

Modern Technologies of Web Development

ITP 404x (3 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, ACAD 275, or experience with HTML, CSS, JavaScript, and jQuery

Lecture

3 hrs per week. Each class will contain lectures and demos interspersed with exercises.

Course Structure

The first half of the course will cover JavaScript and client-side development fundamentals. The second half of the course will focus on building a single page application from start to finish using a modern JavaScript framework. Each lecture will build on top of the same application. This class will use the Ember.js framework, but the concepts learned are applicable to other popular JavaScript frameworks and your skills will be easily transferrable to whatever front-end stack you may work with in the future.

Students are expected to:

- Attend and participate in lecture discussions and critiques
- Complete weekly lab assignments and projects
- Manage and complete individual class projects

Students are responsible for completing assignments and projects by stated deadlines.

Recommended Textbooks

TBD

Grading

Assignments: 30%

Class Participation, Forum Discussion, and Attendance: 15%
Midterm: 20%
Individual Final Project: 35%

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

Policies

It is the responsibility of the student to make sure projects and assignments are turned in on time. Assignments will be assigned on Tuesday and are due the following Tuesday at midnight. Each student will receive 3 assignment extensions to be used at discretion. If you choose to use an extension, the assignment must be turned in within 5 days after the original due date, which is Sunday at midnight. In order to use an extension, notify the TA and the instructor via email. If a student fails to notify the instructor and TA about using an extension, a zero will be given on that assignment. A zero will also be given if an assignment is turned in after the extension period.

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

The first half of the course will cover JavaScript and client-side development fundamentals.

- 1 - 8/22 Course Introduction
Traditional Web Apps vs. Single Page Apps
Command Line Basics
Introduction to Git and Github
Reading: Review Loops and JavaScript Objects
- 2 - 8/29 Synchronous vs Asynchronous Programming
HTTP Fundamentals
AJAX, JSON, and Promises
Assignment 1
- 3 - 9/5 Client-side Templating with Handlebars
Event Delegation
Assignment 2
- 4 - 9/12 *Guest Lecture*
Constructor Functions and Classes
Google Maps JavaScript API
Reading: Intro to ES6
Assignment 3
- 5 - 9/19 REST API Fundamentals
Building an API in Node.js with Loopback
Creating Resources with AJAX
Assignment 4
- 6 - 9/26 Updating and Deleting Resources with AJAX
Working with Arrays
Assignment 5
- 7 - 10/3 **Midterm**

Assignment 6 - Project Proposal and Starter

The second half of the course will focus on building a single page application from start to finish using a modern JavaScript framework. Each lecture will build on top of the same application. This class will use the Ember.js framework, but the concepts learned are applicable to other popular JavaScript frameworks.

- 8 - 10/10 Convention Over Configuration
Project Scaffolding
Client-side Routing, Templates, and Retrieving Data
Loading and Error Substates
Assignment 7
- 9 - 10/17 Handling User Interactions and Building Create/Edit Forms
Assignment 8
- 10 - 10/24 Helpers, Components, and Computed Properties
Assignment 9
- 11 - 10/31 One Way Data Flow / Data Down, Actions Up
Assignment 10
- 12 - 11/7 Acceptance, Integration, and Unit Testing
Assignment 11
- 13 - 11/14 TBA
- 14 - 11/21 No class (Thanksgiving)
- 15 - 11/28 TBA
Final Project Due Friday, 12/01 at midnight

TBA Topics

- Managing Data on the Client
- Test-Driven Development (TDD)
- Intro to React
- Progressive Web Apps (PWA)

Final Project

Students will develop and deploy a JavaScript web application using Ember on a topic of their choice. Detailed requirements will be sent out mid-semester.