

KOENIG SOLUTIONS · COURSE OUTLINE

Web Programming Essentials for Software Engineer

Learn to build web pages and applications with HTML, CSS, JavaScript, TypeScript, Python and AI-assisted developer tools.

8 Days

DURATION

56

TOPICS

26

HANDS-ON ACTIVITIES

Each day listed as 7-8 hours

COURSE OVERVIEW

This course covers the foundations of web development, starting with structured HTML pages, responsive CSS layouts, and core JavaScript programming. It then moves into advanced JavaScript with DOM manipulation and event handling, followed by web protocols, performance optimisation, and browser developer tools. Later modules introduce AI-first software engineering practices with tools such as GitHub Copilot, foundational Python programming with data analysis and visualisation, and TypeScript for enterprise projects along with debugging and testing concepts.

WHO THIS COURSE IS FOR

Software Engineers

Front-End Developers

Web Developers

Full-Stack Developers

PREREQUISITES

- Knowledge of Web Programming

LEARNING OBJECTIVES

- Build structured, standards-compliant web pages with HTML5
- Apply CSS layout systems such as Flexbox and Grid
- Implement JavaScript programs using functions, arrays and objects
- Develop interactive front-end behaviour with DOM manipulation and events
- Explain web protocols including HTTP, HTTPS and REST
- Analyse network and performance issues using browser developer tools
- Apply AI tools such as GitHub Copilot for coding tasks
- Develop TypeScript applications with interfaces, classes and generics

56 Topics

DAY 1 Web Essentials: HTML

7-8 hours

Ability to build structured, standards-compliant web pages.

TOPICS**3 Lab 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

DAY 2 Web Essentials: CSS

7-8 hours

Ability to design responsive, professional UI layouts.

TOPICS**3 Lab 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

DAY 3 Web Essentials: JavaScript Fundamentals

7-8 hours

Strong JavaScript programming foundation.

TOPICS**3 Lab 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

DAY 4 Advanced JavaScript & DOM

7-8 hours

Ability to build interactive front-end behavior.

TOPICS**3 Lab Modules**

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

DAY 5 Web Protocols, Performance & Developer Tools

7-8 hours

Understanding of how applications communicate and perform.

TOPICS

3 Lab Modules

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

DAY 6 AI-First Software Engineering

7-8 hours

Developers learn to leverage AI for productivity.

TOPICS

3 Lab 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

DAY 7 AI & Programming with Python

7-8 hours

Foundational Python skills with AI exposure.

TOPICS

4 Lab 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

DAY 8 TypeScript & Debugging Tools

7-8 hours

Enterprise-ready TypeScript and debugging proficiency.

TOPICS

4 Lab Modules

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|---|----------------------------------|
| ■ Why TypeScript in Enterprise Projects | ■ Inheritance & Abstract Classes |
| ■ TypeScript Setup & Compilation | ■ Modules & Generics |
| ■ Variables, Data Types & Arrays | ■ Debugging & Testing Concepts |
| ■ Functions & Interfaces | ■ Linters & Formatters |

Practise What You Learn

MODULE	ACTIVITY
Web Essentials: HTML	■ 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)
Web Essentials: CSS	■ Lab 1: Style an HTML page using CSS selectors ■ Lab 2: Create responsive layouts using Flexbox ■ Lab 3: Build a mobile-friendly landing page
Web Essentials: JavaScript Fundamentals	■ Lab 1: Write JS programs using conditions and loops ■ Lab 2: Implement functions and array operations ■ Lab 3: Create object-based programs
Advanced JavaScript & DOM	■ Lab 1: Create modular JavaScript files ■ Lab 2: Manipulate DOM elements dynamically ■ Lab 3: Build an interactive UI (form validation / dynamic list)
Web Protocols, Performance & Developer Tools	■ Lab 1: Analyze HTTP requests using browser dev tools ■ Lab 2: Inspect network calls & headers ■ Lab 3: Debug performance issues using Chrome DevTools
AI-First Software Engineering	■ Lab 1: Setup VS Code with Copilot ■ Lab 2: Use AI to generate and refactor code ■ Lab 3: Debug code using AI suggestions
AI & Programming with Python	■ 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
TypeScript & Debugging Tools	■ Lab 1: Convert JavaScript code to TypeScript ■ Lab 2: Implement interfaces and classes ■ Lab 3: Debug TypeScript applications ■ Lab 4: Use linters and formatters

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

FLEXIBLE DELIVERY

Learn the Way That Suits You

Classroom Training

Live Online Classes (ILO)

Fly-Me-A-Trainer (FMAT)

Flexi (Self-Paced)

1-on-1 Training

Ready to Get Started?

Talk to a learning advisor about schedules, group training and customised delivery.

Visit koenig-solutions.com

✉ info@koenig-solutions.com