

Web Development Essentials

Duration: 8 days

Prerequisite: Knowledge of Web Programming

Day 1 – Web Essentials: HTML (7–8 Hours)

Theory Modules

- Introduction to Web & Client–Server Architecture
- HTML Document Structure
- HTML5 Semantic Elements
- Text, Images, Links, Lists
- Forms and Input Controls
- HTML Validation & Best Practices
- Accessibility Basics (ARIA, labels, alt attributes)
- Corporate Web Standards & Coding Guidelines

Lab Modules

- Lab 1: Create a basic HTML page with semantic layout
- Lab 2: Build a registration form with validations
- Lab 3: Create an accessible webpage (screen-reader friendly)

Outcome: Ability to build structured, standards-compliant web pages.

Day 2 – Web Essentials: CSS (7–8 Hours)

Theory Modules

- CSS Syntax, Selectors & Specificity
- Box Model & Positioning
- Flexbox Layout System
- Introduction to Grid Layout
- Responsive Design & Media Queries
- Reusable CSS & Best Practices
- Corporate UI Styling Guidelines

Lab Modules

- Lab 1: Style an HTML page using CSS selectors
- Lab 2: Create responsive layouts using Flexbox
- Lab 3: Build a mobile-friendly landing page

Outcome: Ability to design responsive, professional UI layouts.

Day 3 – Web Essentials: JavaScript Fundamentals (7–8 Hours)

Theory Modules

- JavaScript Execution Model

- Variables, Operators & Data Types
- Control Structures (if, loops, switch)
- Functions & Arrow Functions
- Arrays and Array Functions
- Primitive vs Reference Values
- Objects and Classes

Lab Modules

- Lab 1: Write JS programs using conditions and loops
- Lab 2: Implement functions and array operations
- Lab 3: Create object-based programs

Outcome: Strong JavaScript programming foundation.

Day 4 – Advanced JavaScript & DOM (7–8 Hours)

Theory Modules

- Import & Export Modules
- Destructuring & Spread Operator
- DOM Structure & Traversal
- DOM Manipulation Techniques
- Event Handling
- Best Practices for Clean JS Code

Lab Modules

- Lab 1: Create modular JavaScript files
- Lab 2: Manipulate DOM elements dynamically
- Lab 3: Build an interactive UI (form validation / dynamic list)

Outcome: Ability to build interactive front-end behavior.

Day 5 – Web Protocols, Performance & Developer Tools (7–8 Hours)

Theory Modules

- DNS & TCP/IP Basics
- HTTP vs HTTPS
- REST Communication Overview
- FTP, UDP Overview
- CDNs & Performance Optimization
- WebSockets & WebHooks
- Introduction to Developer Tools

Lab Modules

- Lab 1: Analyze HTTP requests using browser dev tools
- Lab 2: Inspect network calls & headers

- Lab 3: Debug performance issues using Chrome DevTools

Outcome: Understanding of how applications communicate and perform.

Day 6 – AI-First Software Engineering (7–8 Hours)

Theory Modules

- AI in Modern Software Development
- AI-First Engineering Mindset
- VS Code Setup for Developers
- GitHub Copilot Overview
- Prompt Engineering for Developers
- AI for Code Review, Refactoring & Debugging

Lab Modules

- Lab 1: Setup VS Code with Copilot
- Lab 2: Use AI to generate and refactor code
- Lab 3: Debug code using AI suggestions

Outcome: Developers learn to leverage AI for productivity.

Day 7 – AI & Programming with Python (7–8 Hours)

Theory Modules

- Python Syntax & Environment Setup
- Variables, Data Types & Control Structures
- Functions & Modules
- Data Manipulation Basics
- Intro to Data Analysis
- Data Visualization Concepts
- Integrating Python with AI Tools

Lab Modules

- Lab 1: Write Python scripts
- Lab 2: Perform basic data analysis
- Lab 3: Visualize data using Python libraries
- Lab 4: Use AI tools with Python scripts

Outcome: Foundational Python skills with AI exposure.

Day 8 – TypeScript & Debugging Tools (7–8 Hours)

Theory Modules

- Why TypeScript in Enterprise Projects

- TypeScript Setup & Compilation
- Variables, Data Types & Arrays
- Functions & Interfaces
- Inheritance & Abstract Classes
- Modules & Generics
- Debugging & Testing Concepts
- Linters & Formatters

Lab Modules

- Lab 1: Convert JavaScript code to TypeScript
- Lab 2: Implement interfaces and classes
- Lab 3: Debug TypeScript applications
- Lab 4: Use linters and formatters

Outcome: Enterprise-ready TypeScript and debugging proficiency.