HTML: (10-12 Days)

Module 1: Introduction to Web Development (2 Hours)

1.1 Basics of Web Development (1 Hour)

- What is Web Development?
- Frontend vs Backend vs Full Stack
- Role of HTML, CSS, JavaScript
- Overview of Browsers & Rendering Engines
- How Websites Work (Client-Server Model)

1.2 Setting Up the Development Environment (1 Hour)

- Choosing a Code Editor (VS Code, Sublime, etc.)
- Installing VS Code & Browser Extensions
- Introduction to Developer Tools (Inspect Element, Console, etc.)
- Writing & Running First HTML File

Module 2: Understanding HTML Basics (3 Hours)

2.1 What is HTML? (30 min)

- History & Evolution of HTML
- Difference between HTML, HTML5, XHTML

2.2 HTML Page Structure (1 Hour)

- Understanding DOCTYPE & HTML Structure
- <html>, <head>, <body> elements
- Metadata Elements (<meta>, <title>, <link>)

2.3 HTML Tags and Elements (1 Hours)

- What are Tags, Elements, Attributes?
- Common HTML Tags:
    - Headings (<h1> to <h6>)
    - Paragraphs (<p>)
    - Line Breaks & Horizontal Rules (
, <hr>)
    - Bold, Italics, Underline (<b>, <i>, <u>)
    - Superscript & Subscript (<sup>, <sub>)
- Writing Basic HTML Document

2.4 Comments & Best Practices (30 min)

- How to Write Comments in HTML
- HTML Coding Best Practices & Formatting

Module 3: Working with Links and Images (2 Hours)

3.1 Hyperlinks (1 Hours)

- Absolute vs Relative URLs
- Anchor Tag (<a>) & href Attribute
- Opening Links in New Tab (target="_blank")
- Linking Emails & Phone Numbers

3.2 Images (1 Hours)

- Adding Images (<img> tag, src, alt)
- Image Formats (JPG, PNG, GIF, SVG, WebP)
- Resizing & Responsive Images (width, height, max-width)
- Using Images from Local System & URLs

Module 4: Working with Lists and Tables (4 Hours)

4.1 Lists (2 Hours)

- Ordered List (<ol>), Unordered List (<ul>), List Item (<li>)
- Nested Lists
- Definition List (<dl>, <dt>, <dd>)
- Practical: Creating a To-Do List & Navigation Menu

4.2 Tables 2 Hours)

- Table Structure (<table>, <tr>, <td>, <th>)
- Rowspan & Colspan
- Table Styling (border, padding, cellspacing)
- Creating a Timetable or Price List

Module 5: HTML Forms and Inputs (4 Hours)

5.1 Basics of Forms (1 Hours)

- What are Forms?
- Form Structure (<form>, action, method)
- GET vs POST Methods

5.2 Input Elements (1 Hours)

- Text Fields (<input type="text">)
- Password Fields (<input type="password">)

- Email & Number Inputs
- Textarea (<textarea>)
- Dropdown (<select>, <option>)
- Radio Buttons & Checkboxes

5.3 Form Validation (2 Hours)

- Required Fields (required attribute)
- Pattern Matching (pattern attribute)
- Disabling & Read-only Fields
- Submit & Reset Buttons

Module 6: HTML5 Advanced Concepts (3 Hours)

6.1 HTML5 Semantic Elements (1.5 Hours)

- What are Semantic Elements?
- Common Tags: <header>, <nav>, <section>, <article>, <footer>
- Difference Between and <section>

6.2 HTML5 Multimedia (1.5 Hours)

- Adding Videos (<video>, controls, autoplay)
- Adding Audio (<audio> tag, controls, loop)

CSS TOPICS: (15-17 days)

1. Introduction to CSS (1.5 hrs)

- What is CSS?
- Role of CSS in web development
- Ways to apply CSS:
    - Inline CSS
    - Internal CSS
    - External CSS

2. CSS Selectors & Specificity (1 hr)

- Basic selectors:
    - Element Selector
    - Class Selector
    - ID Selector
    - Universal Selector
- Grouping and Combining selectors:
    - Descendant selector (div p)

    - Child selector (div > p)
    - Adjacent sibling selector (h1 + p)
    - General sibling selector (h1 ~ p)
- Specificity and importance of !important

3. CSS Box Model (1.5 hrs)

- Content, Padding, Border, and Margin
- Width, Height, and box-sizing property
- overflow handling

4. Colors & Backgrounds(2 hrs)

- Using color values:
    - Named colors (red, blue, etc.)
    - Hex codes (#ff5733)
    - RGB (rgb(255, 87, 51))
    - HSL (hsl(9, 100%, 64%))
- Background properties:
    - background-color
    - background-image
    - background-position
    - background-size
    - background-repeat

5. Text & Typography (1 hr)

- Font families and @font-face
- Font size, weight, and style
- Line height, letter spacing, word spacing
- Text alignment and transformations

6. CSS Flexbox (Layout System) (4 hrs)

- display: flex
- flex-direction
- justify-content
- align-items
- align-self
- flex-wrap
- flex-grow, flex-shrink, flex-basis
- Practical examples of Flexbox layout

7. CSS Grid (Advanced Layout) (4 hrs)

- display: grid
- Defining grid columns and rows
- grid-template-areas
- grid-gap, grid-column, grid-row
- Responsive grid layouts

8. Positioning Elements (2 hrs)

- static, relative, absolute, fixed, sticky
- Z-index and stacking context

9. CSS Transitions & Animations (3 hrs)

- transition properties (transition-duration, transition-delay)
- CSS keyframe animations (@keyframes)
- animation properties (animation-name, animation-duration, animation-timing-function, animation-iteration-count)

10. Responsive Design & Media Queries (2 hrs)

- Introduction to responsive design
- max-width, min-width, viewport meta tag
- Media queries (@media)
- Mobile-first design approach
- rem, em, %, vh, vw units

11. CSS Variables (Custom Properties) (1 hr)

- Defining CSS variables (--main-color: blue;)
- Using CSS variables (color: var(--main-color);)
- Theming with CSS variables

12. Advanced CSS Concepts (1 hr)

- clip-path for creative shapes
- CSS filters (blur(), grayscale(), brightness())
- transform properties (scale(), rotate(), translate())
- object-fit and object-position for images

13. CSS Frameworks & Preprocessors (10 hrs)

- BOOTSTRAP (5 hrs)
- SASS/SCSS basics: (5 hrs)
    - Variables in SASS

- Nesting styles
- Mixins and functions
- Partials and imports

BOOTSTRAP: (2-3 Days)

1.Boostrap Introduction

2.Bootstrap utility class names

3. Bootstrap Layout and breakpoints

4. Bootstrap colors and design

5. Bootstrap components

6. Bootstrap Icons

JAVASCRIPT: (30 Days)

Module 1: Introduction to JavaScript (4 hrs)

1.1. What is JavaScript?

1.1.1. A Brief History of JavaScript

1.1.1.1. Origins and development

1.1.1.2. JavaScript's role in web development

1.1.2. JavaScript vs. Other Programming Languages

1.1.2.1. Comparing JavaScript to Java, C++, Python, etc.

1.2. Setting Up Your Development Environment

1.2.1. Text Editors and IDEs

1.2.1.1. Popular code editors (Visual Studio Code, Sublime Text)

1.2.1.2. Configuring editor extensions for JavaScript

1.2.2. Browser Developer Tools

1.2.2.1. Chrome DevTools

1.2.2.2. Firefox Developer Tools

1.2.2.3. Debugging in different browsers

1.3. Writing Your First JavaScript Code

1.3.1. Embedding JavaScript in HTML

1.3.1.1. Inline JavaScript

1.3.1.2. External JavaScript files

1.3.2. Variables and Data Types

1.3.2.1. Declaring variables (var, let, const)

1.3.2.2. Data types (string, number, boolean, undefined, null)

1.3.3. Comments and Basic Syntax

1.3.3.1. Single-line and multi-line comments

1.3.3.2. Semicolons and code formatting conventions

Module 2: JavaScript Fundamentals (12 hrs)

2.1. Operators and Expressions (4 hrs)

Addition, subtraction, multiplication, division

2.1.1.1. Modulo operator

2.1.2. Comparison Operators

2.1.2.1. Equality (== vs. ===)

2.1.2.2. Inequality (!= vs. !==)

2.1.3. Logical Operators

2.1.3.1. AND (&&), OR (||), NOT (!)

2.1.3.2. Truthy and falsy values

2.2. Control Flow (4 hrs)

2.2.1. Conditional Statements

2.2.1.1. if statements

2.2.1.2. else if statements

2.2.1.3. else statements

2.2.2. Switch Statements

2.2.2.1. Using switch for multi-case scenarios

2.2.3. Loops

2.2.3.1. for loops

2.2.3.2. while loops

2.2.3.3. do-while loops

2.2.3.4. Loop control (break and continue)

2.3. Functions (4 hrs)

2.3.1. Declaring and Calling Functions

2.3.1.1. Function declaration vs. function expression

2.3.1.2. Calling functions with arguments

2.3.2. Parameters and Arguments

2.3.2.1. Defining parameters

2.3.2.2. Passing arguments to functions

2.3.3. Return Statements

2.3.3.1. Returning values from functions

2.3.3.2. The concept of "undefined" and "void"

Module 3: JavaScript Objects and Data Structures(10 hrs)

3.1. Working with Strings(2 hrs)

3.1.1. String Manipulation

3.1.1.1. Concatenation

3.1.1.2. String interpolation

3.1.2. String Methods

3.1.2.1. Common string methods (charAt, indexOf, length)

3.1.2.2. String manipulation with methods (toUpperCase, toLowerCase, trim)

3.2. Working with Number(2 hrs)

3.2.1. Math Object

3.2.1.1. Math functions (Math.round, Math.floor, Math.random)

3.2.2. Number Methods

3.2.2.1. Converting strings to numbers (parseInt, parseFloat)

3.2.2.2. Number formatting (toFixed, toPrecision)

3.3. Arrays (4 hrs)

3.3.1. Declaring and Initializing Arrays

3.3.1.1. Array literals

3.3.1.2. Creating arrays with the Array constructor

3.3.2. Array Methods

3.3.2.1. Iterating through arrays (forEach, map, filter)

3.3.2.2. Modifying arrays (push, pop, shift, unshift, splice)

3.4. Objects (2 hrs)

3.4.1. Creating Objects

3.4.1.1. Object literals

3.4.1.2. Constructor functions and classes

3.4.2. Object Properties and Methods

3.4.2.1. Accessing and modifying properties

3.4.2.2. Adding methods to objects

3.4.2.3. Object destructuring

Module 4: DOM Manipulation (6-8 hrs)

4.1. Introduction to the Document Object Model (DOM)

4.1.1. What is the DOM?

4.1.1.1. The DOM as a tree structure

4.1.1.2. Relationship between HTML and the DOM

4.1.2. Accessing DOM Elements

4.1.2.1. Selecting elements by tag, ID, class, and attribute

4.2. Manipulating DOM Elements

4.2.1. Changing Text and Attributes

4.2.1.1. Modifying text content

4.2.1.2. Changing attributes (src, href, class)

4.2.2. Adding and Removing Elements

4.2.2.1. Creating new elements (createElement)

4.2.2.2. Appending and removing elements

4.2.3. Event Handling

4.2.3.1. Attaching event listeners

4.2.3.2. Event object and event delegation

Module 5: Asynchronous JavaScript (6-8 hrs)

5.1. Understanding Asynchronous Programming

5.1.1. Callbacks

5.1.1.1. Asynchronous code with callbacks

5.1.1.2. Callback hell and its issues

5.1.2. Promises

5.1.2.1. Creating and using promises

5.1.2.2. Chaining promises

5.2. Fetch API and AJAX

5.2.1. Making HTTP Requests

5.2.1.1. Using the Fetch API

5.2.1.2. Handling different HTTP methods (GET, POST)

5.2.2. Handling Responses

5.2.2.1. Parsing JSON responses

5.2.2.2. Error handling with fetch

Module 6: Error Handling and Debugging (2 hrs)

6.1. Handling Errors

6.1.1. try...catch Statements

6.1.1.1. Handling exceptions gracefully

6.1.1.2. Catching specific error types

6.1.2. Throwing Custom Errors

6.1.2.1. Creating and throwing custom error objects

6.1.2.2. Error handling best practices

6.2. Debugging Techniques

6.2.1. Console.log and Debugging Tools

6.2.1.1. Using console.log for debugging

6.2.1.2. Inspecting variables and objects

6.2.2. Using Breakpoints

6.2.2.1. Setting breakpoints in browser developer tools

6.2.2.2. Stepping through code execution

Module 7: Advanced JavaScript Concepts (8 hrs)

7.1. Closures and Scope

7.1.1. Lexical Scope

7.1.1.1. Understanding variable scope

7.1.1.2. Scope chain and closures

7.1.2. Closure Use Cases

7.1.2.1. Private variables and functions

7.1.2.2. Callback functions and asynchronous code

7.2. Prototypes and Inheritance

7.2.1. Prototype Chain

7.2.1.1. Prototype inheritance model

7.2.1.2. The prototype property

7.2.2. Object-Oriented Programming in JavaScript

7.2.2.1. Creating constructor functions

7.2.2.2. Extending objects with prototypes

7.3. ES6+ Features

7.3.1. Arrow Functions

7.3.1.1. Simplifying function syntax

7.3.1.2. Lexical this binding

7.3.2. Template Literals

7.3.2.1. Interpolating variables in strings

7.3.2.2. Multi-line strings

7.3.3. Destructuring

7.3.3.1. Extracting values from objects and arrays

7.3.3.2. Default values and renaming variables

7.3.4. Classes and Modules

7.3.4.1. Creating classes and constructors

7.3.4.2. Importing and exporting modules

Module 8: Working with APIs and Libraries (5 hrs)

8.1. Consuming APIs

8.1.1. Fetching Data from External APIs

8.1.1.1. Making GET and POST requests

8.1.1.2. Handling asynchronous responses

8.1.2. Handling JSON Data

8.1.2.1. Parsing JSON responses

8.1.2.2. Serializing JavaScript objects to JSON

8.2. Popular JavaScript Libraries

8.2.1. Introduction to jQuery

8.2.1.1. Selecting and manipulating DOM elements with jQuery

8.2.1.2. Event handling and animations

8.2.2. Working with React or Vue.js (choose one)

8.2.2.1. Building user interfaces with components

8.2.2.2. State management and routing

Module 9: Project Development (4 hrs)

9.1. Building a Project

9.1.1. Project Planning and Structure

9.1.1.1. Defining project goals and requirements

9.1.1.2. Organizing project files and directories

9.1.2. User Interface Design

9.1.2.1. Wireframing and prototyping

9.1.2.2. Creating responsive layouts

9.2. Incorporating What You've Learned

9.2.1. Using JavaScript in a Real-World Project

9.2.1.1. Implementing interactivity and functionality

9.2.1.2. Data storage and retrieval (localStorage, APIs)

9.2.2. Troubleshooting and Problem-Solving

9.2.2.1. Debugging issues in your project

9.2.2.2. Iterative development and testing

Module 10: Deployment and Next Steps (2 hrs)

10.1. Preparing for Deployment

- 10.1.1. Minification and Optimization

- 10.1.1.1. Reducing file sizes for faster loading
- 10.1.1.2. Browser compatibility considerations
- 10.1.2. Hosting Options
- 10.1.2.1. Choosing a web hosting service
- 10.1.2.2. Deploying your project to a server

10.2. Continuing Your Learning Journey

- 10.2.1. Advanced Topics
- 10.2.1.1. Exploring Node.js for server-side JavaScript
- 10.2.1.2. Learning TypeScript for static typing
- 10.2.2. Building a Portfolio
- 10.2.2.1. Showcasing your projects and skills
- 10.2.2.2. Networking and job search strategies