

Web Development Series

JavaScript Specialist



The *JavaScript Specialist* course focuses on the fundamental concepts of the JavaScript language. This course will empower you with the skills to design client-side, platform-independent solutions that greatly increase the value of your Web site by providing interactivity and interest. You will learn how to use JavaScript to communicate with users, modify the Document Object Model (DOM), control program flow, validate forms, animate images, create cookies, change HTML on the fly, and communicate with databases.

The first part of this course focuses on essential JavaScript principles and techniques, including common programming practices, working with variables and data, and using functions, methods and events.

Next, you will learn intermediate JavaScript programming techniques that will build upon your knowledge and present solutions for more functional and exciting Web pages. These include using control structures for program flow, manipulating the JavaScript DOM, using language objects, creating expressions, and creating and using custom objects.

You will then apply JavaScript programming techniques to develop interactive forms, change HTML dynamically, create and use cookies, and explore security issues related to JavaScript. You will also learn about extensions to the JavaScript language, including JavaScript code libraries, Web APIs and advanced interactive Web applications with AJAX. Finally, you will learn throughout the course about tools and techniques for debugging and troubleshooting your JavaScript code.

By the end of this course, you will understand and use the most popular applications of JavaScript.

Topics

Introduction to JavaScript

- Introduction to Scripting
- JavaScript Characteristics
- JavaScript and Common Programming Concepts
- JavaScript Flavors and Versions
- Technologies Based on JavaScript
- Server-Side vs. Client-Side Applications
- Annotating Your Code with Comments
- Expanding the Role of JavaScript

Working with Variables and Data in JavaScript

- Using JavaScript to Communicate with the User
- Using Data More Than Once: Variables
- JavaScript Operators
- JavaScript Expressions
- JavaScript Alerts and Prompts
- Inline Scripting, Simple User Events and Basic Event Handlers
- JavaScript Keywords and Reserved Words

Functions, Methods and Events in JavaScript

- Introduction to Functions
- Defining a Function
- Calling a Function
- Methods as Functions
- Types of Functions

- User Events and JavaScript Event Handlers

Debugging and Troubleshooting JavaScript

- What Is Debugging?
- Tools for Debugging Code
- Testing Code in Various Browsers
- Debugging Logic Errors
- JavaScript and Mobile Devices

Controlling Program Flow in JavaScript

- Controlling Decisional Program Flow
- The if...else Statement
- The while Statement
- The do...while Statement
- The for Statement
- The break Statement
- The continue Statement
- The switch Statement

The JavaScript Document Object Model (DOM)

- The JavaScript Document Object Model (DOM)
- The window Object
- The document Object
- The image Object
- The history Object
- The location Object
- The navigator Object
- The Virtual DOM

JavaScript Language Objects

- Introduction to JavaScript Language Objects
- The String Object
- Evaluating Strings
- JavaScript Regular Expressions
- The Array Object
- The forEach Method
- The Map Method
- The Date Object
- Setting and Extracting Time Information
- The Math Object

Custom JavaScript Objects

- Creating Custom Objects
- Creating a JavaScript Object: The Constructor
- Creating an Instance of a Custom Object
- Creating Object Methods
- Creating Functions for Your Objects
- Concept of Classes
- Iterators and Generators
- Call, apply and bind

Changing HTML on the Fly

- Changing HTML on the Fly
- Using the getElementById Method
- Using the getElementsByTagName Method
- Using the getElementsByTagName Method
- Using the getElementsByClassName Method

Modifying Attributes within the DOM
Appending Text to the DOM

Developing Interactive Forms with JavaScript

Interactive Forms
Overview of Form Elements
Referring to Form Elements
The form Object
The input Elements and text Objects
The textarea object
The select Object
Form Validation
Common form Security Errors

JavaScript Security

Introduction to JavaScript Security Issues
Browser vs. Operating System
Browser-Specific Security Issues

Browser Compatibility and Client-Side Detection
Script Blocking
Differences in document.write Among Browsers
Malicious and Accidental Coding
Frame-to-Frame URL Changing
Signed Scripts
Cross-Site Scripting (XSS)
Cookies and Security in JavaScript
Ethics in Collecting, Storing, Using and Protecting User Data
Creating Secure JavaScript Code

JavaScript Libraries and Frameworks

Introduction to JavaScript Libraries and Frameworks
Choosing a Code Library
External and Pre-Made Scripts
Loading Your First Library
Using JavaScript Library Plug-ins

Using Frameworks
Best Practices with JavaScript Libraries and Frameworks
Copyright Issues and JavaScript

JavaScript and AJAX

Introduction to AJAX
Handling Data and Content Types
Interactions Among JavaScript, Data and HTML
Using AJAX Scripts
AJAX and Servers
AJAX and Databases
Usability Issues with AJAX
Combining AJAX with Libraries

Introduction to Web APIs

Web Application Programming Interface (API)
The Web Storage API
The Geolocation API
The Canvas API

Target Audience

The *CIW JavaScript Specialist* course is for individuals who want to understand how to fully use the features of the JavaScript programming language in Web application development. These specialized Web language skills can help you begin or grow a career in advanced Web development and technologies:

- Web developers
- Software developers
- Application programmers
- Full-stack developers
- Web Designers
- UI/UX Designers

Job Responsibilities

Implement and maintain hypertext-based Web sites using authoring and scripting languages; create Web content; use Web management tools and digital media tools; and apply human-factor principles to design.

Prerequisites

No prior knowledge of the JavaScript programming language is necessary. However, students should be familiar with using the Internet, developing Web pages and configuring networks to a level consistent with that found in the CIW Web Foundations series. Knowledge of HTML code development is required.