

From Zero to JavaScript

The JavaScript language is everywhere these days. Using JavaScript, you can build everything from websites, to mobile apps, to game development. This course will get you up to speed with the latest developments in JavaScript, as well as the fundamentals to ensure you have all the skills you need to create great, well-performing, modern JavaScript applications. Where you are new to JavaScript, or have been using it for many years, you will find great nuggets of information in this class.

Learning Objectives

- Learn the Fundamentals of JavaScript
- Respond to Events and Manipulate the DOM
- Discover the New Methods for each JavaScript Data Type
- Learn to Manipulate Collections
- Understand How to Handle Exceptions
- Learn the new ES6 Classes and Object-Oriented Programming
- Use the Fetch API to Call Web APIs
- Efficiently Create Dynamic HTML Using Templating
- Discover the Many Ways to Accomplish Asynchronous Programming
- Learn to Use JavaScript Modules
- Learn the Many of the Different JavaScript Web APIs
- Use IndexedDB to Store Data in your Application

Prerequisites

Students should be somewhat familiar with a programming language. A good knowledge of HTML and CSS. You also need access to an editor such as Visual Studio Code.

Course Length

4-5 days

JavaScript Modules

Module 1: From Zero to JavaScript Fundamentals

The JavaScript language is everywhere these days. JavaScript is one of the most prevalent languages used today. Everything from websites, Web APIs, mobile apps, and game development use the JavaScript language. This fundamentals module provides you with a solid understanding of the JavaScript language constructs. Whether you are a beginner or an experienced developer, mastering the basics is crucial for building a strong foundation and staying up-to-date with the latest advancements.

Module 2: From Zero to JavaScript Operators

In this module you learn to use the various JavaScript operators. You learn mathematical, comparison, logical, assignment, and some additional operators. All these are necessary to understand in order to get the most out of the JavaScript language.

Module 3: From Zero to JavaScript Decision Structures

This module explores the various JavaScript language structures you use to make decisions in your programs. Similar to other languages, JavaScript uses if, else, and switch statements to guide the program flow. This module explores each of these in detail to ensure you understand how to use them in your JavaScript programs.

Module 4: From Zero to JavaScript Looping Structures

This module explores the many ways of looping, or iterating, over collections of data in JavaScript. You learn to use the `*do*` and the `*while*` loops. You also see the various ways to use the very flexible `*for*` loop. In addition you are exposed to the `*for...in*`, and `*for...of*` loops.

Module 5: From Zero to JavaScript Functions

In this module you learn to use the global functions and properties to help you when programming JavaScript. You learn to build your own functions to make your programs easier to understand and maintain. You also learn to use arrow functions as a short-hand for traditional function declarations.

Module 6: From Zero to JavaScript Events

In this module you explore how to respond to events in your JavaScript programs. You learn the many different events connected to various HTML elements and how to respond to them. In addition you learn to connect up event listeners in your programs.

Module 7: From Zero to JavaScript Scope and Hoisting

In this module you learn the correct way to run JavaScript in strict mode. You learn how this affects the scope and the hoisting of variables. The keywords `let`, `var`, and `const` are demonstrated for variable and function declarations, and how they affect hoisting.

Module 8: From Zero to JavaScript Data Type Methods

Each data type in JavaScript has methods that operate upon that data type. In this module you learn how to use the different methods on the `String`, `Number`, `Math`, `Date`, `Array`, `Window`, and `Object` data types.

Module 9: From Zero to JavaScript Array Manipulation

In this module you learn how to loop through arrays. Discover methods to locate data within arrays. Get familiar with mapping and reducing arrays. Learn how to generate new arrays. Master the techniques for altering data in arrays. Learn how to sort and reverse the contents of arrays.

Module 10: From Zero to JavaScript Set Manipulation

In this module you familiarize yourself with the Spread syntax. Understand how to implement the Rest Parameter syntax. Explore the functions available in the `Map()` object. Discover the methods associated with the `Set()` object.

Module 11: From Zero to JavaScript DOM Manipulation

In this module you explore how to query and manipulate the *Document Object Model (DOM)* using JavaScript. You learn to query the DOM using methods such

as `querySelector()`, `querySelectorAll()`, `getElementsByClassName()`, and `getElementsByTagName()`. You will see examples of adding and removing HTML elements, CSS classes, and styles.

Module 12: From Zero to JavaScript Exception Handling

When an error occurs in your code JavaScript creates an Error object and displays it in the Browser's console window. You learn to utilize the `try`, `catch`, and `finally` blocks to capture and report errors. You will extend the Error object into your own class to which you add your own properties. You then learn the different Error objects available in JavaScript and how each one responds and reports the errors.

Module 13: From Zero to JavaScript Classes

Once a JavaScript application starts to get large and complex it helps to implement object-oriented programming techniques. The `*class*` keyword, introduced in 2015 to JavaScript, is the preferred method for implementing OOP in your applications. In this module you learn to create classes with properties and methods. You will learn to take advantage of inheritance and build static properties and methods to create some useful helper classes.

Module 14: From Zero to JavaScript Templating

To build dynamic web pages you need to add HTML to your web page on the fly. A dynamic web page is one where you marry HTML with data retrieved from a data store. Writing JavaScript code to create HTML on-the-fly can be messy and lead to hard-to-find bugs. Use a templating language such as `Mustache.js` or `Handlebars.js` makes building HTML on the fly much simpler.

In this module you learn to build dynamic web pages using string concatenation and template literals to illustrate how messy these can be. You then learn the basics of templating using `Handlebars.js`. You start by learning how templating works. You then learn to place templates into an HTML template element and marry data and templates together using `Handlebars`. Finally you build a select list and a table using loops using `Handlebars` templates.

Module 15: From Zero to JavaScript Asynchronous Programming

To keep your application performing well, it is essential to use asynchronous programming. This module provides you with the basics of asynchronous programming in JavaScript. You learn to use callbacks, promises, the `async` and `await` keywords, and web workers.

You start by learning what asynchronous programming is all about. You then see the old style of asynchronous programming using callbacks. You will still see these in many JavaScript programs, so it is essential that you understand how they work. You then learn to create promises in JavaScript which is a much easier-to-use way of creating asynchronous applications. You take a look at using the `async` and `await` keywords. Finally, you learn about Web Workers for accomplishing asynchronous programming.

Module 16: From Zero to JavaScript Fetch API

In this module you are shown how to use the Fetch API in JavaScript to get, post, put, and delete data by making calls to a Web API server. The Fetch API replaces the older XMLHttpRequest object. The Fetch API is a more powerful and more flexible method of interacting with Web API calls. The Fetch API is promise-based, thus making it much easier to use.

Module 17: From Zero to JavaScript Modules

In this module you learn the concept of Modules in JavaScript. Explore how to incorporate Modules into your applications. Find out how to create, export, and import functions from a module. Develop classes within modules. Learn how to merge multiple modules into a single module. Get acquainted with creating a Module object. Discover how to load modules dynamically.

Module 18: From Zero to JavaScript APIs

In this module you are introduced to various Web APIs that you can access through JavaScript. You learn how to store data client-side using the Web Storage API using `sessionStorage` and `localStorage`. You interact with the Clipboard API to read and write data to the operating system's clipboard. Using the History API you can move forward and backward through the history in the browser. The HTML Drag and Drop API shows you how to drag elements around your web page and even drag and drop in a group of files from your computer. The Web Video and Audio API allows you to programmatically start, pause, fast-forward, and rewind video and audio files on your web page. Finally, the Geolocation API reports the current latitude and longitude of your device.

Module 19: From Zero to JavaScript IndexedDB

In this module you learn to implement an object database in your web pages

Explore the functionalities of IndexedDB. Learn how to create, list, and remove objects from a database. Gain skills in adding, modifying, and deleting data in a database. Learn how to access data within a database. Discover methods for searching data in a database.