COS318 - Web Programming  
An Industry Perspective  
Fall 2017  
Prerequisite: COS217

Instructor: Steven Yackel Email: yacste@bethel.edu  
T TH 2:05 – 3:20 AC333 Office Hours: Immediately following class time until 3:50

Books

* (Optional) Cracking the Coding Interview: 189 Programming Questions and Solutions, Gayle Laakmann McDowell, 2015; ISBN-13: 978-0984782857; ISBN-10: 0984782850

Course Overview

This course covers the rapidly changing field of web programming. There will be a brief overview of client side technologies and languages. The large majority of the class will cover web programming from the server side, with REST standards, MVC 6, and common web service problem spaces. Other topics that are strongly related to web programming such as queues, dependency injection, and workers will also be covered. See a more complete list at the end of this syllabus.  
  
Why this Course is in our Curriculum

While there are still many traditional software platforms and applications in development, more and more companies are moving their technologies to the web with services, web sites, and cloud deployments. It is important for students graduating with a computer science degree to be fluent in web development and the problems that arise when creating web services.

This class’s subtitle is “An Industry Perspective.” There are several things about this class that will be different than more traditional classes. Examples include frequent real-world code reviews, software engineer interview practice, and reputation as a part of the final grade. The intention is to give a more accurate picture of what it will mean to be a software engineer as a full-time job.  
  
Class Format

Class time will be varying combinations of lecture, live coding, and class collaboration. Class participation is expected, which includes questions and answers during live coding as well as discussion in groups when appropriate. All live coding done during class as well as any code necessary for assignments will be available at https://github.com/spazard1/Web-Programming-FA2017.

Reputation

Many courses have a portion of the grade allocated to participation, but participation doesn’t model effectively enough what a software engineer career will entail. Elements such as timeliness of code, interaction in meetings and groups, going above and beyond what is expected, and showing passion will all raise reputation in a company. Those concepts will be rewarded in this class; examples of what it that means practically are participation in discussions, doing more than assignments require through stretch levels, and quality and timeliness of your code. Everyone will begin with the same baseline reputation, but it will change positively or negatively throughout the semester as these various metrics are evaluated.  
  
Assignments

Assignments will be introduced on the Tuesday of each week and will be due a week after the following Thursday. This means each assignment must be completed in a maximum of nine days. All assignments will primarily be creating new code projects or adding additional code to existing projects. Late assignments are accepted for partial credit, but will negatively affect your reputation.

Each assignment will have stretch levels for those students who wish to push themselves beyond the baseline level of the class. Often these stretch levels will include topics not covered in class and will require outside investigation and learning to complete. Students who succeed at these stretch levels will be extra reputation.

Exams

There will be two mid-term exams and one cumulative final exam. The two mid-term exams will be a combination of short answer questions, code review, and code writing. The final exam will involve each student being given a fully functioning web service program. Each student will independently code review this program and will be graded on their ability to make good comments on necessary changes to the code based on the topics covered in this course.

All exams will include a section where students may demonstrate a meaningful contribution made to class or group discussion by writing a short paragraph. Writing about these contributions can positively help reputation.  
  
Institutional Policies

Bethel University’s policies of integrity, attendance, accessibility, appeals, classroom behavior, and computer and network usage apply to this course. Many of the policies are available online at **http://cas.bethel.edu/catalog/acadinfo/**.  
  
Grade Breakdown

Reputation 20%  
Assignments 40%  
Exam 1 10%  
Exam 2 10%  
Final Exam 20%

|  |  |  |
| --- | --- | --- |
| ≥93 – 100 % A ≥90 – <93 % A- ≥87 – <90 % B+ ≥83 – <87 % B | ≥80 – <83 % B-  ≥76 – <80 % C+  ≥65 – <76 % C | ≥60 – <65 % C-  ≥57 – <60 % D+  ≥50 – <57 % D |

Topics Overview

|  |  |
| --- | --- |
| Introduction to Web Programming HTML, CSS Javascript, JSON, XML HTTP (Headers, Verbs, Parameters, Status Codes) MVC/WebApi  REST (Controllers/Routes)  Filters/Middleware, CORS Dependency Injection Transient Fault Handling | Async/Sync (async/await, Promises)  Cloud Deployment, Logging, Monitoring  Workers, Queues Optimistic Concurrency Control JWT Service Configuration  API Versioning Introduction to Node.js and Express |