Syllabus
Programming for the Web with JavaScript (SD4x)

Instructors:

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Course Overview:

JavaScript is the programming language of the World Wide Web.

As a professional web software developer, you will not only need to know how to program in this simple yet powerful language, but you will need to understand the fundamentals of how data is exchanged on the World Wide Web (WWW) and what tools and frameworks are available to you for creating robust, interactive web applications.

This course, part of the CS Essentials for Software Development Professional Certificate series, provides an introduction to modern web development using JavaScript. In addition to exploring the basics of web page creation using HTML and CSS, you will learn advanced web page layout and responsive design tools such as Bootstrap. You will also learn how browsers represent a web page data using the Document Object Model (DOM) and how to develop dynamic, interactive web pages using JavaScript in the browser. Beyond fundamental JavaScript syntax and advanced language features such as callbacks, events, and asynchronous programming, you will work with jQuery, which provides functionality for simplified DOM manipulation and event handling.

This course will also introduce you to modern web frameworks and component-based libraries such as React.js for efficiently developing modular web page components, and

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D3.js for creating data-driven documents. We will also teach you how to represent and exchange data using JavaScript Object Notation (JSON), and how to access RESTful APIs on the web.

Server-side JavaScript is becoming more prevalent in the industry, with web frameworks such as Node.js and Express making it simple to create and deploy complex, data-driven web applications. This course will prepare you to use such frameworks and show you how to integrate them with NoSQL databases such as MongoDB.

Prerequisites
- Basic knowledge of computer programming (variables, functions, control flow)
- Knowledge of core data structures (arrays, lists, sets, trees)

Course Outline
- Week 1 - Web Programming Basics: how web browsers and servers communicate using HTTP; creating static web content with HTML and CSS
- Week 2 - Using JavaScript to Create Dynamic Web Pages: basics of the JavaScript programming language; accessing HTML elements from embedded JavaScript using the DOM and jQuery
- Week 3 - Client-Side Frameworks for Developing Modular Web Page Components: component-based web app development using React.js; creating data-driven documents with D3.js
- Week 4 - Building Scalable Web Apps with Server-Side JavaScript: generating dynamic content on the server using Node.js and Express; storing and retrieving data in MongoDB; developing an API for the web

Verified Learner- Earning a Certificate

To earn a verified certificate for this course, you need to be enrolled as part of the verified track, complete identity verification and earn a passing grade. If you are auditing the course, you will not receive a certificate. Register for the verified certificate here.

Grading

This course is pass/fail only. You will not receive a letter grade on your certificate.

Passing Grade: You must score **60%** or above to pass the course.

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Showing Answers: After completing a quiz question or using up all of the attempts, the option to show the answer will appear. This option is not available for assignments.

Weights of Graded Assessments:

- **Quizzes (20%):** There will be 38 total quizzes and your lowest 2 scores will be dropped.
- **Assignments (80%)**: There will be 6 assignments and all assignments will count toward your final grade.

Effort

We expect this course will take you 6-8 hrs per week to complete.

Communication

Discussion Forum: We will be communicating with you through the discussion forum on a daily basis. Please reach out to us through the discussion forum with any questions about the course content. Please allow 24 hours to receive a response from a TA or an instructor. Also, all communication on the discussion forum must follow the edX Honor Code. **Never post code or solutions to assignments on the discussion forum**.

Weekly Emails: We will be sending you course updates and interesting information about the field of software development weekly.

Live Chat Sessions: If you are part of the verified track, we will be offering live chat sessions where learners can speak directly with the TAs. Details will be sent in the weekly emails.

Academic Integrity

Definitions of Academic Dishonesty:

Activities that have the effect or intention of interfering with education, pursuit of knowledge or fair evaluation of a student's performance are prohibited. Examples of such activities include but are not limited to the following definitions:

Cheating: Using or attempting to use unauthorized assistance, material, or study aids in examinations or other academic work.

Plagiarism: Using the ideas, data, or language of another without specific or proper acknowledgement. Example: using another person's work and using it to submit an assignment/project/lab work, cloning someone else's ideas without attribution etc.

Unfair Advantage: Attempting to gain unauthorized advantage over fellow learners in an academic exercise. Example: gaining or providing unauthorized access to examination materials, etc.

edX Honor Code Pledge

By enrolling in this edX course, I agree that I will:

- Complete all tests and assignments on my own, unless collaboration on an assignment is explicitly permitted.
- Maintain only one user account and not let anyone else use my username and/or password.
- Not engage in any activity that would dishonestly improve my results, or improve or hurt the results of others.
- Not post answers to problems that are being used to access student performance.

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