Client Side Scripting for the Web - Syllabus

Upper Level IST & CS Elective, Instructor: Sally Kyvernitis

IST Elective: **CIS 3344 Advanced Web Application Design and Scripting**, pre-reqs: CIS 2229 and CIS 3309
CS Elective: **CIS 4350 Client Side Scripting for the Web**, pre-reqs: CIS 2107 and CIS 2168

Today’s web applications are relying more on client side code (JavaScript) and less on server side code. Using a technique called AJAX, web pages can invoke HTTP requests to server side web APIs that can access and modify data stores. Because AJAX is asynchronous, it works in the background, without locking up the UI, thus creating a more responsive experience for users. In this course, we will write our own server side Web APIs (using java/JSP), but the focus of this course is on client side scripting, including **AngularJS**, an open-source, Model-View-Controller, “single-page-application” web application framework written by Google.

Angular code can be written by simply including a JavaScript reference in the web page, just as you would reference jQuery. Here is a very simple example to demonstrate how Angular works. This example shows JSON data (as might be returned by a Web API), a sample HTML page with Angular/javascript code (only 30 lines long), and a demonstration of how the page runs:

http://curran.github.io/screencasts/introToAngular/exampleViewer/#/26

Since web development continues to undergo rapid change, this course teaches students how to keep themselves updated by learning the newest developments from the internet. Each student will learn about then write a tutorial on some aspect of client side web development.

**Course Topics**

Since this course assumes no web development (or design) experience, we cover all of the following topics:

- HTML and CSS (including CSS positioning)
- Responsive Web Design (makes a web page usable on various screen sizes, e.g., cell phone, computer screen)
- JavaScript (code that runs in the browser, can access the HTML Document Object Model, and can invoke Ajax calls to server side Web APIs)
- jQuery, a library of JavaScript functions that manages inconsistencies that exist between various browsers, making JavaScript more robust and reliable for client side functionality (and less lines of code for you to write)
- Setting up a Database: using a data modeling tool to create and populate a (mySql) database, basic SQL statements (Select, Insert, Update, Delete)
- Creation of Server-Side Web APIs to respond to client side requests to get and/or update data
- Ajax, a technique whereby JavaScript makes asynchronous calls to Web APIs
  - XML and JSON, two formats for sending data over the internet.
- Angular Introduction, followed by an Angular project (several weeks allocated)

If a student already has extensive background in any topic that is covered, they may substitute other work. These students should discuss their background with the instructor at the beginning of the course.
Course Format

- **Tests.** There will be 3-4 tests with no final exam. The tests could be administered in lecture or lab (hands on). There are no make-up tests. If you miss a test, discuss your situation with the instructor - an accommodation might be possible, depending on the circumstances.

- **Weekly Lab Assignments.**
  - Weekly programming homework assignments are highly related to lecture topics. Each lab is described in a Blackboard assignment. In order to receive a lab grade, you have to publish the required functionality and submit the source code (a zip file of your whole web site) into the Blackboard assignment.
  - It is very important to know **how to debug** in each of the languages that we use (HTML, CSS, JavaScript, jQuery, JSP, java, and SQL). Be sure to pay close attention to important information about how to debug for each lab.
  - Lab due dates are defined (only) by the lab schedule at the top of Blackboard. You can submit a lab up to 24 hours late with no penalty (as a courtesy, to allow you time to publish, test, and submit your code). If you miss the lab deadline, you can still submit up to 1 week late (also with the 24 hour courtesy) – with a **20% late penalty**. Lab homework is not accepted after that, but you still have to complete the work by the project due date (or your project grade will suffer).
  - Lab grades are typically based on functional testing that occurs within 1-2 weeks of the lab’s due date. Remember to regression test each week so that you do not introduce errors into previously published code. If there is ever any question about a lab grade, we re-evaluate based on the source code that was submitted into Blackboard (the lab in question plus the labs submitted afterwards). Late penalties are based on the date of the blackboard submission.

- **Use of Lab Time.** Every week in lab there will either be a graded test or lab activity.
  - **Lab activities** are short assignments that must be started and completed in lab, then shown to the Lab Assistant for grading. If you miss a lab activity, there is no make up, but you can drop your lowest lab activity grade.

- **Project.** Your project is the culmination of all your labs. Your project grade is based on functional testing plus a code review of all the source code. So be sure to keep your code (each week) bug free, well organized, and with self-documenting names.

- **Tutorial.** Because it is imperative that students are able to learn web development concepts independently from the internet, each student will write and publish a tutorial on an approved topic. Selected students will present their tutorials to the class towards the end of the semester.

Tentative Lab / Tutorial Schedule

3. JavaScript Intro
4. Advanced JavaScript
5. Your Tutorial
6. Database (creation, data population)
7. Web APIs (server side Web APIs are written using java/JSP, providing access to your database)
8. Angular Client Side Manipulation.
9. Angular Triple Lab (3 submissions: register / logon / logoff plus insert, edit, and delete from one of your db tables).
Tentative Grade Weights

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<tr>
<td>Labs (approximately 11 Weekly Programming Homeworks)</td>
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<tr>
<td>Lab Activities (&lt; 11, must complete in lab, no make ups, lowest grade dropped)</td>
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<tr>
<td>Tutorial (you write, publish, and possibly present to the class)</td>
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<tr>
<td>Project ( culmination of all labs: regression tested, code review)</td>
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<tr>
<td>3-4 Tests (no final exam)</td>
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Grade Scale

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<td>93-100</td>
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<td>57-59</td>
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Early grade estimates:

- Lab and Lab Activity grade feedback should be available within 1-2 weeks of each lab due date.
  - The lowest Lab Activity grade is dropped close to the end of the semester.
- For Tutorial grade, the Lab grade is the best estimate.
- For Project grade, the Lab grade is the best estimate.
- You should receive a grade for your first test within the first 5 weeks of the semester.

Miscellaneous

- The CIS department computer labs are NOT open 24/7. Learn the lab hours and adjust your schedule accordingly. If you want to work from home, set up your own development environment as explained in my lab documentation. Those who promptly set up their own web development environment do much better in this course than those who do not.
- Attendance: If you must miss lecture or lab, check Blackboard to see what material was presented and ask your classmates about anything else that may have been discussed.
- Communication: Please contact me as soon as possible if you think you are running into difficulties. Ask me, or your lab instructor, or another student for help as soon as possible.
- Disability Disclosure: Any student who has a need for accommodation based on the impact of a disability should contact me privately to discuss the specific situation as soon as possible. Student must provide me with a note from the office of Disability Resources and Services (100 Ritter Annex, 215-204-1280).
- Academic Honesty and Ethics: Temple University and I expect you to observe the highest ethical standards. When working in the lab or on your project, you may consult others, but the work you submit must be your own. Never share your answers with others. Never accept answers from others. Unless otherwise directed, all quizzes are closed book, closed computer. All violations of academic honesty will be handled according to university policy.