CS 290, Web Application Development

**Proposed course description**

Overview This course is designed to give students the skills needed to implement a dynamic, interactive website. This will cover concepts related to layout, client side interaction and server side scripting.

Topics Layout and Styling

* HTML 5
  + Differences from previous version of HTML
  + Validation of HTML 5 documents
* CSS
  + Selectors
  + Pseudoclasses

Client Side Interactions

* JavaScript
  + Basic use of the language
  + Debugging
* Ajax
* ○ Purpose of asynchronous calls ○ Loading and parsing data using an asynchronous call
* JSON objects
* JavaScript libraries
  + jQuery

Server Side Scripting

* PHP
  + Basic use
  + Debugging
  + Sessions
  + GET and POST requests
  + Interaction with a database
* SQL
  + Basic introduction
  + Use of the language
    - Table creation and deletion
    - Inserting and deleting
    - Selection and updating

Usability

* Basic concepts of learnability, memorability and efficiency
* Prototyping for user feedback

Scalability

* Client side vs server side operations
* Caching

Security

* Introduction to various kinds of attacks
  + SQL injection
  + Cross site scripting
  + Man in the middle
* Design considerations to mitigate risks

**Assignments** There will generally be assignments that separately cover layout, client side interaction and server side scripting along with a final project that requires students to combine all of these concepts to make a fully functional website. Students should be exposed to 3rd party libraries so after they have been introduced to the different languages they are asked to write a howto guide involving the use of a 3rd party library or API that is related to web development.

[[edit](http://www.occcwiki.org/index.php?title=CS290_Proposed&action=edit&section=3)]**Proposed course outcomes (3-5 outcomes)**

Measurable Student Learning Outcomes: At the completion of the course, students will be able to… 1. Understand and discuss the language of the Internet and web page authoring 2. Discuss best practices in web site security, user interface design, content management, and new issues 3. Envision, design, prototype, produce, test, and promote a web site that uses

Compliant HTML and CSS

Dynamic navigation

Embedded media

Database-driven structure and content

Forms with dynamic user interaction

• Students will be able to design and create a moderately complex static web site that conforms to current standards

• Students will be able to implement custom user interface behavior using client-side scripting

• Students will be able to implement asynchronous calls for sending data between the client and server

• Students will be able to implement dynamically-generated websites using server-side scripting

• Students will be able to use basic database commands to create, store and retrieve data in conjunction with a dynamic website

• Students will be able to describe how to apply usability, scalability and security concepts in the context of web development