****Full Stack Development Training Curriculum (3 Months - 12 Weeks)****

****Target Audience:**** Beginner developers with no prior coding experience.

****Learning Objectives:**** By the end of this training, students will be able to:

* Build responsive websites using HTML, CSS, and Bootstrap.
* Create dynamic and interactive web applications using JavaScript.
* Develop server-side logic and connect to databases using PHP and MySQL.

****Schedule:****

* ****Days:**** Monday, Wednesday, Friday (2 hours per session)
* ****Total Duration:**** 12 Weeks

****Curriculum Breakdown (Weekly):****

****Week 1-2: Introduction to Web Development****

* ****Topics:****
  + Introduction to the internet and World Wide Web.
  + What is full-stack development?
  + Basic HTML structure and elements.
  + Introduction to CSS for styling.
  + Introduction to web development tools (Browser developer tools, text editor)
* ****Projects:****
  + Simple static webpage (e.g., personal portfolio)
* ****Classwork:****
  + HTML element identification and practice.
  + Basic CSS styling exercises.
* ****Assignments:****
  + Recreate an existing website using HTML and CSS.
* ****References:****
  + W3Schools - [https://www.w3schools.com/](https://www.w3schools.com/" \t "https://gemini.google.com/app/_blank)
  + Mozilla Developer Network (MDN) - [https://developer.mozilla.org/index.html](https://developer.mozilla.org/index.html" \t "https://gemini.google.com/app/_blank)

****Week 3-4: Advanced HTML & CSS****

* ****Topics:****
  + Advanced HTML features (forms, tables, multimedia)
  + CSS selectors, properties, and layout models (flexbox, grid)
  + Responsive web design principles (media queries)
  + Introduction to Bootstrap framework
* ****Projects:****
  + Responsive portfolio website with Bootstrap
* ****Classwork:****
  + HTML form creation and validation practice.
  + Responsive design exercises using media queries.
* ****Assignments:****
  + Build a single-page website using HTML, CSS, and Bootstrap.
* ****References:****
  + Bootstrap Documentation - [https://getbootstrap.com/docs/5.2/getting-started/download/](https://getbootstrap.com/docs/5.2/getting-started/download/" \t "https://gemini.google.com/app/_blank)

****Week 5-6: Introduction to JavaScript****

* ****Topics:****
  + JavaScript fundamentals (variables, data types, operators)
  + Control flow statements (if/else, loops)
  + DOM manipulation and event handling
  + Basic JavaScript functions
* ****Projects:****
  + Interactive website with animations and user interactions.
* ****Classwork:****
  + JavaScript coding exercises for basic functionality.
  + DOM manipulation practice using JavaScript.
* ****Assignments:****
  + Build a simple game or interactive application using JavaScript.
* ****References:****
  + JavaScript.com - [https://www.javascript.com/](https://www.javascript.com/" \t "https://gemini.google.com/app/_blank)
  + Khan Academy JavaScript Course - [https://www.khanacademy.org/computing/computer-programming/programming](https://www.khanacademy.org/computing/computer-programming/programming" \t "https://gemini.google.com/app/_blank)

****Week 7-8: Building with JavaScript****

* ****Topics:****
  + Object-oriented programming (OOP) concepts in JavaScript
  + Working with Arrays and Objects
* ****Projects:****
  + Interactive web application with multiple functionalities using JavaScript.
* ****Classwork:****
  + JavaScript coding exercises focusing on OOP and data structures.
  + Modal, pop-ups,
* ****Assignments:****
  + Build a more complex web application using JavaScript (e.g., To-Do list)
* ****References:****
  + Eloquent JavaScript - [https://eloquentjavascript.net/](https://eloquentjavascript.net/" \t "https://gemini.google.com/app/_blank)
  + Frontend Masters - [https://frontendmasters.com/](https://frontendmasters.com/" \t "https://gemini.google.com/app/_blank)

****Week 9-10: Introduction to PHP & MySQL****

* ****Topics:****
  + Server-side scripting with PHP
  + PHP syntax and basic programming constructs
  + Connecting to databases with MySQL
  + Database fundamentals (CRUD operations)
* ****Projects:****
  + Simple PHP script interacting with a MySQL database
* ****Classwork:****
  + PHP coding exercises for basic functionality.
  + MySQL queries practice (SELECT, INSERT, UPDATE, DELETE)
* ****Assignments:****
  + Build a basic CRUD application using PHP and MySQL (e.g., user registration system)
* ****References:****
  + PHP.net - [https://www.php.net/manual/en/index.php](https://www.php.net/manual/en/index.php" \t "https://gemini.google.com/app/_blank)

****Week 11-12: Full-Stack Project****

* ****Projects:****
  + Full-stack web application integrating all learned technologies (HTML, CSS, JavaScript, PHP, MySQL)
  + Deployment and hosting options
* ****Assignments:****
  + Develop a full-stack web application of their choice using the learned technologies.
  + Present their final project to the class.
* ****References:****
  + Atlassian Agile - [https://www.atlassian.com/agile](https://www.atlassian.com/agile" \t "https://gemini.google.com/app/_blank)
  + Git SCM - [https://git-scm.com/](https://git-scm.com/" \t "https://gemini.google.com/app/_blank)

## **Comprehensive Curriculum Breakdown**

****Class Breakdown (Weekly):****

****Week 1 & 2: Introduction to Web Development****

****Class 1 & 2 (Monday & Wednesday, 2 hrs):****

* ****Topic:**** Introduction to the Internet and World Wide Web
  + Explain the basic concepts of the internet, websites, and web servers.
  + Briefly discuss different types of websites and their functionalities.
* ****Classwork:****
  + Interactive discussion: Brainstorm real-world websites and identify their functionalities (e.g., online store, social media platform).
* ****Assignment:****
  + Research and write a short report on the history and evolution of the World Wide Web.

****Class 3 & 4 (Friday & Monday, 2 hrs):****

* ****Topic:**** What is Full-Stack Development?
  + Introduce the concept of full-stack development and its role in web development.
  + Briefly explain the different components a full-stack developer works with (front-end, back-end, database).
* ****Classwork:****
  + Watch a short video explaining full-stack development (e.g., YouTube video on "What is Full-Stack Development?").
  + Write a short reflection on why someone might want to become a full-stack developer.
* ****Assignment:****
  + Research and create a mind map outlining the different skills and technologies involved in full-stack development.

****Class 5 & 6 (Wednesday & Friday, 2 hrs):****

* ****Topic:**** Basic HTML Structure and Elements
  + Introduce the HTML language and its role in building websites.
  + Explain basic HTML structure (tags, attributes, elements).
  + Cover common HTML elements used for building web pages (headings, paragraphs, images, links).
* ****Classwork:****
  + Hands-on practice: Students write basic HTML code to create a simple webpage structure (index.html).
* ****Assignment:****
  + Using an online code editor (e.g., Repl.it, CodePen), create a simple webpage with a title, heading, paragraph, and image using HTML.

****Resources:**** W3Schools ([https://www.w3schools.com/](https://www.w3schools.com/" \t "https://gemini.google.com/app/_blank)), Mozilla Developer Network (MDN) ([https://developer.mozilla.org/index.html](https://developer.mozilla.org/index.html" \t "https://gemini.google.com/app/_blank))

****Week 3 & 4: Advanced HTML & CSS****

****Class 7 & 8 (Monday & Wednesday, 2 hrs):****

* ****Topic:**** Advanced HTML Features (forms, tables, multimedia)
  + Introduce HTML forms for user input and data collection.
  + Explain basic form elements (text fields, buttons, radio buttons, etc.).
  + Briefly cover tables for data presentation and multimedia elements (images, videos).
* ****Classwork:****
  + Hands-on practice: Students create an HTML form to collect user information (e.g., name, email) on their webpage (index.html).
* ****Assignment:****
  + Extend the previous assignment by adding a contact form to your webpage using HTML. Include elements like name, email, and a message area.

****Class 9 & 10 (Friday & Monday, 2 hrs):****

* ****Topic:**** Introduction to CSS Selectors, Properties, and Layout Models (Flexbox)
  + Explain different types of CSS selectors (ID, class, element) for targeting specific elements.
  + Cover common CSS properties for advanced styling (margins, padding, borders).
  + Introduce the Flexbox layout model for responsive design.
* ****Classwork:****
  + Hands-on practice: Students style their webpage using CSS (style.css) to change fonts, colors, layouts, and incorporate the created form.
* ****Assignment:****
  + Style the previously created contact form using CSS. Make it visually appealing and user-friendly.

****Class 11 & 12 (Wednesday & Friday, 2 hrs):****

* ****Topic:**** Introduction to Responsive Web Design Principles (Media Queries)
  + Explain the concept of responsive web design and its importance.
  + Introduce media queries for adapting website layout to different screen sizes.
* ****Topic:**** Introduction to Bootstrap Framework (brief overview)

Briefly introduce the Bootstrap framework as a collection of pre-built CSS styles and components.

* ****Classwork:****
  + Hands-on practice: Students implement basic responsive design using media queries in their CSS to ensure their webpage adapts to different screen sizes.
  + Brief exploration of the Bootstrap framework and its components (optional).
* ****Assignment:****
  + Make the previously created webpage responsive using media queries. Ensure it looks good on desktops, tablets, and mobile devices.

****Resources:**** Bootstrap Documentation ([https://getbootstrap.com/docs/5.0/getting-started/introduction/](https://getbootstrap.com/docs/5.0/getting-started/introduction/" \t "https://gemini.google.com/app/_blank))

****Week 5 & 6: Introduction to JavaScript****

****Class 13 & 14 (Monday & Wednesday, 2 hrs):****

* ****Topic:**** JavaScript Fundamentals (variables, data types, operators)
  + Introduce the JavaScript language and its role in creating dynamic web applications.
  + Explain basic JavaScript concepts (variables, data types, operators) for data manipulation.
* ****Classwork:****
  + Coding exercises: Students practice writing basic JavaScript code using variables, data types, and operators in an online code editor (e.g., CodePen).
* ****Assignment:****
  + Create a simple JavaScript program that prompts the user for their name, stores it in a variable, and then displays a greeting message on the webpage using an alert or innerHTML manipulation.

****Class 15 & 16 (Friday & Monday, 2 hrs):****

* ****Topic:**** Control Flow Statements (if/else, loops)
  + Introduce conditional statements (if/else) for making decisions in JavaScript programs.
  + Explain loops (for, while) for repetitive tasks.
* ****Classwork:****
  + Coding exercises: Students practice using control flow statements (if/else, loops) in JavaScript to solve problems (e.g., check if a number is even or odd, iterate through an array).
* ****Assignment:****
  + Create a simple JavaScript program that uses a loop to display a list of numbers from 1 to 10 on the webpage. You can use innerHTML manipulation to achieve this.

****Class 17 & 18 (Wednesday & Friday, 2 hrs):****

* ****Topic:**** Introduction to DOM Manipulation and Event Handling
  + Introduce the Document Object Model (DOM) and how JavaScript interacts with web page elements.
  + Explain basic DOM manipulation techniques (accessing, modifying, creating elements).
  + Introduce event handling for user interactions with web pages (clicks, mouseovers, etc.).
* ****Classwork:****
  + Coding exercises: Students practice manipulating DOM elements (e.g., changing text content, adding/removing elements) and handling user events (e.g., click events) using JavaScript.
* ****Assignment:****
  + Create a simple webpage with a button that changes the background color of the webpage when clicked. Use JavaScript DOM manipulation and event handling to achieve this.

****Resources:**** JavaScript.com ([https://www.javascript.com/](https://www.javascript.com/" \t "https://gemini.google.com/app/_blank)), Khan Academy JavaScript Course ([https://www.khanacademy.org/computing/computer-programming/programming](https://www.khanacademy.org/computing/computer-programming/programming" \t "https://gemini.google.com/app/_blank))

****Week 7 & 8: Building with JavaScript****

****Class 19 & 20 (Monday & Wednesday, 2 hrs):****

* ****Topic:**** Object-Oriented Programming (OOP) Concepts in JavaScript (Basic Understanding)
  + Introduce the concept of Object-Oriented Programming (OOP) for structuring JavaScript code.
  + Briefly explain objects, properties, and methods in JavaScript.
* ****Classwork:****
  + Coding exercises: Students practice creating simple objects and using methods in JavaScript to represent real-world entities (e.g., creating an object for a product with properties like name, price).
* ****Assignment:****
  + Create a simple JavaScript program that defines an object representing a book with properties like title, author, and genre. Include methods to display book information on the webpage.

****Class 21 & 22 (Friday & Monday, 2 hrs):****

* ****Topic:**** Working with Arrays and Objects
  + Explain how to work with arrays for storing and managing collections of data.
  + Cover common methods for manipulating arrays (adding, removing, iterating).
  + Discuss object properties and methods for accessing and modifying object data.
* ****Classwork:****

Coding exercises: Students practice working with arrays and object manipulation techniques in JavaScript (e.g., iterating through an array of products, modifying object properties).

* ****Assignment:****
  + Create a simple JavaScript program that manages a shopping cart. Define an array to store products (objects with name, price) and implement functions to add, remove, and display items in the cart.

****Class 23 & 24 (Wednesday & Friday, 2 hrs):****

* ****Project: Building a Simple Interactive Application (Week-long Project)****
  + Students will work on a small, interactive JavaScript application throughout the week.
  + ****Project Ideas:****
    - Quiz Game: Users can answer multiple-choice questions and receive a score.
    - To-Do List: Users can add, edit, and mark tasks as complete.
    - Random Quote Generator: Displays a random quote and author on the page with a button to generate a new one.
  + Instructor will provide project guidance, answer questions, and conduct code reviews throughout the week.

****Resources:**** Eloquent JavaScript ([https://eloquentjavascript.net/](https://eloquentjavascript.net/" \t "https://gemini.google.com/app/_blank)), Frontend Masters ([https://frontendmasters.com/](https://frontendmasters.com/" \t "https://gemini.google.com/app/_blank))

****Week 9 & 10: Introduction to PHP & MySQL****

****Class 25 & 26 (Monday & Wednesday, 2 hrs):****

* ****Topic:**** Introduction to Server-Side Scripting with PHP
  + Introduce the PHP language and its role in server-side scripting for web applications.
  + Explain basic PHP syntax (variables, operators, control flow statements).
* ****Classwork:****
  + Coding exercises: Students practice writing basic PHP code using variables, operators, and control flow statements in an online development environment (e.g., LAMP stack on a local machine).
* ****Assignment:****
  + Create a simple PHP script that takes a user's name as input using a form and displays a personalized greeting message on the webpage.

****Class 27 & 28 (Friday & Monday, 2 hrs):****

* ****Topic:**** Connecting to Databases with MySQL
  + Introduce the MySQL database system for storing and managing website data.
  + Explain basic concepts of databases (tables, columns, rows).
  + Demonstrate connecting to a MySQL database from a PHP script (instructor will provide a pre-configured setup).
* ****Classwork:****
  + Hands-on practice: Students write simple PHP scripts to connect to a MySQL database and perform basic queries (instructor will guide the setup process).
* ****Assignment:****
  + Create a simple PHP script that connects to a MySQL database (provided by instructor) and displays a list of existing data (e.g., table of names) on the webpage.

****Class 29 & 30 (Wednesday & Friday, 2 hrs):****

* ****Topic:**** Database Fundamentals (CRUD Operations)
  + Introduce CRUD operations (Create, Read, Update, Delete) for interacting with databases.
  + Explain how to write PHP code to perform CRUD operations on a MySQL database.
* ****Classwork:****
  + Coding exercises: Students practice CRUD operations using PHP and MySQL (instructor provides guidance).
* ****Assignment:****
  + Extend the previous assignment by adding functionalities to create new entries in the database (e.g., add a new name) using a form and PHP script.

****Resources:**** PHP.net ([https://www.php.net/docs.php](https://www.php.net/docs.php" \t "https://gemini.google.com/app/_blank)), Optional for further explanation: SQLBolt ([https://sqlbolt.com/](https://sqlbolt.com/" \t "https://gemini.google.com/app/_blank))

****Week 11 & 12: Putting it all Together****

****Class 31 & 32 (Monday & Wednesday, 2 hrs):****

* ****Topic:**** Project Planning and Development Methodologies (Agile - Basic Principles)
  + Introduce the concept of Agile development methodologies for managing software projects.
  + Briefly explain core Agile principles (iterations, sprints, user stories).
* ****Classwork:****
  + Group discussion: Students discuss the benefits of Agile methodology and its potential applications in web development projects.
* ****Assignment:****
  + In small groups, research and present a specific Agile methodology (e.g., Scrum, Kanban) highlighting its key principles and practices.

****Class 33 & 34 (Friday & Monday, 2 hrs):****

* ****Topic:**** Security Considerations in Web Development
  + Introduce basic security principles for web development (preventing XSS, SQL injection).
  + Discuss best practices for user input validation and data sanitization.
* ****Classwork:****
  + Interactive discussion: Students brainstorm potential security vulnerabilities in web applications and discuss mitigation strategies.
* ****Assignment:****
  + Conduct more research based on the class work given

**Class 35 & 36 (Wednesday & Friday, 2 hrs):**

* **Topic:** Course Wrap-Up & Project Presentations