Pokhara University
Faculty of Science and Technology

Course No.: CMP 168 (3 Credits)	Full Marks: 100
Course Title: Web Technology (3-1-3)	Pass Marks: 45
Nature of the Course: Theory and Practical	Total Lectures: 45 hrs
Level: Bachelor	Program: BE (Software/ Information Technology)

1. **Course Description**

This course covers fundamental concepts and methods of web technology: - web design using CSSs, client-side programming using JavaScript, server-side programming using PHP and MySQL, web protocols, and web development tools.

2. **General Objectives**

- To acquaint the students with the knowledge of HTML and CSS.
- To acquaint the students with the knowledge of JavaScripts.
- To acquaint the students with the knowledge of PHP and MySQL.
- To develop the skills in students to design and develop the interactive, responsive and dynamic web based applications.

3. **Methods of Instruction**

Lectures, Discussions, Readings, Practical works, and Project works.

4. **Contents in Detail**

Specific Objectives	Contents
• Familiarize with the basic principles, architecture and concepts of web technology.	**Unit I: Web Fundamentals (7 Hrs.)** 1. Web Basics: History of Web, WWW, Web Browsers, Web Servers, Web site, Web page (Static and Dynamic) URL, URI, Internet. 2. Overview of web protocols: HTTP and HTTPS 3. Domain name and hierarchy, domain name registration process and web hosting. 4. Web Architecture. 5. Architecting Web Application (Characteristics, Needs, Pros, and Cons) 6. Best Practices for Good Web Application Architecture
• Use HTML to layout web pages and components using forms, media and tables.	**Unit II: HTML5 (6 Hrs.)** 1. HTML Basic: Origins and evaluation of HTML, Basic syntax, Standard HTML document structure, Editors, Elements, Attributes Tag reference, Global Attributes, Structure tags, Formatting Tags, Text level, and Block level formatting, Heading, Paragraph, Comments, Block, and inline tag, Marquee tag, Grouping tags 2. HTML list, Hyperlink, Images, and Image maps, Tables, Frames, Forms, Color, and Multimedia in HTML

• Use CSS to design responsive web pages	**Unit III: Cascading Style Sheets (CSS3) (5 Hrs.)** 1. Introduction to CSS and its level, overriding rules 2. Different Selectors and their use 3. CSS Background, Borders, Images, Text, Font, List, Padding, Margin, Positioning, Form, Box shadow, Colors Display property, Table-less design, Pseudo-classes, and Pseudo elements 4. Box model, Website layout, Responsive Web Design, Media Queries
• Develop interactive and rich web pages using JavaScript.	**Unit IV: Client-side scripting with JavaScript (10 Hrs.)** 1. JavaScript Overview, Structure, Enabling, Placement, Variables, Data types, Operators, Control structure Type conversion, Functions, Arrays, Date and Math function, ES6 Fundamentals 2. Element Access in JavaScript, Event handling, Error handling 3. Form Validation with Regular Expression 4. DOM and DOM tree 5. Introduction to Asynchronous Programming (XMLHttpRequest)
• Develop dynamic web pages using PHP and run in local server.	**Unit V: Introduction to PHP (10 Hrs.)** 1. Introduction to Web Server (either XAMPP or WAMP or LAMP) 2. Client-side vs Server-side Scripting 3. Overview of PHP, Syntax, Primitives, Operations and expressions, Variables, Constants, Operator, Output and control statements, Type conversion, Array, String, Function, Basic pattern matching, Form and file handling, Error and Error Handling 4. Introduction to PHP object and class
• Familiarize with Cookies and Sessions. • Integrate database with web applications	**Unit VI: (7 Hrs.)** 1. Cookies and Local Storage Management 2. Session Handling 3. Database Connectivity (MySQL) 4. Database Operations (CRUD Operation)

5. **List of Tutorials:**

The various tutorial activities that suit this course should cover all the contents of this course to give students a space to engage more actively with the course content in the presence of the instructor. Students should submit tutorials as assignments to the instructor for evaluation. The following tutorial activities of 15 hours per group of maximum 24 students should be conducted to cover the content of this course.

1. Introduction to web technology: Provides an overview of web technology, including the history of the web, web standards, and the role of different technologies in building web applications.
2. HTML and CSS: Covers the basics of HTML and CSS, including syntax, tags, and properties, and teaches students how to build web pages and apply them to style.
3. JavaScript: Covers the basics of JavaScript, including syntax, data types, variables, and functions, and teaches students how to add interactivity and dynamic behavior to web pages.
    - Moving Elements and Element Visibility
    - Changing colors and fonts
    - Mouse and Keyword Events

- Dynamic content and stacking elements
- Dragging and dropping elements.
- Element Positioning

4. Server-side scripting: Covers server-side scripting languages such as PHP including syntax, data types, variables, functions, and control structures, and teaches students how to build dynamic web applications.
5. Database: Covers database design and management, including creating tables, defining relationships, querying data, and integrating databases with web applications.
6. Web design principles: Covers principles of web design, including typography, color theory, layout, and user experience, and teaches students how to create effective and engaging web designs.
7. Emerging trends and technologies: Cover emerging trends and technologies in web development, such as progressive web apps, web components, and web assembly, and introduces students to the latest tools and techniques for building cutting-edge web applications.

6. Lab Works

Laboratory works of 45 hours per group of maximum 24 students should cover all the content of this course. Students should submit a final project that uses the concept of Web Technology learned in this course. The evaluation of the practical works should also be based on project work.

7. Evaluation System and Students ′Responsibilities

Internal Evaluation

The internal evaluation of a student may consist of assignments, attendance, internal assessment, lab reports, project works etc. The internal evaluation scheme for this course is as follows:

Internal Evaluation	**Weight**	**Marks**	**External Evaluation**	**Marks**
Theory		30	Semester-End examination	50
Attendance & Class Participation	10%			
Assignments	20%			
Presentations/Quizzes	10%			
Internal Assessment	60%			
Practical		20		
Attendance & Class Participation	10%			
Lab Report/Project Report	20%			
Practical Exam/Project Work	40%			
Viva	30%			
Total Internal		50		
Full Marks: 50 + 50 = 100				

Student Responsibilities:

Each student must secure at least 45% marks separately in internal assessment and practical evaluation with 80% attendance in the class in order to appear in the Semester End Examination. Failing to get such a score will be given NOT QUALIFIED (NQ) to appear for the Semester-End Examinations. Students are advised to attend all the classes, formal exam, test, etc. and complete all the assignments within the specified time period. Students are required to complete all the requirements defined for the completion of the course.

8. Prescribed Books and References

Text Books:

1. Sebesta, R. W. (2002). *Programming the world wide web*. Addison-Wesley Longman Publishing Co., Inc..
2. Nixon, R. (2021). *Learning PHP, MySQL & JavaScript*. O'Reilly Media, Inc..

References:

1. Powell, T. (2010). *HTML & CSS: the complete reference*. McGraw-Hill, Inc..
2. HM Deitel-Deitel & Associates, Inc. (2007). *Internet & world wide web: how to program*. Pearson Education India.
3. Pfaffenberger, B. (1996). *World wide web bible*. Henry Holt and Co., Inc..
4. Powell, T. (2002). *Web design*. McGraw-Hill Professional Publishing.
5. Powell, T. A. (2001). *Web Design: the complete reference book*. Tata McGraw Hill.