Examination (SEE)

A written examination will be conducted for the course as per academic calendar. It will carry 100 marks and marks obtained out of 100 will be converted as per weightage assigned.

## 7. Lesson Plan

Lecture No.	Topic	Mapped CLO
1.	Overview of the course, Discussion on Course Policy, Course Website and Blog, Importance of the course, Evaluation, Linkages of the course with other course/'s and Professional relevance	1, 2
<b>Introduction to LAMP Technology</b>		
2.	<ul style="list-style-type: none"> <li>• Introduction</li> <li>• Characteristics and Advantage of LAMP</li> <li>• Installation and Configuration of LAMP stack</li> </ul>	2, 3
3.	□ Understanding of Apache Web Server, Understanding and setting of various configuration files of LAMP stack	2
<b>PHP Programming fundamentals</b>		
4.	□ Understanding syntax and variables of PHP, Control statements	1

5.	□ functions	1
6.	□ functions	1
7.	□ passing information between PHP pages	1
8.	□ String Handling functions	1
9.	□ String Handling functions	1
10.	□ Array functions	1
11.	□ Array functions	1
<b>MySQL</b>		
12.	□ Introduction to MySQL	1,2
13.	□ Creation of MYSQL database □ Creating tables □ Implementation of DDL and DML queries on MYSQL database □ phpmyadmin to manage MySQL database	1
14.	□ MySQL database administration	2
15.	□ CRUD operation Insert, Delete	1
16.	□ CRUD operation Update and Display	1
<b>Object Oriented programming with PHP</b>		
17.	□ What Is Object-Oriented Programming? Basic □ PHP Constructs for OOP	1, 2
18.	□ Advanced OOP Features, Introspection Functions	1
19.	□ Gotchas and Troubleshooting	1
20.	□ OOP Style in PHP	1
21.	□ Regular Expression concepts	1, 3
22.	□ Regular Expression implementation	1
23.	□ Handling Session in PHP	1, 3
24.	□ Cookies in PHP	1, 3
<b>File Handling</b>		
25.	□ Understanding PHP File Permissions	1, 3
26.	□ File Reading and Writing Functions	1, 3
27.	□ File system and Directory Functions	1, 3
28.	□ File system and Directory Functions	1
29.	□ Network Functions, Date Functions	1
30.	□ Revision Lecture, Review of the course, Feedback related to the course, Linkages with advanced course/s in succeeding years.	1

## 8. Mapping of Session Learning Outcomes (SLO) with Course Learning Outcomes (CLO)

<b>Session No.</b>	<b>Session Learning Outcomes: After successful completion of the session, student will be able to:</b>	<b>Mapped CLO</b>
1.	understand importance, scope and policy of the course	1, 2
<b>Introduction to LAMP Technology</b>		
2.	explain and relate basic concepts of LAMP stack	2, 3
3.	describe basic of Apache Web Server, understanding and setting of various configuration files of LAMP stack	2
<b>PHP Programming fundamentals</b>		
4.	understand basics of syntax and variables of PHP, learn control statements	1
5.	design web page which includes concept of functions	1
6.	design web page which includes concept of user defined functions	1
7.	develop web pages for passing information between PHP pages	1
8.	learn string handling functions	1
9.	learn string handling functions	1
10.	learn array functions	1
11.	design web page to include array function concepts	1
<b>MySQL</b>		
12.	understand basics of MySQL	1,2
13.	create MySQL database, tables and practice DDL & DML queries	1
14.	discover phpmyadmin functionalities	2
15.	perform insert and delete CRUD operation	1
16.	perform display and update CRUD operation	1
<b>Object Oriented programming with PHP</b>		
17.	understand basics of Object-Oriented Programming concepts and Basic PHP Constructs for OOP	1, 2
18.	learn advanced OOP features justify use of introspection functions	1
19.	discover use of gotchas and troubleshooting concepts	1
20.	learn OOP concepts in PHP page	1
21.	understand regular expression concepts	1, 3
22.	Learn and apply regular expression concepts	1

23.	create web page using session handling technique	1, 3
24.	know Cookie handling technique	1, 3
<b>File Handling</b>		
25.	learn PHP file permissions	1, 3
26.	perform file reading and writing operation	1, 3
27.	implement file system and directory Functions	1, 3
28.	demonstrate network functions	1
29.	know date and time functions in detail	1
30.	summarize topics covered in the course and express the linkages with other course/'s	1

## 9. **Teaching-learning methodology**

1. Lectures: Primarily Chalk and Black board, Power Point Presentations (PPTs) and Demonstration of concepts through web pages will be used to conduct the course.
2. Laboratory: Explanation of Experiment to be performed along with co-relation with theory will be given. At the end of each session assessment will be carried out based on parameters like understanding of the experiment performed, originality, involvement of the student, regularity, discipline and timely submission of practical.

## 10. **Active learning techniques**

Active learning is a method of learning in which students are actively or experientially involved in the learning process. Following active learning techniques will be adopted for the course.

1. Muddiest Point – Student asks for the “most confusing” point/concept. Best used at the end of the class session.

## 11. **Course Material**

Following course material is uploaded on the moodle:

<https://lms.nirmauni.ac.in/course/view.php?id=3477>

- Course Policy
- Lecture Notes
- Books / Reference Books / NPTEL video lectures
- Assignments, Lab Manuals
- Question bank
- Web-links, Blogs, Video Lectures, Journals
- Softwares

- Advanced topics

## **12. Course Learning Outcome Attainment**

Following means will be used to assess attainment of course learning outcomes.

- Use of formal evaluation components of continuous evaluation, laboratory work, semester end examination
- Informal feedback during course conduction

## **13. Academic Integrity Statement**

Students are expected to carry out assigned work under Continuous Evaluation (CE) component and LPW component independently. Copying in any form is not acceptable and will invite strict disciplinary action. Evaluation of corresponding component will be affected proportionately in such cases. Turnitin software will be used to check plagiarism wherever applicable. Academic integrity is expected from students in all components of course assessment.