Web Development Syllabus

CSS (Cascading Style Sheets) & JavaScript

Introduction to CSS
- ✓ What is CSS?
- ✓ Importance of CSS in Web Development
- ✓ CSS Syntax: Selectors, Properties, and Values

CSS Basics
- ✓ Types of CSS: Inline, Internal, and External
- ✓ **Selectors and Combinators**
  - Universal Selector (*), Type Selector, Class Selector, ID Selector
  - Descendant, Child, Adjacent Sibling, and General Sibling Combinators
- ✓ **Colors and Backgrounds**
  - Color Models: RGB, HEX, HSL
  - Background Properties: background-color, background-image, background-repeat
- ✓ **Fonts and Text Styles**
  - Font Families and Web-Safe Fonts
  - Text Properties: font-size, font-weight, text-align, text-decoration
- ✓ **The Box Model**
  - Content, Padding, Border, and Margin
  - box-sizing Property

Intermediate CSS

- ✓ **CSS Units**
  - Absolute Units: px, pt
  - Relative Units: %, em, rem, vw, vh
- ✓ **Positioning and Layouts**
  - Static, Relative, Absolute, Fixed, and Sticky Positioning
  - Z-Index and Stacking Context
- ✓ **Display and Visibility**
  - Block, Inline, Inline-Block, Flex, Grid
  - Hiding Elements with visibility and display
- ✓ **Pseudo-Classes and Pseudo-Elements**
  - Common Pseudo-Classes: :hover, :focus, :nth-child()
  - Pseudo-Elements: ::before, ::after

Responsive Web Design

- ✓ Media Queries
  - Syntax and Usage
  - Breakpoints for Common Devices
- ✓ Viewport Meta Tag
  - Ensuring Mobile Compatibility
- ✓ Flexible Layouts
  - Fluid Grids and Flexible Images

Advanced CSS

- ✓ **CSS Flexbox**
  - Container Properties: display: flex, justify-content, align-items
  - Item Properties: flex-grow, flex-shrink, flex-basis
- ✓ **CSS Grid**
  - Defining Grids with grid-template-rows and grid-template-columns
  - Placing Items with grid-row and grid-column
- ✓ **Transitions and Animations**
  - CSS Transitions: transition-property, transition-duration
  - CSS Animations: @keyframes, animation-name, animation-duration
- ✓ **Transformations**
  - Rotate, Scale, Translate, Skew

CSS Preprocessors (Optional)

- ✓ Introduction to SASS/LESS
  - Variables, Nesting, Mixins, Functions
- ✓ Compiling Preprocessed CSS

CSS Frameworks

- ✓ Introduction to Popular Frameworks (e.g., Bootstrap, Tailwind CSS)
- ✓ Using Framework Classes for Rapid Development

Project: Styling a website

- ✓ Create a Fully Styled Multi-Page Website
- ✓ Implement Responsive Design Techniques
- ✓ Add Animations and Interactive Styles

JavaScript

- ✓ **Introduction to JavaScript**
  - What is JavaScript and Its Role in Web Development
  - Embedding JavaScript in HTML
  - JavaScript Syntax Basics
    - o Comments, Statements, and Semicolons
    - o Declaring Variables: var, let, and const
- ✓ **Core Concepts**
  - Data Types and Operators
    - o Primitive Types: String, Number, Boolean, Null, Undefined, Symbol
    - o Complex Types: Objects and Arrays
    - o Arithmetic, Comparison, Logical, Assignment, and Ternary Operators
  - Control Flow
    - o Conditional Statements: if, else if, else, switch
    - o Loops: for, while, do...while
    - o Iterating Over Arrays with for...of and Objects with for...in
- ✓ **Functions and Scope**
  - Function Declarations and Expressions
  - Arrow Functions (=>)
  - Parameters and Default Values
  - Scope: Block, Function, and Global
  - Closures

✓ **Working with the DOM (Document Object Model)**

- Selecting Elements
    - o Methods: getElementById, querySelector, querySelectorAll
- Modifying Elements
    - o Changing Content and Attributes
    - o Manipulating Classes (classList)
    - o Adding and Removing Elements
- Event Handling
    - o Event Listeners: addEventListener
    - o Event Types: Click, Hover, Keyboard Events
    - o Event Object and Bubbling/Capturing

✓ **JavaScript Objects and Arrays**

- Creating and Accessing Objects
- Methods and this Keyword
- Arrays: Properties and Methods (push, pop, map, filter, reduce)
- Iterating with forEach, map, and reduce

✓ **ES6+ Features**

- Template Literals
- Destructuring Arrays and Objects
- Spread and Rest Operators
- Modules: import and export

- ✓ **Asynchronous JavaScript**
  - Callbacks and Promises
  - Async/Await Syntax
  - Fetch API
    - o Making GET and POST Requests
    - o Handling Responses and Errors
  - Working with APIs (e.g., JSONPlaceholder, OpenWeatherMap)

- ✓ **Error Handling and Debugging**
  - Using try...catch Blocks
  - Debugging Tools in Browsers

- ✓ **JavaScript Libraries and Frameworks (Overview)**
  - jQuery Basics (Optional)
  - Introduction to Modern Libraries: React.js (Brief Overview)

- ✓ **Project: Interactive Web Applications**
  - Building a Dynamic To-Do List Application
  - Adding API Integration (e.g., Fetching Data from Public APIs)
  - Implementing Form Validations