SPICED Full Stack Web Development Curriculum

SPICED Academy is an education startup in Berlin that offers onsite 18-week courses in web development and data science in order to become a well-rounded, creative engineer.

The SPICED full stack web development curriculum focuses heavily on Javascript, one of the most important programming languages in the world. What makes it so important? The answer to that question begins with the fact that it is the only programming language that runs natively in all major web browsers. Its original purpose was to provide enhanced interactivity to web pages and it remains absolutely necessary to use Javascript in order to provide much of the functionality users have come to expect in the sites they visit.

In 2009 Node.js was first released and quickly grew in popularity. Node.js allows developers to write server-side code for their web applications in Javascript and more and more developers choose to do so. There are great advantages to using the same language on the server and in the browser - more code can be reused and there is less energy lost in mentally switching gears.

Javascript is often used in other contexts as well. For example, mobile apps can be written in Javascript using tools such as Cordova and React Native. Desktop applications can also be written in Javascript.

Apart from its ubiquity, we focus on Javascript because it is an excellent language for beginner programmers. It is easier to become productive with it than it is with many other languages, yet there are few limits on what you can accomplish with it.

Phase I

In the first phase students gain an understanding of the basics of Javascript. We will review data types, control flow with conditionals and loops, defining variables and functions, creating objects and arrays, and handling exceptions. We will examine how global and local scopes work and how identifiers are resolved.

Important topics:
- array methods
- the `this` keyword
- callbacks
- inheritance patterns

- the module pattern

During this phase techniques for presenting content beautifully using HTML and CSS will also be covered.

Important topics:
- semantic markup
- including resources (scripts, stylesheets, images, media)
- the box model
- positioning
- floating and clearing
- media queries and responsive techniques

Phase II

In the second phase students will integrate what they've learned of Javascript, HTML, and CSS and create interactive UI widgets and animations using native browser APIs as well as the jQuery library. We will make ajax requests to retrieve data from third party APIs and present it to users using client-side templates.

Important topics:
- DOM traversal
- DOM events and event delegation
- CSS transitions and animations
- requestAnimationFrame
- XMLHttpRequest and CORS
- HTTP methods, status codes, and headers

Phase III

In the third phase students will learn about server-side programming with Node.js. Their first project will be a simple web server which will provide an opportunity to examine the basics of handling HTTP requests. We will use Node's fs module to learn about file i/o and gain an understanding of Node's streams api. We will move on to use the Express framework to create routes and middleware, handle submitted form data and query strings, set and retrieve cookies, and generate dynamic web pages using server-side templates populated with data retrieved from third party APIs.

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Important topics:
- Readable and writable streams

- Event emitters
- Promises
- Cookies and sessions

Phase IV

In the fourth phase students will learn how to connect to and query a database. We will build log-in and registration flows. We will also explore several popular client-side MV* frameworks and write single page applications and our own APIs to support them.

Important topics:
- CRUD
- Securely storing passwords
- Caching
- MVC

Phase V

In the fifth phase students will work in small teams on more sizable projects while learning about testing, deployment, and Agile methodology.

Phase VI

In this final phase, students will work in teams on a capstone project from one of our partner companies or on a project of their choice. This is a great opportunity for students to work on their own startup idea! These capstone projects will bring together everything that students have learned throughout the course.

SPICED Demo Day

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At the end of the program, students will participate in SPICED demo day, an exciting event where they will present their capstone projects and meet with hiring managers from our extensive network of Europe's hottest businesses and startups.

Throughout - Career and Professional Skills

Throughout the program, you will have a mentor alongside you to guide you, support you and be your cheerleader. You will gain indispensable professional skills you'll need to thrive in your career and in life, in the areas of communication, decision making, critical thinking, interdisciplinary teamwork and empathy. Additionally, you will learn and apply critical concepts in design thinking, rapid prototyping, pair programming and agile development. Along the way, you will build and refine your CV, your LinkedIn and GitHub profiles, work on your interviewing skills, build and sharpen up your portfolio and be career ready!

Contact

Get in touch with us to learn more or ask questions -- we'd love to hear from you!

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