AMITY UNIVERSITY
PATNA

Course Title: Web DevelopmentTechnology

Course Code: CSIT256

Credit Units: 3

Course Level: UG

Syllabus Version: I

L	T	P/S	SW	No. of PSDA	Total Credit Unit
2	0	2	0	0	3

Course Description:
This course introduces students to the advanced tools and technologies used in modern web development. It covers the design and implementation of interactive, responsive, and data-driven websites using HTML5, CSS3, JavaScript, Bootstrap, AJAX, XML, JSON, PHP and MySQL. The course emphasizes both front-end and back-end development, including real-time data handling and dynamic content generation. Students will gain hands-on experience through lab exercises and a mini project that integrates the full stack of web technologies, enabling them to build complete, professional-grade web applications.

Course Objective:
By the end of this course, students will be able to:

CO1: Understand the foundational structure of web pages using HTML5 and learn how to design static websites with semantic and interactive elements.

CO2: Apply CSS3 and Bootstrap to style and build responsive, mobile-friendly web interfaces using modern layout techniques and design components.

CO3: Explore data interchange and asynchronous communication techniques using XML, AJAX, and JSON for building real-time, data-driven web applications.

CO4: Design and implement dynamic server-side web applications using PHP and MySQL, including database connectivity, form handling, and user authentication.

Pre-Requisites:

1. Proficiency in at least one programming language, such as Python, Java, or C++. Understanding of programming concepts such as loops, conditionals, functions, and data structures like arrays, lists.
2. Familiarity with object-oriented programming (OOP) principles, including classes, objects, inheritance, and polymorphism.

Course Contents / Syllabus:

Module-I Basics of HTML:	**Weightage (%)**	**Lecture Hours**
Introduction to HTML: syntax, elements, document structure Basic tags: headings, paragraphs, lists, links, images, audio, video Advanced HTML: tables, forms, form elements (input, textarea, select,	20.00	6

button, fieldset) Semantic elements: div, span, header, footer, section, article Navigation bar creation and layout using HTML		
Module-II Styling with CSS and Bootstrap:	20.00	6
Introduction to CSS: syntax, types (inline, internal, external) Selectors, colors, backgrounds, fonts, borders, and box model Positioning, float, display, z-index Media queries for responsive design Bootstrap framework: installation, classes, layout, grid system Bootstrap components: buttons, forms, cards, modals, alerts, navigation		
Module-III Javascript and Client Side Scripting:	20.00	6
JavaScript basics: variables, data types, operators, arrays, loops, functions Events: onclick, onsubmit, onmouseover, onchange, etc. Output: alert, console, prompt DOM manipulation: accessing, modifying, creating, and removing elements Form validation using JavaScript (required, pattern, length) Combining JavaScript with HTML and CSS for interactivity		
Module-IV Advance Web Technologies- XML, AJAX and JSON:	20.00	6
XML: structure, uses, DTD, schema, parsing, and transformation using XSL/XSLT XHTML: introduction and features AJAX: working, advantages/disadvantages, XMLHttpRequest object Creating AJAX-based web applications JSON: structure, syntax, arrays, objects, key-value pairs Fetching and displaying data from server using JSON		
Module-V PHP Programming & Working With Database	20.00	6
Introduction to PHP: Installation and configuration, understanding syntax, and writing basic scripts. Core PHP Concepts: Variables, string functions, numeric functions, operators, conditional statements, loops, arrays (indexed, multidimensional, and associative). File Handling and Error Management: File system functions, file input/output, file uploads, error handling, logging, and sending emails using PHP. Database Integration with MySQL: Introduction to MySQL, database design concepts, SQL queries, and connecting PHP with MySQL to build dynamic, data-driven applications.		

Course Learning Outcomes (CLOs):

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

CLO1: Understand the principles of coherent web coding and how to use a digital product.

CLO2: Apply the incorporation of valid standards-conformant HTML document involving a variety of element types, implement a variety of presentation effects in HTML and XML documents, including explicit positioning of elements.

CLO3: Evaluate the skills and project-based experience needed for entry into web application and development careers

CLO4: Create dynamic, full-stack web applications by integrating client-side features with server-side programming in PHP and backend database operations using MySQL.

Pedagogy for Course Delivery:

The session will be taught using blended mode, flipped class and practical based methods. In addition to assigning different programs, the course instructor will spend considerable time in understanding the concept of innovation assign small projects to students in groups for implementing the learned concepts

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	Total
60	40	100

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment (40 %)					End Term Examination (60%)
Components (Drop down)	**Viva**	**Class Test**	**Home Assignment**	**Attendance**	
Weightage (%)	5	20	10	5	60

Lab/ Practical/ Studio Assessment:

	Continuous Assessment/Internal Assessment (40 %)					End Term Examination (60 %)	
Components (Drop down	**Class Test (Practical based)**	**Lab Record**	**Continuous Performance**	**Internal Viva**	**Attendance**	**Practical Evaluation**	**Viva**
Weightage (%)	10	10	10	5	5	40	20

Problem Solving Techniques: Lab Problems [30 Hrs]

SNo.	Problems	Hours
1	**Module 1** Create your class time table using table tag. Create Your Resume using HTML, use text, link, size, color and lists. Create an HTML document with proper structure including DOCTYPE, html, head, and body tags. Add a title "My First Website" and include at least 3 different header tags (h1, h2, h3) with appropriate content. Build a webpage structure with a header section containing navigation, a main content area with multiple paragraphs, and a footer section with contact information. Create an HTML page with three types of lists: ordered list of your top 5 favorite movies, unordered list of hobbies, and a definition list of technical terms with their meanings.	6 Hrs
2	**Module 2** Use all the CSS (inline, internal and external) to format college web page that you have created. Create an external CSS file and link it to an HTML page. Style a simple webpage with different font families, colors, backgrounds, and text alignments for various elements. Create CSS selectors for: element selector, class selector, ID selector, descendant selector, and pseudo-class selector. Apply different styles to show their effects. Create a responsive webpage using Bootstrap's grid system. Design a layout with header, navigation, main content (8 columns), sidebar (4 columns), and footer. Build a responsive navigation bar using Bootstrap classes including brand logo, navigation links, and a dropdown menu that collapses on mobile devices	6 Hrs
3	**Module 3** Write an HTML/JavaScript page to create login page with validations. Develop a Simple calculator for addiction, subtraction, multiplication and division operation using JavaScript. Create JavaScript functions for basic mathematical operations (add, subtract, multiply, divide) and call them using button click events on an HTML page. Create a form validation script that checks for required fields, email format, and password strength. Display appropriate error messages using JavaScript. Create a JavaScript program that handles different types of events: onClick, onMouseOver, onFocus, onBlur, and demonstrates their usage with practical examples.	6 Hrs
4	**Module 4** Write a Program to retrieve date from a text file and displaying it using AJAX. Create XML file to store Student Information like Register Number, Name, Mobile Number, DOB, and Email-Id. Create a DTD for student details like id, name, age, address. Create XSL file to convert XML file to XHTML file. Write program for populating values from JSON text.	6 Hrs
5	**Module 5** Create a PHP program to demonstrate the use of arrays (indexed, associative, and multidimensional) and perform common operations like sorting, searching, and iteration. Write a PHP script to create a user registration form with fields like name,	6 Hrs

	email, and password. Store the submitted data in a MySQL database using SQL INSERT queries. Develop a PHP application to upload a file (e.g., image or PDF) to the server and display the uploaded file with proper validations and error handling. Create a PHP-based login system that validates user credentials from a MySQL database and redirects users based on authentication success or failure. Write a PHP program to read and display records from a MySQL database table (e.g., student details) using SQL SELECT queries and display them in a structured HTML table format.	

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Mapping Continuous Evaluation components/PSDA with CLOs					
SN	**Bloom's Level**	**Course Learning Outcomes**	**Class Test**	**Project**	**Viva**
1	**Understand**	Understand the principles of coherent web coding and how to use a digital product.	✓	✓	✓
2	**Apply**	Apply the incorporation of valid standards-conformant HTML document involving a variety of element types, implement a variety of presentation effects in HTML and XML documents, including explicit positioning of elements.	✓	✓	✓
3	**Evaluate**	Evaluate the skills and project-based experience needed for entry into web application and development careers	✓	✓	✓
4	**Create**	Create dynamic, full-stack web applications by integrating client-side features with server-side programming in PHP and backend database operations using MySQL.	✓	✓	✓

PSDA (Professional Skill Development Activities)

- Develop a responsive static website using HTML5, CSS3, and Bootstrap, focusing on semantic structure and mobile-friendly design.
- Create interactive web features with JavaScript, including DOM manipulation, event handling, and client-side form validation.
- Build a real-time web application using AJAX and JSON to fetch and display live data from public APIs.
- Participate in hands-on lab sessions and peer code reviews to enhance coding skills, debugging techniques, and collaborative development.
- Design and present a mini project that integrates front-end technologies into a complete, data-driven web application.
- Develop dynamic server-side web application using PHP and MySQL including user authentication, data storage, file handling and interaction with a backend database.

Text:

1. Laura Lemay, Mastering HTML, CSS & Java Script Web Publishing, BPB Publications, 2016
2. Thomas A. Powell, The Complete Reference HTML & CSS, Fifth Edition, 2017
3. "HTML and CSS: Design and Build Websites" by Jon Duckett
4. "JavaScript: The Good Parts" by Douglas Crockford
5. "Ajax: The Complete Reference" by Thomas Powell
6. "Web Design with HTML, CSS, JavaScript and jQuery Set" by Jon Duckett

References:

1. Silvio Moreto, Bootstrap 4 By Example, ebook, 2016.
2. Tanweer Alam, Web Technologies, Khanna Book Publishing, 2011.

Web Resources

1. www.javatpoint.com
2. www.w3schools.com
3. https://www.geeksforgeeks.org/web-technology/
4. https://www.freecodecamp.org/