

INTRODUCTION TO PROGRAMMING FOR WEB DEVELOPMENT

COURSE 5

Server-side JavaScript and Apps with Node.js and React

This course is one in a series of six from A&D Tutoring that, taken together, are designed to give students having *no prior experience of modern computer programming or Web technologies* the threshold knowledge and skills needed to succeed at advanced formal training in software and Web development. The first three courses in the series develop a core of computer programming (using the Python and JavaScript languages) and Web coding (using HTML, CSS, and JavaScript), which this and the two remaining courses build upon.

Description

Node.js is a framework that allows JavaScript to run directly on servers — the machines where hosting companies store webpages and send them on demand to internet-connected users — as well as in browsers. React is a library of code, used by millions of websites (including giants such as Facebook, Netflix, Twitter, and Uber), that leverages Node.js to create fast-running, interactive sites and apps that work on any platform. In this course, you will build from a knowledge of JavaScript programming in browsers to learn how JavaScript works in React through Node.js, and you will use React to build server-based Web applications with sleek, responsive user interfaces. Duration is 100 hours of instructor contact time.

Upon successful completion of this course, you will be able to:

- understand and exploit the differences between JavaScript running in a server/Node.js environment versus a browser;
- use asynchronous JavaScript programming (promises and results, `async` and `await`) to allow multiple sub-processes to run concurrently;
- explain and take advantage of the differences between object-oriented and functional programming in JavaScript;
- analyze and construct code that uses JavaScript Object Notation (JSON) and JavaScript+XML (JSX);
- create single-page, server-based apps using React templates;
- add arbitrary components to React apps;
- manage the state of changeable components on React apps using hooks;
- use React Router to make a single-page, server-based app behave like a multi-page, browser-based website.

Prerequisites

- Courses 1, 2, and 3 of this series, or comparable prior experience in programming with Python (or a similar language) and coding for the Web with HTML, CSS, and JavaScript.
- All-round familiarity with the Microsoft Windows operating system, command-line interfaces (e.g., PowerShell or Command Prompt), basic text editors, and Visual Studio Code. Some knowledge of Git Bash and GitHub.com (Course 4 of this series) could be beneficial but is not required.