Advanced Front-End Web Development

ITP 404x (4 Units)

Objective

The objective of this course is to provide students with the necessary skills to build JavaScript web applications using modern techniques, frameworks, libraries, and tools that are used among developers within the industry. The concepts learned in this class will be applicable to many technology stacks students may work with in the future.

Prerequisites

ITP 301, ITP 303, ACAD 275, or experience with HTML, CSS, and JavaScript

You should be familiar with concepts such as variables, loops, conditional logic, functions, and the basics of objects.

Lecture

Each class will contain lectures, demos, and exercises.

Grading

Assignments: 45%
Class participation and attendance: 5%
Midterm: 20%
Individual final project: 30%

A   100% - 93%
A-   92% - 90%
B+   89% - 87%
B   86% - 83%
B-   82% - 80%
C+   79% - 77%
C   76% - 73%
C-   72% - 70%
D+   69% - 67%
D   66% - 63%
F   62% and below

Due Dates and Extensions

Assignments are due the following week at midnight unless stated otherwise.

Extensions will be granted on a case by case basis. If an extension has been granted, the assignment must be turned in within 5 days after the original due date, which is Sunday at midnight. If an extension has been granted, it is the responsibility of the student to email the Grader and the Instructor notifying them that the assignment is ready to be graded. Please include the link to your assignment's repository in your email. Failure to turn in an assignment by the due date will result in a 0.

Attendance

Students can attend class in-person, remotely, or asynchronously. The TA (Nikki) will record student attendance in Blackboard. If you attend asynchronously, in order to get credit for attendance, students must send an email to the TA (Nikki) and the instructor addressing the following prompt by Thursday at 11:59pm:

"Briefly describe one thing in this week's class that you found interesting or challenging."

Academic Integrity

The use of unauthorized material, communication with fellow students during an examination, attempting to benefit from the work of another student, and similar behavior that defeats the intent of an examination or other class work is unacceptable to the University. It is often difficult to distinguish between a culpable act and inadvertent behavior resulting from the nervous tension accompanying examinations. When the professor determines that a violation has occurred, appropriate action, as determined by the instructor, will be taken.

Although working together is encouraged, all work claimed as yours must in fact be your own effort. Students who plagiarize the work of other students will receive zero points and possibly be referred to Student Judicial Affairs and Community Standards (SJACS).

All students should read, understand, and abide by the University Student Conduct Code listed in SCampus, and available at:
http://www.usc.edu/student-affairs/SJACS/nonacademicreview.html

Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to your TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Course Outline

0   Environment Setup

1 - 8/24   Course Introduction
Synchronous vs Asynchronous Programming
HTTP Fundamentals, Ajax, JSON, and Promises (Part 1)
Assignment 1

2 - 8/31   Promises (Part 2)
Client-side Templating
Event Delegation
Assignment 2

3 - 9/7   Introduction to JavaScript Frameworks
React: JSX, Components, Props, Conditional Rendering
Assignment 3

4 - 9/14   React: State, Lifecycle, and Handling User Events
Assignment 4

5 - 9/21   React: Forms and Data Flow
Assignment 5

6 - 9/28   React: Client-side Routing and CRUD (Part 1)
REST APIs and JSON Server (Part 1)
Assignment 6

7 - 10/5   React: Client-side Routing and CRUD (Part 1)
REST APIs, and JSON Server (Part 2)

8 - 10/12   Midterm
Assignment 7 - Final Project Overview

9 - 10/19   React: Building Modals with Portals
6:30pm Resume Workshop / Q&A with Michal Meyers
Assignment 8

10 - 10/26   React: Patterns for Building Reusable Components
Assignment 9

11 - 11/2   React: Testing Components
Mocking APIs with Mirage.js
Pull Requests and Continuous Integration (CI) Workflow
Assignment 10

12 - 11/9   Introduction to Node.js
              Building a REST API in Node.js

13 - 11/16   Guest Lecture with Kousha Hamidi: Functions-as-a-Service (FAAS)

14 - 11/23   Building an Authentication System (Back-End)

15 - 11/30   Building an Authentication System (Front-End)
              React: State Management with Context

Final Project (due 12/5 at 11:59pm)

Students will develop and deploy a JavaScript web application using the technologies
we learned in class on a topic of their choice. Detailed requirements will be sent out
mid-semester.