

# JAVASCRIPT SYLLABUS

## MODULE 1: Introduction to JavaScript

- 1.1 What is JavaScript
- 1.2 History of JavaScript
- 1.3 ECMAScript Versions (ES5, ES6, ES7+)
- 1.4 JavaScript vs Other Languages
- 1.5 JavaScript Engine (V8, SpiderMonkey)
- 1.6 How JavaScript Works in Browser
- 1.7 JavaScript vs Node.js

## MODULE 2: JavaScript Setup & Environment

- 2.1 Writing JavaScript in Browser
- 2.2 Inline JavaScript
- 2.3 Internal JavaScript
- 2.4 External JavaScript File
- 2.5 Using Browser Console
- 2.6 Installing VS Code
- 2.7 Using Live Server

## MODULE 3: JavaScript Syntax & Basics

- 3.1 Statements
- 3.2 Comments
- 3.3 Case Sensitivity
- 3.4 JavaScript Keywords
- 3.5 Semicolons
- 3.6 Code Formatting

## MODULE 4: Variables

- 4.1 var
- 4.2 let
- 4.3 const
- 4.4 Variable Naming Rules
- 4.5 Scope of Variables
- 4.6 Hoisting

## MODULE 5: Data Types

- 5.1 Primitive Data Types
  - String
  - Number
  - Boolean
  - Undefined
  - Null
  - Symbol
  - BigInt
- 5.2 Non-Primitive Data Types
  - Object
  - Array
  - Function
- 5.3 typeof Operator

## MODULE 6: Operators

- 6.1 Arithmetic Operators
- 6.2 Assignment Operators
- 6.3 Comparison Operators
- 6.4 Logical Operators
- 6.5 Bitwise Operators
- 6.6 Ternary Operator
- 6.7 Type Operators

## MODULE 7: Type Conversion

- 7.1 Implicit Conversion (Coercion)
- 7.2 Explicit Conversion
- 7.3 Number()
- 7.4 String()
- 7.5 Boolean()
- 7.6 parseInt()
- 7.7 parseFloat()

## MODULE 8: Control Structures

- 8.1 if Statement
- 8.2 if...else
- 8.3 else if Ladder
- 8.4 Nested if
- 8.5 switch Statement

## MODULE 9: Loops

- 9.1 for Loop
- 9.2 while Loop
- 9.3 do...while Loop
- 9.4 break Statement
- 9.5 continue Statement
- 9.6 Nested Loops

## MODULE 10: Functions

- 10.1 Function Declaration
- 10.2 Function Expression
- 10.3 Arrow Functions
- 10.4 Parameters and Arguments
- 10.5 Default Parameters

10.6 Return Statement

10.7 Anonymous Functions

10.8 Callback Functions

## **MODULE 11: Arrays**

11.1 Creating Arrays

11.2 Accessing Array Elements

11.3 Array Length

11.4 Looping through Arrays

11.5 Array Methods

- push()
- pop()
- shift()
- unshift()
- splice()
- slice()
- concat()
- join()

11.6 Advanced Array Methods

- map()
- filter()
- reduce()
- find()
- some()
- every()
- sort()

## **MODULE 12: Strings**

12.1 String Creation

12.2 String Properties

12.3 String Methods

- length
- charAt()
- indexOf()

- lastIndexOf()
- includes()
- slice()
- substring()
- replace()
- split()
- toUpperCase()
- toLowerCase()

## MODULE 13: Objects

13.1 Creating Objects

13.2 Object Properties

13.3 Object Methods

13.4 this Keyword

13.5 Object Constructors

13.6 Object Destructuring

13.7 Object Methods

- keys()
- values()
- entries()
- assign()

## MODULE 14: DOM (Document Object Model)

14.1 Introduction to DOM

14.2 Selecting Elements

- getElementById()
- getElementsByClassName()
- getElementsByTagName()
- querySelector()
- querySelectorAll()

14.3 DOM Manipulation

- innerHTML
- textContent

- style manipulation
- classList

14.4 Creating Elements

14.5 Removing Elements

## **MODULE 15: Event Handling**

15.1 What are Events

15.2 Event Listeners

15.3 addEventListener()

15.4 Mouse Events

15.5 Keyboard Events

15.6 Form Events

15.7 Event Bubbling

15.8 Event Capturing

15.9 Event Delegation

## **MODULE 16: Forms & Validation**

16.1 Accessing Form Elements

16.2 Form Submission

16.3 Input Validation

16.4 Prevent Default Behavior

16.5 Regular Expressions in Forms

## **MODULE 17: Error Handling**

17.1 try...catch

17.2 finally

17.3 throw Statement

17.4 Custom Errors

## MODULE 18: JavaScript Timing

- 18.1 setTimeout()
- 18.2 setInterval()
- 18.3 clearTimeout()
- 18.4 clearInterval()

## MODULE 19: ES6 Modern JavaScript

- 19.1 let and const
- 19.2 Arrow Functions
- 19.3 Template Literals
- 19.4 Destructuring
- 19.5 Spread Operator
- 19.6 Rest Parameters
- 19.7 Default Parameters

## MODULE 20: Modules

- 20.1 ES6 Modules
- 20.2 export
- 20.3 import
- 20.4 Named Exports
- 20.5 Default Exports

## MODULE 21: Classes & OOP

- 21.1 Classes
- 21.2 Constructor
- 21.3 Methods
- 21.4 Inheritance
- 21.5 super Keyword
- 21.6 Static Methods
- 21.7 Encapsulation
- 21.8 Polymorphism

## MODULE 22: Asynchronous JavaScript

- 22.1 Synchronous vs Asynchronous
- 22.2 Callbacks
- 22.3 Callback Hell
- 22.4 Event Loop
- 22.5 Async Examples

## MODULE 23: Promises

- 23.1 Creating Promises
- 23.2 Promise States
- 23.3 then()
- 23.4 catch()
- 23.5 finally()

## MODULE 24: Async / Await

- 24.1 async Functions
- 24.2 await Keyword
- 24.3 Error Handling with async/await

## MODULE 25: Fetch API & AJAX

- 25.1 What is API
- 25.2 Fetch API
- 25.3 GET Requests
- 25.4 POST Requests
- 25.5 Handling JSON
- 25.6 Error Handling

## MODULE 26: JSON

- 26.1 JSON Basics
- 26.2 JSON.parse()
- 26.3 JSON.stringify()

## MODULE 27: Browser Storage

- 27.1 Cookies
- 27.2 Local Storage
- 27.3 Session Storage

## MODULE 28: JavaScript BOM

- 28.1 Window Object
- 28.2 Navigator Object
- 28.3 Screen Object
- 28.4 Location Object
- 28.5 History Object

## MODULE 29: Advanced JavaScript Concepts

- 29.1 Execution Context
- 29.2 Call Stack
- 29.3 Scope Chain
- 29.4 Closures
- 29.5 Hoisting
- 29.6 Prototypes
- 29.7 Prototype Chain
- 29.8 Garbage Collection

## **MODULE 30: Functional Programming**

- 30.1 Pure Functions
- 30.2 Higher Order Functions
- 30.3 Immutability
- 30.4 Currying

## **MODULE 31: Design Patterns**

- 31.1 Module Pattern
- 31.2 Singleton Pattern
- 31.3 Observer Pattern
- 31.4 Factory Pattern

## **MODULE 32: JavaScript Performance**

- 32.1 Debouncing
- 32.2 Throttling
- 32.3 Lazy Loading

## **MODULE 33: JavaScript Security**

- 33.1 XSS Attacks
- 33.2 CSRF
- 33.3 Secure Coding Practices

## **MODULE 34: JavaScript Debugging**

- 34.1 console methods
- 34.2 breakpoints
- 34.3 debugging tools

## MODULE 35: Testing in JavaScript

37.1 Unit Testing

37.2 Jest Basics

37.3 Testing Functions

## MODULE 36: JavaScript Projects

### Beginner Projects

1. Calculator
2. To-Do List
3. Digital Clock
4. Random Password Generator
5. Image Slider

### Intermediate Projects

6. Weather App (API)
7. Quiz Application
8. Notes App with Local Storage
9. Movie Search App
10. Form Validation System

### Advanced Projects

11. Chat Application
12. E-commerce Cart System
13. Real-Time Dashboard
14. REST API Client
15. Drag & Drop Kanban Board