Course Goals
The course aims to prepare students for real-world software engineering tasks. This will include learning widely used tools (e.g., git and VS Code) and working in a group to build a large software application that students can include in their portfolio/resume. Additionally, students will learn and apply processes that software engineering teams utilize to manage software projects (e.g., agile development and code reviewing).

Topics
- Software Engineering Process
- Software Requirements
- Software Analysis & Design
- Software Testing
- Software Project Management
- Software Engineering Research

Skills & Tools
- Version control (git and GitHub)
- Integrated development environments (VS Code)
- Graphical user interface design and implementation
- Debugging
- Program analyzers
- Unit testing
- Documentation generators
- Python
- Code reviewing
- Usability testing
- If time permits: interview problem solving and contributing to an open-source project

NOTE: This course is modified to be taught online due to COVID-19. We will make it great!

Lectures
Lectures will be recorded and uploaded to YouTube. The links will be posted to Canvas. The slides will be made available on the course website. Students are expected to watch the recordings within a few days of being posted.

Quizzes
There will be frequent quizzes that cover the lecture material (approximately one per week). The quizzes will be posted on Canvas. You may use any notes, online materials, and lecture slides, but you may not communicate, even non-verbally, with anyone.

Class Sessions & Participation
Class sessions will be held during the scheduled time on Zoom. The time will be used to review the lecture material, review the previous quiz, provide feedback on group project progress, and a time for students to ask questions. Additionally, students will be given time to meet with their groups each week. Students will be assigned either Tuesday or Thursday to attend and will be required to attend that day each week (and not the other day). Attendance and participation will be documented and graded.

Group Project
The focus of this course is a group project that consists of designing, building, and evaluating a software application. Students will work in groups of 3-5 on a semester-long software project and use specific development tools and processes to meet milestones. Over a series of 2-3 week iterations, the group will iteratively implement the software while applying a variety of software engineering techniques (e.g., version control management, user stories, unit tests, code reviewing, etc.). Groups will be periodically given portions of class time to meet. Groups are expected to communicate regularly outside of class and setup their own system and schedule for doing so (e.g., every Tuesday evening on Slack). Grades will be given for each iteration to the individual based on their contributions (planning, coding, etc.), tracked via GitHub’s Issues feature. The expectation is that contributions will be made frequently and regularly. Iterations are not deadlines. Committing your contributions only at the end of the iteration will result in a failing grade. Group grades will be given based on two demos of the software’s functionality throughout
the semester (attendance is required to receive credit). Additionally, individual contributions will be verified during the group demos to ensure features are implemented as claimed. (I may re-grade individual contributions as necessary.)

Note about using someone else’s code: It is common while programming to use source code found from other resources (e.g., examples, tutorials, GitHub, Stack Overflow). This is completely acceptable if you provide credit. For example, if you use a function from an online resource, add a comment with the URL of the resource. Even if you make considerable changes to it, it is best to add the original URL and a comment “Based on this SO answer that does …”. However, someone else’s code should make up only a small portion of any student’s contribution.

**Extra Credit**

Throughout the semester there may be opportunities to go above-and-beyond that will result in extra credit applied to the student’s overall grade. These will be judged on a case-by-case basis, in a manner that is fair to the entire class. Examples of opportunities for extra credit include: exemplary effort in a particular iteration of the group project or contributing to an open-source project.

**Grading**

- 55% group project
  - 6 iterations at 9.16% each
- 25% quizzes
  - Approx. 10 quizzes at 2.5% each
- 20% participation and attendance
  - Random checks

I will use the standard grading scale to convert to letter grades with plus and minus.

The instructor reserves the right to revise, alter or amend this syllabus as necessary. Students will be notified regarding any changes.