

## **WEB DEVELOPMENT CURRICULUM**

### **Module 1: Introduction to Web Development**

- Introduction to Web Development
  - What is Full-Stack Development?
  - Overview of Front-End vs. Back-End Development
  - Tools of the Trade: IDEs, Version Control (Git/GitHub), Command Line, Prototyping etc.

### **Module 2: HTML & CSS**

- HTML Basics
  - HTML Syntax & Structure
  - HTML Elements: Headings, Paragraphs, Lists, Links, Images
  - HTML Tables
  - Forms & Inputs
  - Semantic HTML
- CSS Basics
  - CSS Syntax and Selectors
  - Box Model, Margins, Padding, Borders
  - Layout: Flexbox, Grid, Positioning
  - Responsive Design and Media Queries
  - CSS Frameworks: Introduction to Bootstrap

### **Module 3: JavaScript (Front-End)**

- JavaScript Fundamentals
  - Syntax, Variables, Data Types
  - Functions, Conditionals, Loops
  - Arrays and Objects
- DOM Manipulation
  - Selecting Elements
  - Event Listeners and Handlers
  - Creating and Removing DOM Elements Dynamically
- Advanced JavaScript Concepts
  - Closures, Hoisting, Scope
  - Promises and Asynchronous Programming (fetch API, async/await)
  - Error Handling

### **Module 4: Version Control**

- Git & GitHub Basics
  - Git Commands: Init, Clone, Commit, Push, Pull, Branching

- Creating Repositories on GitHub
- Collaboration: Pull Requests, Merging, Handling Conflicts

## Module 5: Introduction to PHP

- Basics of PHP
  - What is PHP? History and Usage
  - Installing PHP: XAMPP, MAMP, or LAMP Stack Setup
  - Basic Syntax: Embedding PHP in HTML
  - PHP Variables, Constants, and Data Types
  - Basic Output: `echo` and `print`

## Module 6: PHP Syntax and Control Structures

- PHP Control Structures
  - Conditionals: `if`, `else`, `elseif`, `switch`
  - Loops: `for`, `foreach`, `while`, `do-while`
  - Operators: Arithmetic, Assignment, Comparison, Logical
- Functions in PHP
  - Defining and Calling Functions
  - Function Parameters and Return Values
  - Variable Scope and Global Variables
  - Anonymous Functions and Closures

## Module 7: Working with Forms

- Handling Forms in PHP
  - GET vs POST Methods
  - Accessing Form Data Using `$_GET` and `$_POST`
  - Sanitizing and Validating Form Input
  - Redirecting with PHP
- Working with Sessions and Cookies
  - Introduction to Sessions: Starting, Storing, and Destroying Sessions
  - Using Cookies: Creating, Accessing, and Deleting Cookies

## Module 8: Arrays and Strings

- Working with Arrays
  - Indexed and Associative Arrays
  - Array Functions: `sort()`, `array_merge()`, `array_push()`, etc.
  - Multidimensional Arrays
  - Looping through Arrays (`foreach` and `for`)
- String Manipulation in PHP
  - String Functions: `strlen()`, `strpos()`, `substr()`, etc.
  - Regular Expressions in PHP (`preg_match()`, `preg_replace()`)
  - String Formatting with `sprintf()`

## Module 9: Working with Files

- File Handling in PHP
  - Reading and Writing Files: `fopen()`, `fread()`, `fwrite()`, `fclose()`
  - File Uploads in PHP
  - Handling File Permissions and Security Considerations

## Module 10: Working with Databases (MySQL)

- Working with Databases
  - Introduction to SQL Databases (MySQL)
  - Basic SQL: `SELECT`, `INSERT`, `UPDATE`, `DELETE`
  - Creating Schemas and Models
  - Querying and Manipulating Data
  - Introduction to NoSQL Databases (MongoDB)
- Introduction to MySQL with PHP
  - Setting Up a MySQL Database
  - Connecting PHP to MySQL with `mysqli` and PDO (PHP Data Objects)
- CRUD Operations with PHP and MySQL
  - Performing CRUD Operations in PHP
  - Handling User Input and Querying the Database Securely (SQL Injection Prevention)
  - Prepared Statements with PDO

## Module 11: Advanced PHP Topics

- Error Handling in PHP
  - Types of Errors: Notices, Warnings, and Fatal Errors
  - Error Reporting and Logging
  - Custom Error Handlers with `set_error_handler()`
- Exception Handling
  - Try, Catch, and Throw Mechanisms
  - Creating Custom Exception Classes
  - Best Practices for Error and Exception Handling
- PHP and APIs
  - Working with External APIs
  - Sending HTTP Requests using `cURL`
  - Handling JSON Data with `json_encode()` and `json_decode()`
- Regular Expressions and Data Filtering
  - Advanced Pattern Matching
  - Validation and Data Sanitization Functions
  - Filtering Data with `filter_var()`

## Module 12: PHP Security

- Security Best Practices

- Input Validation and Error Handling
- Preventing SQL Injection
- Securing File Uploads and Sessions

### **Module 13: Project Development**

- User Authentication and Personalization (Password Hashing with bcrypt)
- Shopping Cart
- Content Management System
- Web Forum
- Mailing List Management
- Email Management

### **Module 14: Deployment**

- Domain Name Registration
- Web Hosting
  - Introduction to Cloud Platforms: AWS, Microsoft Azure, Google Cloud,...
  - Deploying Front-End Applications
  - Deploying Database

### **Module 15: Career Development**

- Discussion on career development

### **Final Notes**

Students who complete all assignments and embark on a project that is hosted with their personalized domain name (web address) get Certificate of Proficiency while other students get Certificate of Participation.