**JavaScript Syllabus**

**1. Introduction to JavaScript**

* What is JavaScript?
* Features of JavaScript
* Setting up the Development Environment
* Writing and Executing JavaScript Code
* JavaScript in Browsers vs. JavaScript in Node.js
* Linking External JavaScript Files

**2. JavaScript Basics**

* Variables (var, let, const)
* Data Types (String, Number, Boolean, Null, Undefined, Symbol, Object)
* Operators (Arithmetic, Assignment, Comparison, Logical, Bitwise)
* Type Conversion and Type Coercion
* Comments in JavaScript

**3. Control Flow**

* Conditional Statements (if, else if, else, switch)
* Loops (for, while, do-while, forEach)
* break and continue statements

**4. Functions in JavaScript**

* Function Declaration vs. Function Expression
* Arrow Functions (=>)
* Callback Functions
* Function Scope and Closures
* Higher-Order Functions
* Immediately Invoked Function Expressions (IIFE)

**5. Objects and Arrays**

* Creating Objects (Object Literals, Constructors, Object.create)
* Object Methods and Properties
* this Keyword in JavaScript
* Arrays (Creating, Accessing, Modifying)
* Array Methods (push, pop, shift, unshift, splice, slice, map, filter, reduce, find, some, every, includes, sort, reverse)
* Iterating over Arrays (for, forEach, map)

**6. DOM Manipulation**

* Introduction to the DOM (Document Object Model)
* Selecting Elements (getElementById, querySelector, querySelectorAll)
* Modifying HTML and CSS using JavaScript
* Event Handling (addEventListener, Event Object, event.target)
* Event Delegation
* Form Validation using JavaScript

**7. ES6+ (Modern JavaScript Features)**

* Let & Const
* Template Literals
* Destructuring (Array & Object Destructuring)
* Spread and Rest Operators (...)
* Default Parameters
* Enhanced Object Literals
* Modules (import and export)
* Optional Chaining (?.)
* Nullish Coalescing (??)

**8. Asynchronous JavaScript**

* Callbacks and Callback Hell
* Promises (then, catch, finally)
* async & await
* setTimeout() and setInterval()
* Fetch API & Handling Errors
* Using try...catch for Error Handling

**9. JavaScript Object-Oriented Programming (OOP)**

* Introduction to OOP
* Classes and Objects
* Constructor Functions
* Prototypes and Prototype Inheritance
* class and extends in ES6
* Getters and Setters
* super and this in OOP

**10. Error Handling & Debugging**

* Types of Errors (SyntaxError, TypeError, ReferenceError)
* try, catch, finally, throw
* Debugging using Browser Developer Tools

**11. JavaScript and Web APIs**

* Local Storage, Session Storage, Cookies
* Fetch API and AJAX
* WebSockets
* Geolocation API
* Notifications API

**12. JavaScript Frameworks & Libraries (Introduction)**

* Overview of Popular Frameworks (React.js, Angular, Vue.js)
* Introduction to Node.js and Express.js (for Backend)
* Introduction to jQuery

**13. Advanced JavaScript Concepts**

* Closures and Lexical Scope
* Event Loop and Concurrency Model
* JavaScript Engine (V8, SpiderMonkey)
* Memory Management and Garbage Collection
* Currying
* Debouncing and Throttling

**14. Working with JSON**

* JSON Syntax
* Parsing JSON (JSON.parse())
* Stringifying Objects (JSON.stringify())

**15. Testing JavaScript**

* Unit Testing with Jest
* Debugging with Console and DevTools

**16. JavaScript Best Practices**

* Code Optimization Techniques
* Avoiding Common Mistakes
* Performance Optimization