

# SYLLABUS

# JAVASCRIPT

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## COURSE OVERVIEW

JavaScript is the programming language of the Web browser, and has spread to other domains, from robotics to servers. Its ubiquity, necessity for Web developers, and ease of deployment - make JavaScript a must-learn language. Not only do you have to know it to be a modern software developer, but JavaScript is also immediately useful in the hands of a beginner, making it a great first programming language.

In this course you will learn the fundamentals of programming, as well as the fundamentals of JavaScript and its unique asynchronous programming model. We'll progress from making interactive command-line programs, to building our own messaging clients and chat bots, and walk away having learnt to build real-time connected apps on the server and Web browser.

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### UNIT 1: TYPES & EXPRESSIONS

- Using a REPL
- Numbers and math
- Booleans and logic
- Defining and referencing variables
- Evaluating expressions

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### UNIT 2: FUNCTIONS

- Invoking functions
- Declaring functions
- Functions as data
- Anonymous functions
- Immediately invoked function expressions
- Scope and closures

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### UNIT 3: OBJECTS

- Dictionaries
- Objects
- Calling object methods
- Defining object methods
- Object constructors
- The "this" keyword

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### UNIT 4: STRINGS, ARRAYS, AND CALLBACKS

- Arrays and their methods
- Strings and their methods
- Map, filter, reduce, and sort
- Type coercion in JavaScript

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## UNIT 5: CONTROL STRUCTURES AND IMPLEMENTING CALLBACKS

- If
- Switch
- For
- While
- Try
- Implementing our own “map” function
- Different ways to iterate over a list: for, while, map, recursion

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## UNIT 6: ASYNCHRONOUS PROGRAMMING, IO AND BUILDING PYRAMIDS OF DOOM

- The event loop
- The “fetch” API and GET requests
- Deploying an HTTP server with node and ngrok
- Nesting asynchronous callbacks

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## UNIT 7: THE DOM

- The document object model
- Script tags in the browser
- “onClick” and event handlers
- “getElementbyId” and manipulating the DOM
- Form submission and making/receiving POST requests

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## UNIT 8: BUILDING A CHAT CLIENT

- We have the skills, so together we’ll design a build a quick and dirty messaging app to chat amongst each other.

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## UNIT 9: BUILDING A BOT

- Why chat with another person when you can chat with a bot? Let’s build one!

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## UNIT 10: CONNECTING TO THIRD PARTY APIS

- Our bot is dumb as a bag of nails. Let’s leverage the power of the interwebs to make our bot wise and all-knowing.