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## **Interactive Curricular Roadmaps**

### **Overview**

The goal of my project is to create a platform to visualize the different paths that students typically pursue in course 6. I want to build a platform where students can ask questions about what classes they should take, both to “balance” their semester and to find similar themes in advanced classes, all backed by the history of previous course 6 students.

### **Background**

I wanted to design a project in order to give back to the younger generations of Course 6 students. My idea is to provide a new tool that they can use to help themselves make more educated decisions about what they study. I found my transition to Computer Science difficult and hopefully with this tool, students will be able to define a clearer path for themselves.

I am using data that I received from Professor Terman through Course 6’s database of courses taken by previous students. The data includes thousands of students where each student has a major and a list of every class that student completed at MIT along with the corresponding semester. The data is anonymized because it does not include any names or grades that students’ received. I will be analyzing students from 2008-2015 because the class numbers and graduation requirements for Course 6 have been relatively consistent over the last 7 years.

I would like to first discover what sort of patterns there are in students’ course roads and then design a corresponding website to display these discoveries interactively. Part of this discovery will rely on what sort of interesting questions can this data shed light on? I aim to answer questions like: how to balance a semester? what courses should I take my senior year? and hopefully others. Once I have discovered what questions I can meaningful answer, I will design and implement a platform to convey these results in the most effective way. Currently, I think statistical roadmaps and selective filtering could be useful tools to students, but I am very open to all sorts of new designs.

There are currently 2 websites that aim to help make picking classes easier for students Course Picker ([picker.mit.edu](http://picker.mit.edu)) and CourseRoad ([courseroad.mit.edu](http://courseroad.mit.edu)). Course Picker allows you to select classes and then visually display them in a calendar in order to help students pick classes that do not overlap or find recitation times that fit in their schedule. Additionally, you can export your classes to CourseRoad. CourseRoad allows you to create different curricular roadmaps and ensure that you are meeting all of your graduation requirements. My platform will be slightly different from Course Picker and CourseRoad because it has the benefit of accessing historical data to help students decide which classes will be the most beneficial. Additionally, I envision my platform as more of a learning tool where students benefit from how former

students have completed their degrees rather than just a planning tool similar to Course Picker or CourseRoad.

## Implementation

I am currently analyzing the data and trying to define certain patterns and meaningful information. Once certain patterns are discovered, they will help dictate what the most effective representation structure will be for the platform.

My platform is written primarily in Python. The web interface will include some JavaScript, HTML/CSS, and JQuery. Additionally, I would like to implement some interesting graphs or roadmaps using the D3 JavaScript Library.

## Timeline

1. Digest / Explore / Classify Data (2 weeks - due March 7th)
  - a. Get a better idea of what I want to show the user and what information/patterns will be meaningful and useful
  - b. [1 week] - to parse data and brainstorm UI functionality
  - c. [1 week] - plan how the user will interact with the platform based on what functionality will be provided
2. Build out Minimum Viable Product (MVP) features (2 weeks - due March 28th):
  - a. Implement the main functionality of my platform including necessary functions and generally build how information will be collected, generated, stored, and displayed
3. Build preliminary User Interface for MVP(1 week - due April 4th):
  - a. Design and implement the UI for the platform
  - b. Only focus on the key workflow areas to make the platform usable and interactive
4. Perform preliminary Usability testing (1 week - due April 11th):
  - a. Using the MVP platform and if necessary paper prototypes, conduct some user testing with freshmen and sophomores to see how they interact and evaluate the design and available features
5. Augment platform with additional features (2 weeks - due April 25th):
  - a. Based on user input and self-revaluation, update the site as necessary
6. Testing (1 week - due May 2nd):
  - a. Conduct a final round of usability testing and make tweaks to the platform as necessary
7. Final Report (1 week - due May 9th [real report is due May 12th ie last day of classes]):
  - a. Craft final report detailing the work I completed over the semester