SWE 432 Fall 2018 – Web Programming

"Design and Implementation of Software for the Web"

Fall 2018: Mondays & Wednesdays, 1:30-2:45pm, Exploratory L003

Website (syllabus, assignments, etc): https://www.jonbell.net/swe-432-fall-2018-web-programming/
Instructor: Prof. Jonathan Bell
Email: bellj@gmu.edu
Twitter: @_jon_bell_
Office: 4422 Engineering Building; (703) 993-6089
Office Hours: Anytime electronically, Mondays & Wednesdays 11:00am-12:00pm, or by appointment

TA's TBA

Contacting:

Please post on Piazza for course-related inquiries.

Overview

This course will provide a comprehensive introduction to web development, covering front end development, back end development, and user interface design. This course is somewhat unique, and hence, there is unfortunately no single (or even small set) of textbooks to use for it. Where appropriate, we will provide additional references (e.g. via Safari Books Online) to book chapters that can be relevant for further reading. We will also maintain a repository of code examples on GitHub.

Over the term, you will learn how to use both client facing and backend technologies to make a web app. You will work on each homework with a partner, and over the course of the semester, will build a dynamic website piece by piece. By the end of the semester, you will have built a dynamic web app, hosted on Heroku. A listing of projects created by the students in Fall 2016 is available here.

Learning Outcomes

- Knowledge of quantitative engineering principles for how to build software user interfaces, especially web-based user interfaces, that are usable
- Understanding the client-server and message-passing computing models in the context of web applications
- Knowledge for how to build usable, secure and effective web applications
- Theoretical and practical knowledge about how data are stored and shared in web applications
- Component software development using specific technologies including Javascript, NodeJS, JSON, React and Firebase
- Understanding that usability is more important than efficiency for almost all modern software projects, and often the primary factor that leads to product success

Grading:

TBA

XX% Programming Assignments
XX% Final Project
XX% Quizes and in-class activities
XX% Midterm Exam
XX% Final Exam

Homework policy

Students must work individually on all homework assignments. We encourage you to have high-level discussions with other students in the class about the assignments, however, we require that when you turn in an assignment, it is only your work. That is, copying any part of another student's assignment is strictly prohibited. You are free to reuse small snippets of example code found on the Internet (e.g. via StackOverflow) provided that it is attributed. If you are concerned that by reusing and attributing that copied code it may appear that you didn't complete the assignment yourself, then please raise a discussion with the instructor.

10% will be deducted for late HW assignments and late HW assignments will only be accepted for 24 hours after the due date. **HW assignments submitted more than 24 hours late will receive a zero**. If you're worried about being busy around the time of a HW submission, please plan ahead and get started early. **Homework that does not compile or run will receive at most 50% credit**.

For fairness to all, there are no exceptions to the above rules.

In Class Activities:

Most lectures will feature interactive activities and/or quizzes that support the material being presented. These quizzes and activities are meant primarily to help me understand how well you (and the class as a whole) are understanding the material that day. These quizzes will be graded on a "did it" or "didn't" basis: you either take the quiz, and you get the marks, or you did not take the quiz, and do not get the marks (that is, as long as you answer the questions, you get full credit, regardless of what the answers are). You must be present in class to take the quiz (participating in an online quiz remotely will be considered an honor code violation). You can miss up to three quizzes with no penalty.

You are strongly encouraged to bring your laptop or phone to class so that you can participate in the activities.

Schedule (subject to change):

#	Date	Topic	Notes	Slides
1	8/27/18	Course Overview; JavaScript		
2	8/29/18	JavaScript		
3	9/5/18	JavaScript Tools and Testing (Video and exercises)		
	9/9/18	Last day to drop classes with no penalty		
4	9/10/18	Asynchronous Programming		
5	9/12/18	Organizing Code in Web Apps		
6	9/17/18	Backend Web Development		
7	9/19/18	Handling HTTP Requests		
8	9/24/18	Persistence		
9	9/26/18	NoSQL		
10	10/1/18	Security		
11	10/3/18	Microservices		
12	10/10/18	Deployment		
13	10/15/18	HTML and CSS		
14	10/17/18	Document Object Model		
15	10/22/18	Making HTTP Requests		
16	10/24/18	Templates and Data-Binding		
17	10/29/18	Frontend Frameworks		
18	10/31/18	Frontend Frameworks		
19	11/5/18	Frontend Frameworks (Video and Activity)		
20	11/7/18	Information Visualization Frameworks		
21	11/12/18	User-Centered Design		
22	11/14/18	Interaction Techniques		
23	11/19/18	Site Design		

24	11/21/18	Visual Design		
25	11/26/18	Think-aloud Usability Studies		
26	11/28/18	Information Visualization		
27	12/3/18	Design Languages		
28	12/5/18	Review		
	12/12/18	Final exam, 1:30pm-4:15pm		

Honor Code:

GMU is an Honor Code university; please see the Office for Academic Integrity for a full description of the code and the honor committee process, and the Computer Science Department's Honor Code Policies regarding programming assignments. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.

Accommodations for Disabilities:

If you have a documented learning disability or other condition that may affect academic performance you should: 1) make sure this documentation is on file with Office for Disability Services (SUB I, Rm. 4205; 993-2474; http://ods.gmu.edu) to determine the accommodations you need; and 2) talk with me to discuss your accommodation needs.

Privacy:

Students must use their MasonLIVE email account to receive important University information, including messages related to this class. See http://masonlive.gmu.edu for more information.