17-437 / 17-637: Web Application Development Fall 2020 Syllabus

August 29, 2020

This course will introduce concepts in programming web application servers. At the conclusion of this course you will understand the fundamental concepts of software engineering and how they apply to web application design and programming, will know the modern tools used to program web application servers, and will be able to produce substantial web applications as part of a team. This course will introduce web application concepts primarily using Django/Python technologies, and you will be able to generalize these concepts to other web application technologies and tools.

During the first part of the semester we will have a series of homework assignments in which you build two increasingly sophisticated web applications. The second part of the course will focus on a larger project, in which you will design and implement a substantial dynamic web site of your choice as part of a project team. At the conclusion of your project you will demonstrate your web site to the course staff. There will be no midterm or final exams in this course, this semester.

Pandemic-related Logistics

This course is too large to meet in-person, so it will be "remote-only". This course will meet, live, via Zoom, on Mondays and Wednesdays at 9:50am. The link is posted on the course Piazza. If you have problems connecting, check/post on Piazza. For your convenience, here's the current link:
https://cmu.zoom.us/j/91917936136?pwd=eDg1MXR6anJJd20rT3ZUd2dMbXBadz09
Note: You will need to sign-in with your Andrew identity.

Most meetings, primarily in the first half of the course, will consist of a ~60-minute lecture followed by a ~20-minute exercise/quiz. The exercise/quiz is designed both to reinforce the lecture material you just heard, and to help you meet other students in the course.

- If you are unable to watch the lecture live, you will be able to watch a recording later. The lecture video should be posted about two hours after class ends.
- The exercise/quiz will not be recorded so you should attend the live lecture and stay for the live quiz to get credit.
- For those of you with connectivity issues, I will offer a make-up exercise/quiz session. I will survey the class to determine the time. You must watch the recorded lecture beforehand.

In the second half of the semester, we will have some lectures, but there will be several project-related meetings, mostly during class time. They will also be held on the Zoom platform.

The TAs will hold office hours via Zoom. Homework grading will be done via an automated tool (and it's really cool)!

Because of the recorded lectures and automated grading, we hope to provide you with greater flexibility and less stress when managing time constraints created by other courses, possible illnesses, or other personal matters.

Prerequisites

Students will be working with a significant amount of code, so students need to have good programming skills. Ability to program in Python is assumed. If you do not know the Python language, you must have the ability to learn it quickly on your own (and you will need to do so). For undergraduates, either of 15-213 or 17-214 (or their various cross-listings) is required. Prerequisite courses for graduate students are not enforced, but they must have the commensurate background.

Students will need a reasonably modern laptop on which to do assignments and to participate in classroom exercises/demonstrations. Laptops may be of the Windows, MacOS, or Linux variety. Students will need to install and run the Chrome and Firefox browsers as well as Git, Python 3 and Django 3 software.

Course Staff

Instructor:
Jeffrey Eppinger (eppinger@cmu.edu)

Teaching Assistants:
Anthony Attipoe (aattipoe@andrew.cmu.edu)   Joanne Park (joannep@andrew.cmu.edu)
Elena Gong (yezheng@andrew.cmu.edu)   Steven Shan (slshan@andrew.cmu.edu)
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TA Office Hours will be via Zoom. Times and links will be posted on Piazza.

Course Communications

- Canvas will be used to provide links to:
    - Lecture videos (but try to attend them live on Zoom)
    - Lecture slides
    - Code from examples shown in lecture
    - Cloud deployments of lecture examples
    - Quizzes
- Piazza will be used for:
    - Announcements (including links to the live Zoom sessions)
    - Q&A
- GitHub will be used for homework submission
- We will use several course websites:
    - https://www.cmu-webapps.org provides course login support
    - http://demo.cmu-webapps.org will host live lecture demos
    - https://grader.cmu-webapps.org will run the homework grader

Course Topics

The expected lecture schedule, subject to change, is as follows:

Date	Lecture Topic	Date	Lecture Topic
8/31	Introduction	10/26	Bootstrap
9/2	HTML & CSS	10/28	Transactions
9/7	No class (Labor Day)	11/2	Sprint #1 Presentations
9/9	JavaScript & DOM	11/4	Sprint #1 Presentations
9/14	HTTP & Django	11/9	Internationalization
9/16	Cookies & Sessions	11/11	Security
9/21	Forms & Templates	11/16	Sprint #2 Presentations
9/23	Authentication	11/18	Sprint #2 Presentations
9/28	Models	11/23	Scalability
9/30	Files & Images	11/25	No class (Thanksgiving)
10/5	AJAX	11/30	No class (Project Demos)
10/7	jQuery & WebSockets	12/2	No class (Project Demos)
10/12	Cloud Deployment	12/7	Automated Testing
10/14	Databases, E-mail, OAuth	12/9	Best Project Awards
10/19	Team Formation and Project Proposals		
10/21	Team Formation and Project Proposals		

Important Dates

- Homework will be due on Mondays, every week, during the first half of the course.
- You need to attend class for exercise/quiz credit (or attend the make-up session)
- You will need to attend class on 10/19 and 10/21 to find teammates, if you don't have a team by then.
- You will need to attend class for your team's sprint presentations, held during lecture time on either 11/2 or 11/4 and again on either 11/16 or 11/18. (We choose the days.)
- You need to be present for your team's final project presentation. (Your team chooses from a list of available dates and times.)

Video Records

- <u>We will</u> post video recordings of the lectures.
- <u>You may NOT</u> make your own recordings of class meetings.

Textbooks

This course has no required textbooks as information about the topics covered in this course is readily available on the internet, and you may search for general information. But you might find the following texts to be useful references:

- **Mastering Django.**
  - You can buy it: https://djangobook.com/
  - Most chapters are free, on-line, here, at the moment:
    https://djangobook.com/mastering-django-2-book
- **Pro Git.** Chacon. Apress, 2009.
  - Free online at http://git-scm.com/book
  - **Pro Git. Chacon. Apress, 2009.**
- **Software Engineering, 10th edition.** Ian Sommerville. Pearson, 2015.

Grading

Your course grade will be computed <u>approximately</u> (and, likely, exactly) as follows:

- 42% Homework (6% each for HW#1-HW#7, HW#0 doesn't count)
- 10% Quizzes
- 48% Final project

In 17-437, a 90% average (or above) is <u>typically</u> an A. In 17-637, 90% is <u>typically</u> an A-. No promise as to where the A+/A/A- cut-offs will be for 17-637. I may curve these boundaries in your favor. Same story for B grades at 80%, etc. ("<u>Typically</u>?" See late penalties, below.)

Homework

We expect to have seven homework assignments, due on Mondays, during the first half of the semester. Here are some details:

- Your homework solutions will be uploaded (aka "pushed") to GitHub.
- You will grade your own homework using our AutoGrader server (https://grader.cmu-webapps.org). We can also submit requests to grade it, to help debug problems.
- You may upload new versions and grade them until you get all the points on the homework.
- We will use your highest score for each homework.

Late Homework Policy

We understand that normal student-life events, including projects and exams in other courses, can interfere with your ability to complete your work on time. Therefore, you may submit your homework late, after the due date.

Procedure
- If you are 4 or less days late on an assignment, you may push additional attempts to your GitHub repo and then grade them as usual.
- We will determine the submission date for each homework by using the date (Pittsburgh local time) of the first AutoGrader run on your highest score.
- We will track the number of "late days" you have accumulated on each homework. (We only count whole days, so there's no difference between being a second late or 23-hours late.)
- If you are more than 4 days late on an assignment, you will need to set up a time to talk to the professor about how to get back on track in the course.

Penalties – On the homework score, itself, we will <u>not</u> deduct points for use of late days, but ...
- Students with the fewer late days will be able to sign up earlier for project demo times.
- Students, who have used late days, whose course averages are "near" a grade boundary, will receive the lower course grade.
  - In effect, students who use late days give up their right to complain about having the highest course average in their grade bracket.
  - Note that each homework counts for approximately 6% of your course grade, so taking a few late days to improve your score is better than turning in a disaster, in terms of the effect it will have on your course grade in the end.
- If you use an extreme number of late days (e.g., more than 4 late days on any one assignment), we may lower your course grade, particularly, if you have not contacted the professor to discuss how to get back on track in the course.

Late Project Policy

If you are unable to demonstrate your course project at the scheduled final presentation time during "demo week", you may discuss with the professor the possibility of demonstrating your project the following week with a reduction in your project grade.

Collaboration Policy

You should read and abide by the University Policy on Academic Integrity, http://www.cmu.edu/policies/student-and-student-life/academic-integrity.html.

For homework assignments, you are encouraged to talk with and share ideas with other students, including examining and critiquing others' solutions. You must independently create and turn in your own unique work. In particular, you may not copy another student's files or let another student copy your files. You may use external resources (books, internet sites, etc.) as references, but you may not

copy files or substantial parts of files from external resources, and you must clearly cite any external resources you use. Citations should be in a README.md file at the top-level folder of each homework assignment and project you turn in via GitHub.

You are encouraged to collaborate with your partner and with other students for your course project. All project deliverables, however, must be completed by you and your partner. You may not copy another project's documents or code for your project solution, or use substantial external code or documents obtained from any third party such as an Internet site.

Here are some examples of behavior that are inappropriate:
- Copying files or parts of files (such as source code, written text, or unit tests) from another person or source.
- Copying (or retyping) files or parts of files with minor modifications such as style changes or minor logic modifications.
- Allowing someone else to copy your code or written assignment, in draft or in final form.
- Getting help that you do not fully understand, and from someone whom you do not acknowledge on your solution.
- Writing, using, or submitting a program that attempts to alter or erase grading information or otherwise compromise security of course resources.
- Copying someone else's files containing draft solutions, even if the file permissions are incorrectly set to allow it.
- Lying to course staff.
- Copying prose or programs directly.
- Giving copies of work to others.
- Making your work publicly available in a way that other students (current or future) can access your solutions, even if others' access is accidental or incidental to your goals.
- Coaching others step-by-step without them understanding your help.

There are of course some gray areas, such as receiving help you don't fully understand or copying generic, boilerplate UI designs or configurations from the internet. In general, you should ask the instructor if you have any questions or concerns about the policy, or if you are unsure about the appropriateness of your own past or potential future actions. ***When in doubt, ask the instructor.***

The minimum penalty for violating this policy will be a zero grade for the assignment in question, and ***all*** cases will be referred to the appropriate university disciplinary board. Be warned that the university disciplinary actions for cheating can be very harsh, especially in response to cheating by a graduate student. Note: There is no statute of limitations for violations of the collaboration policy; penalties may be assessed (and referred to the university disciplinary board) after you have completed the course, and some requirements of the collaboration policy (such as restrictions on posting your solutions) extend beyond your completion of the course.

Well-being Statement

At the end of the day, please remember this is just class. *Take care of yourself and try not to stress. Prof. Eppinger is here to have some fun. He hopes you are having fun, too – at least in this class, anyway.*

The homework late policy is designed to help reduce your stress. If you're so behind that you're about to cheat (or help someone else cheat), please go to sleep and talk to me in the morning (or tell someone else to do this). We'll work something out.

If you or anyone you know is experiencing academic stress, difficult life events, or feelings of anxiety or depression, we strongly encourage you to seek support. Our Counseling and Psychological Services (CaPS) are available to help: call 412-268-2922 or visit their website at http://www.cmu.edu/counseling/. Also, consider reaching out to a friend, faculty or family member you trust for help getting connected to the support that can help. ***And, certainly, Prof. Eppinger is willing to talk with you, too.***