

Syllabus

Instructor: Pavel Panchekha, <pavpan@cs.utah.edu>

Location: Mon/Wed 15:00–16:30 on [Zoom](#)

Textbook: Web Browser Engineering, note that I will be teaching from the in-progress draft

Office Hours: The hour before class, on the [same Zoom](#)

The instructor will communicate with you – about assignments, announcements, and course policy – via Canvas’s built-in messaging system. By default, Canvas emails your university email address with important information. If you do not regularly check this address, you can set up [email forwarding](#) to another address that you do check.

Discussion will be over Piazza. This is a forum for you to ask questions, get help from other students, or ask for additional materials to go deeper into a concept.

Flipped Classroom

This course flips the classroom: you will watch lectures for *homework* and complete assignments as *classwork*.

Your *homework* responsibilities are:

- Watch lecture videos, as assigned each class
- Read the textbook, as assigned each class
- Follow the text and build your own web browser

Expect this to take eight hours a week.

The *classwork* will then involve:

- Presenting your browser implementations
- Completing the textbook exercises, as a class
- Discussing real-world browser implementations

Presentations, exercises, and discussions will lead by students. Sign up on Canvas to lead; each student will lead for approximately 20 minutes.

Project Weeks. Three weeks are devoted to studying and implementing “projects” as a class. These weeks’ homework is still readings and videos

about real-world browser implementations. These weeks' classwork will still involve completing exercises as a class, but those exercises will be larger and more complex.

Succeeding in a flipped classroom

Start preparing for class the previous week. Consider the week of 12 October, covering layout (one of the most complex topics this class covers), with classes scheduled for the 12th (Monday) and 14th (Wednesday). The 8th, the prior Thursday, is a good time to start preparing.

- On Thursday, read through the layout chapter in the textbook, which will take you about a half-hour. Complete short quiz.
- On Friday, reread the layout chapter, this time following along with the text in your own web browser. You might do this over the weekend if you have Friday plans.
- On Monday morning, watch the lecture videos assigned that day and answer their quiz questions; this'll take you about a half hour.
- On Monday afternoon come to office hours if you found the lecture confusing or you couldn't get your browser to work.

By Monday's class, you've seen the material three times, and have a good understanding of browser layout. This way you're prepared to present your code and lead the other students in fixing bugs, testing your browser, or implementing an exercise. Likewise, before Wednesday's class, you'd watch those lectures, answer the quiz questions, and come to office hours.

Adjust. You'll need to adjust to the flipped classroom. It is *essential* that you watch videos and read the textbook before class. Otherwise, you will be unable to participate in class.

Prepare. You'll be best prepared for class if you watched the lectures and read the textbook within the last week. If you read ahead, review before class.

Get help. If you have questions about the material, or need help debugging your web browser, ask them on Piazza or at office hours. Since office hours are right before class, they will also help you prepare for class.

Schedule

Aug 24	Basics of HTML, CSS, and JS
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Aug 31	Chapter 1 (Networking)
Sept 7	Chapter 2 (Graphics)
Sept 14	Project / guest lecture
Sept 21	Chapter 3 (Text)
Sept 28	Chapter 4 (HTML)
Oct 5	Chapter 5 (Layout)
Oct 12	Chapter 6 (Style)
Oct 19	Chapter 7 (Chrome)
Oct 26	Project / guest lecture
Nov 2	Chapter 8 (Forms)
Nov 9	Chapter 9 (Scripts)
Nov 16	Chapter 10 (Reflow)
Nov 23	Project / guest lecture
Nov 30	Chapter 11 (Security)

“Project” weeks involve doing larger in-class projects like adding tabs to our web browser or implementing accessibility tools.

Grades

Web Browser Internals is a graduate course. Grading is not intended to be punitive: you are taking this class because you want to learn the material.

The grades will be based on homework (50%) and classwork (40%). The remaining 10% is awarded to students who come to at least one office hour during the semester. If the normal office hour time does not work for you, you will need to schedule an alternative time with the instructor.

If you want a more detailed explanation for a grade you received, or believe there to be an error in a grade, please notify the instructor within 7 days of receiving the grade.

Homework grades

Homework grades ensures you watch the lectures, read the textbook, and follow along with the code. Half the grade is for quiz questions about the text

and lectures, and half is for submitting your unit tests for the implementations in each chapter.

Quizzes. You'll be asked to answer quiz questions on each day's lecture (due that day before class) and on each reading (due end of day the Friday before classes on that topic). Don't spend too long on these: the quizzes aren't intended to be difficult. They're just about ensuring you actually read / watched the material.

Questions are submitted through a Canvas quiz. The quiz also has a spot to leave comments on the course and rate the clarity of the material and your interest in it.

Tests. Code must be tested. For each chapter of the textbook, you must submit at least 10 tests you used to make sure your code works correctly. Good tests test something other than the "happy path": good tests test edge cases, invalid inputs, and strange combinations of features. Good tests are short; long, complicated tests will not get full marks. Multiple tests testing the feature in the same way will also not count. Tests are submitted via Github; I encourage you to keep your code in the same Github repo, but you will only be graded on the contents of the tests/ folder in that repository.

There are lots of kinds of tests. Since this course builds a web browser, the tests might be HTML pages, multiple files (HTML, CSS, and JavaScript, for example), shell scripts (to test a web server that you implement in chapters 8, 9, and 11), or even text files describing a sequence of user actions (to test user interaction in chapters 6 and 7). They can also be unit tests, doctests, or other small-scope tests.

Classwork grades

Classwork grades ensure you participate in class presentations, exercises, and discussions. Each time you lead a class activity is equally weighted; expect there to be four over the course of the semester, so each will be 10% of the grade. (Though some students may have 5 presentations.)

You *lead* class activities, but that doesn't mean you do all the work yourself. You are graded on: being prepared for class; soliciting help from the class; vocalizing your thought process; and handling instructor and student questions.

You will not lose marks for having a buggy or incomplete browser implementation, or for being unable to complete an exercise. In each of those cases, it is the job of the whole class to help you resolve the problems. You will, however, lose marks for being unprepared: not having read the text or watched through the videos, and having little sense of what you are trying to accomplish or why.

Late policy

The main assignments in the course are the class presentations, which don't really have a late policy. However, if you are absent from class for multiple days, you must let the instructor know. That ensures you will be called to lead a class activity on those days that you are present.

For quizzes and test submissions, extensions are generally granted if you reach out to the instructor at least 24 hours prior to the deadline. Otherwise, late assignments are not accepted except in emergencies.

University and College Policies

Please check Canvas for a complete list of all University of Utah, College of Engineering, and School of Computing policies that apply to this course.