College of Engineering

CS Capstone Progress Report

December 5, 2019

OSU CS Applied Plan Portal

Prepared for

Oregon State University

Dr. Rob Hess _____ _____
Signature *Date*

Prepared by

Group CS72
The Portal Team

Claire Cahill _____ _____
Signature *Date*

Jackson Golletz _____ _____
Signature *Date*

Phi Luu _____ _____
Signature *Date*

Zachary Thomas _____ _____
Signature *Date*

Abstract

The computer science applied option allows students to select courses that total to at least thirty-two credits, that focus on some area of interest. Both creating and reviewing these custom applied plans can be confusing and time consuming. Our teams goal is to produce a web application that simplifies both the process of creating and reviewing these custom applied plans.

During Fall term our team met with our client and agreed upon the specific technologies we would use, the visual design of the application, and the criteria used to measure success. Our team also met with Nick Malos, an OSU CS & ECE Academic Advisor, and with Miguel Fernandez, who leads the OSU API team. These additional meetings were scheduled with the goal of learning more about the needs of OSU's advisors and to learn about the courses API that is under development at OSU.

CONTENTS

1 Introduction

Students at Oregon State who major in computer science must choose between two routes: systems or applied. Those who decide to pursue the applied option may create a custom plan of courses to complete in order to graduate. The applied option allows students to select courses that total to at least thirty-two credits, that focus on some area of interest. The current system of creating and reviewing these custom applied plans can be confusing and time consuming.

Our team's goal is to produce a web application that simplifies both the process of creating and reviewing these custom applied plans for both students and advisors. We want to offer students a platform to easily explore and select courses for their applied plan, as well as create a better method to communicate with their advisors about submitted plans. For advisors, we want our application to offer them an easier solution to review and leave feedback on plans.

2 Progress

2.1 Communication

We have been meeting with our client weekly to get a better understanding of the project and of our client's expectations. We have agreed upon the technologies we will be using for our final project and the visual design of the application.

We have meet with Nick Malos, an OSU CS & ECE Academic Advisor, to talk about how our application could be designed to expedite and streamline the application review process for advisors. We also met with Miguel Fernandez, who leads the OSU API team. We discussed with Miguel the possibility of using the courses API that they are developing to simplify the process of collecting course data. Miguel is currently reviewing our design document and will be keeping in touch with us as the courses API is developed.

2.2 Designs

We divide the application into four sections: student front-end, student back-end, advisor front-end, and advisor back-end. For the front-end components, we will be using React as the JavaScript framework to develop reusable components. Our team has developed mock-up designs for each of the screen views in the portal. The following sections will be included in our project: student homepage, advisor homepage, student edit/create plan, and view plan. We will be following the standards outlined by the Oregon State branding guidelines, using the specified primary and secondary colors. We made some key decisions about the factors that will be included on the pages, including the ”Overall acceptance rate” percentage value and integrating an explore panel for students to choose their courses.

For the back-end of this web application, we will be creating our own relational database using MySQL. Some tables we will start with are Plans, Courses, Users, Comments, PlanReviews, and SelectedCourses. We will create more tables as needed while developing the project. Although there are conerns about the use of educational data in our application which will be discussed in the next section, we will still be utilizing some OSU APIs to supply data about people, textbooks, and courses. Additionally, we plan to use OSU's Central Authentication Service to authenticate a user without requiring access to a user's password.

We decided to host the application on Heroku, a Platform as a Service platform that will allow for quick and effective building and deploying.

3 PROBLEMS

At this point in the project we see on the horizon a number of bureaucratic roadblocks. Most of the issues we see center around the approval and long-term maintenance of our project after we finish development. In particular, during our client meeting in week 9, Miguel Fernandez, the head of OSU's API team, informed us that in order to get data about the university's course offerings, we would need to navigate through multiple levels of administrative review and approval. Additionally, Miguel told us that to his knowledge, no capstone group had *ever* been granted access to an internal OSU API. We expect that this will be a significant obstacle going forward, as we need this data for our app to function and fulfill the requirements set forth by our client. After doing some investigation, Jackson identified an existing OSU web application that exposes course-related API endpoints, which may allow us to obtain data for testing purposes. That said, piggybacking off of another product is not sustainable for production for a variety of reasons, not the least of which is that it could change or disappear at any time.

Our second issue, and one that we believe is relatively minor, concerns the adoption and long-term support for the project once we have completed it. In order for an application to be used at the university, it must be owned and controlled by OSU Information Services. At this stage, we are just beginning to get our foot in the door, so to speak, with OSU IS, which was not involved with the conception or submission of this capstone project. According to Miguel Fernandez of the OSU API team, similar projects have been considered in the past, but were shelved for unspecified reasons. In our client meeting during week 9, Miguel told us that he would discuss our project with his superiors to try to build interest and support for it. Beyond making our case to those who are willing to hear us out and hoping for them to make progress with their superiors, there is not much we can do to ensure that this project will be adopted once it is completed.

4 RETROSPECTIVE

POSITIVES	DELTAS	ACTIONS
Week 1: We received our group assignment and introduced ourselves to each other. We also updated and improved our resumes.	**Week 1:** We needed to set up the group's workspace and figure out the schedule throughout the term.	**Week 1:** We recorded our schedules in WhenIsGood to determined the best times to meet as a group and with our client. We also created accounts in GitHub, Trello, Discord, and Google Drive.
Week 2: We learned more about our project and held a meeting with our client and Nick Malos, an Academic Advisor.	**Week 2:** We needed to get more information about the project from our client.	**Week 2:** We planned for a follow up meeting with our client and our client mentioned that there may be value in researching what OSU APIs are available.

Week 3: We worked together as a team to complete our team standards for the week. We started the first draft for our requirements document.	**Week 3:** We needed to divide up work on the requirements document. We also needed to decide how we were going to divide up the final group problem statement.	**Week 3:** We developed our team standards regarding work completion, work quality, meeting attendance and preparation, and conflict management. We also decided that Zak's problem statement was the most well-written and that we would use it as a a starting to point to edit and turn in for a final grade.
Week 4: We finished the requirements document. We used Trello for the first time. We became more familiar with IEEE format.	**Week 4:** We needed to assign tasks to specific team members in order to complete the requirements document.	**Week 4:** We assigned each other tasks in the Trello account and completed each one to fulfill all the required sections of the requirements document.
Week 5: We agreed as a team on how to divide up the project into topics that each of focus on for our individual tech reviews.	**Week 5:** We needed to meet outside of class in order to determine the areas of the project that each team member is most interested in working with.	**Week 5:** We needed to schedule another meeting with our client to discuss the specific requirements of the project. We also needed to talk to our client about the timeline and get some recommendations about the technologies to implement the application.
Week 6: We met with our client and were able to figure out the basic functionalities of the application.	**Week 6:** We needed to finalize our individual Tech Reviews and meet with our client more often.	**Week 6:** We decided to meet with our client weekly on Mondays instead of on an as-needed basis. We also decided to conduct informal user surveys upon completion of the project instead of a formal user study.
Week 7: We used Trello to divide the work for our design document between each of our group's members.	**Week 7:** We needed to continue working on our design document ahead of the November 21st due date.	**Week 7:** We handed off our individual tech reviews to our client and decided the specific tasks that each group member was assigned for the group design document.

Week 8: The client reviewed our design document draft and seemed very happy with it. We finished and submitted our final draft before the deadline.	**Week 8:** We needed to add additional mockups to improve the UI. We also needed to contact the OSU APIs team to clarify some API endpoints as well as FERPA issues.	**Week 8:** We scheduled a meeting with our client to seek his approval of our design document. We also scheduled a meeting with Miguel Fernandez, the lead developer of the OSU API team, to learn more about the courses API.
Week 9: We had a meeting with Miguel Fernandez, the lead developer of the OSU API team, who is working on the university's internal courses API. We were able to learn more about this API and gain an understanding of the process for getting access to it.	**Week 9:** We found out that we may be unable to get access to the internal courses API due to data privacy concerns.	**Week 9:** During development, we are planning to either get static course data from the registrar or use unprotected endpoints from another OSU web application.
Week 10: We worked together to complete our progress report.	**Week 10:** We will need to setup weekly meetings with our client for Winter term.	**Week 10:** We plan to contact our client to schedule a new weekly meeting time when Winter term starts and we made sure that this was convenient for our client.