C S 105 (50875)
Computer Programming: PHP/SQL
Spring 2016

Course Description

An introduction to programming in PHP and SQL. This is, in effect, a Web application development short course. In addition to PHP and SQL, you will work with HTML and CSS. You will develop on top of the common "LAMP"-style Web app platform (Linux–Apache httpd–MySQL–PHP). You will design and implement Web applications.

Prerequisites

- C S 307, 313E, 314, 314H, or E E 422C (or 322C), with a grade of at least C-.
- Experience constructing basic static HTML Web pages.
- Experience using basic Linux shell commands for file management.

Course Objectives

When you complete this course, you will be able to:

1. Design and implement a database-driven Web application on the LAMP platform.
2. Describe Web architecture at a basic level; Compare and contrast Web application development with desktop application development.
3. Explain how Web standards impact Web development.
4. Develop conforming Web applications and review a Web application's conformance to Web standards.
5. Describe threat models in Web security; Describe common types of vulnerabilities and attacks in Web applications.
6. Implement defenses to some common attacks in a Web application.

Challenges in This Course

This course is different from others because you will be challenged to develop skill in:

1. Systems design from high-level underspecified requirements;
2. Mostly self-directed, fast-paced mastery of a multitude of tools and architectures;
3. Critique of Web app work products; and
4. Working and debugging in a three-tier environment.

Contact Information

Instructor: John A. Thywissen

Office hours: Mondays & Wednesdays 4–5 p.m., in GDC 2.506, and by appointment

E-mail: jthywiss at cs

(Post questions to Canvas rather than e-mail.)

Class Meetings

Class meets for one hour twice a week during the first half of the semester.

January 20–March 9, Mondays & Wednesdays 3–4 p.m., in GDC 2.506

Required and Recommended Materials

- You must have a UTCS account for this course. If you do not, request one **immediately** at URL: https://apps.cs.utexas.edu/udb/newaccount/
- Required and recommended materials are on the class Canvas site. I will update these as we move through the curriculum.
- There is no textbook for this course. (None is needed, since there is plenty of high-quality material on the Web about the topics we will cover. Furthermore, Web languages are frequently revised, so a printed book would quickly become obsolete.)

Syllabus

This syllabus represents my initial plans and objectives. These plans often change during the course. The current syllabus will be kept on the class Canvas site.

I. Internet and Web architecture (class meeting 1)
II. HTML (approx. class meetings 1–2)
   A. Semantic & structural markup *vs.* presentational markup
   B. Document Object Model tree; Syntactic considerations
   C. The standards landscape; Conformance; Validation
   D. From documents to UIs
III. CSS (approx. class meeting 3–4)
   A. Box model
   B. The cascade and selectivity
IV. Web infrastructure (approx. class meeting 8)
V. PHP (approx. class meetings 5–14, concurrent with SQL)
   A. Language constructs
   B. Form handling
   C. Session state

VI. SQL (approx. class meetings 5–14, concurrent with PHP)
   A. Relational data model
   B. Queries
   C. DML
   D. DDL
VII. Web application security (approx. class meeting 11)
VIII. The future of programming for the Web (approx. class meeting 15)

Assignments

There will be five "work product reviews" of the Web application that we're incrementally developing during this course. (Each review is like a project deadline.)

- Work product 1: Wireframe: Un-styled static HTML pages showing the app UI structure
- Work product 2: Page templates: Styled static HTML pages showing page layout and aesthetics
- Work product 3: Iteration 0: PHP-driven app with one test page functioning
- Work product 4: Iteration 1: PHP-driven app pages with a subset of use cases functioning
- Work product 5: Iteration 2: PHP-driven app pages with all use cases functioning

Each work product review will result in feedback from the instructor and two students. Of course, this means you will review two other students' work products, too.

Examinations, Tests, and Quizzes

There will be approximately 8 quizzes given via the class Canvas site. They are "low stakes" quizzes, intended as review tools for you to check your knowledge.

There will be no tests in this course. There will be no final examination in this course.

Grading

The overall course grade will be composed of these components, weighted as indicated:

- Project work products—70%. Each of the work products weighted equally.
- Your reviews of others' work products—15%. Each review weighted equally.
- Quizzes—15%. Each quiz weighted proportionately to its "point" value.

Grading rubrics for each of these are on the class Canvas site.

The overall course grade is a letter grade, on the standard UT scale. Attendance is not a grading component, but regular and prompt attendance at all class meetings is expected.

WARNING: Do not submit work products late!

You cannot review other students' work until yours is submitted. The randomized review allocation process runs at deadline time. If you miss the deadline, you will get a *zero score* for the peer reviews that you are responsible for.

Also, when you submit a work product late, I may have already finished grading that assignment for the class. I won't make any guarantees about when I will have time to go back and provide feedback on your work. Since subsequent assignments depend on prior ones, this may cascade into a grade disaster.

Policies

Policies that apply to this course include those below, those in the university *Catalogs (General Information, Undergraduate, Graduate)*, *Course Schedule*, and *Handbook of Operating Procedures*.

University of Texas Student Honor Code

"As a student of The University of Texas at Austin, I shall abide by the core values of the University and uphold academic integrity."

Academic Integrity and Collaboration

Throughout this course, collaboration with your fellow students is encouraged.

However, all work submitted by you must be your own work, prepared without unauthorized assistance, where "unauthorized" means not explicitly allowed by an instructor. Any assistance received on work must be documented in the work, for example as an acknowledgment in a paper or a prominent comment in source code.

You must not acquire from any unauthorized source (*e.g.*, another student or an Internet site) a partial or complete solution to an assignment or test. Until an assignment or test has been returned or the solutions published, you must maintain the confidentiality of your solutions to assignments and of test questions. "Maintain confidentiality", in this case, means to protect from disclosure to anyone other than the instructor.

Everyone should do their share and take an *active* part in maintaining academic integrity. You must not enable someone else to turn in work that is not theirs. If you suspect academic dishonesty, inform me. (You are not required to name the offenders, but you *are* required to report it.)

Academic dishonesty will normally result in a course grade of "F" for all those knowingly or recklessly involved, and will be referred to the Dean of Students for further disciplinary action.

Attendance and Deadlines

Your participation in class meetings is important your success in this course. Regular and prompt attendance at all class meetings is expected of you.

Assignment and exam deadlines must be applied fairly to all students.

There are some excusable absence reasons according to university policies (military service, court appearances, religious holy days, etc.). Some can be anticipated at the start of the semester, some happen as the semester progresses, and some are unexpected. The dean's office or I may require supporting documentation of absence reasons.

For excusable absence types that can be anticipated at the start of the semester, if you wish to request accommodation, do so in writing not later than the 4th calendar day of the semester.

If a need for excusable absence arises during the semester, notify me in writing within two days of you becoming aware of the likelihood of your absence. I recommend calling Student Emergency Services at 512-471-5017 when you unexpectedly cannot attend classes.

For a properly notified excusable absence, accommodation will depend on the number and nature of missed class meetings or deadlines. It may be the grant of a drop of the class, or it may be the establishment of a later deadline. For other absences, no accommodations will be made.

Help when You're Struggling, Have a Crisis, or an Emergency

Please, when something bad happens, or when you're feeling overwhelmed, *get help*. Don't endure it on your own. Even talking through the situation often helps. Here are some options:

- See me. Come by office hours, or book an appointment (just ask in Canvas).
- Visit the computer science advisors. They're not just there to help you register; they can really help in many situations.
  Tel: 512-471-9509 **E-mail:** under-info@cs.utexas.edu (Tell them your UT EID.)
  Office: GDC 2.720 **Hours:** Monday–Friday 8:30 a.m–4:30 p.m.
- Talk to Student Emergency Services. They are here to help you with all kinds of life's troubles (family, housing, health, money, stress, etc.) whether it's a crisis or not.
  Tel: 512-471-5017 **E-mail:** studentemergency@austin.utexas.edu
  Office: SSB 4.104 **Hours:** Monday–Friday 8 a.m–5 p.m.

Accommodations for Students with Disabilities

The university provides, upon request, appropriate academic accommodations for qualified students with disabilities. For more information, contact Services for Students with Disabilities at 512-471-6259 (voice) or 512-232-2937 (video phone).

Students requiring assistance in evacuation shall inform their instructors in writing during the first week of class. The instructors will fax students' notes to UT's fire safety office.

Electronic Communications

Announcements, course documents, on-line discussions, and grades will be posted on UT's Canvas system. To get help quickly and efficiently, post your questions on Canvas, rather than e-mailing questions to the instructor. Regularly review the postings on Canvas for this class. Suggestion: Set "Notification Preferences" in your Canvas account settings.

The instructor may send e-mail communications to you, with the expectation that they will be received and read by the following day. Your official e-mail address (as listed in UT Direct as "Student Records - Email Address") will be used. For details, see the UT Use of E-mail for Official Correspondence to Students policy.