

# Project Proposal and Outline

## Teammates:

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## Project Goals:

Create a visual representation for Computer Engineering/Computer Science students' course requirements and prerequisites. Our project aims to visualize the different classes/pathways required prior to taking the class inputted into the program. It will look similar to what Wade did with his website as seen here: [https://waf.cs.illinois.edu/discovery/class\\_hierarchy\\_at\\_illinois/](https://waf.cs.illinois.edu/discovery/class_hierarchy_at_illinois/) . We will adjust the scope as needed.

## Datasets:

We will be using the course prerequisite csv file found here:

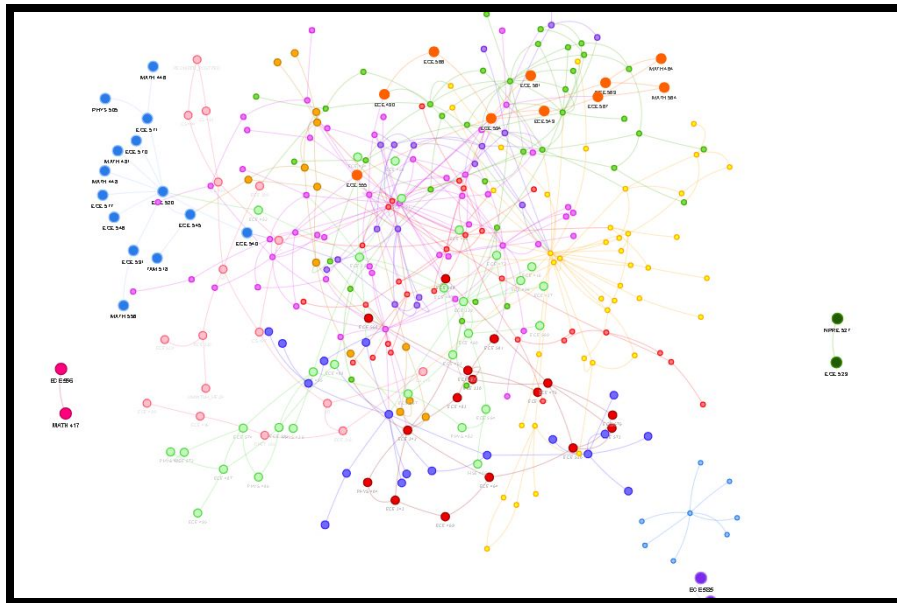
<https://github.com/illinois/prerequisites-dataset> , possibly combining it with the course catalog and gened datasets found here: <https://github.com/wadefagen/datasets> . Both repos specify the format of the csv files within their README's. We will be using information publicly accessible from the University of Illinois to extract information regarding ECE/CS curriculum and prerequisites in order to construct our graph(s).

## Algorithms:

Sets! Graphs! Lots of them! We will need to figure out how to utilize multiple connection types so this web of different classes can actually be utilized well. From the specified options on the project goals doc, we'll likely end up using some sort of shortest path algorithm, and we'll be providing a graphic output of the graph.

**\*\*\*We will use adjacency matrices as well as other implementations for directed graphs to construct accurate and quick (run-time) accessibility of desired information. We will have a matrix for vertices (classes) as well as an adjacency matrix to store the directed edges in order to more easily access edges when looking for a specific path. It may also be beneficial to have a matrix of incoming edges and also outgoing edges in order to speed up our class searching process knowing which classes come before.\*\*\***

It will look kind of like this, but more tailored to a specific input course:



**Potential Features:**

- Highlighting classes that are prerequisites for the selected class
- Different pathways for different majors
- Highlight prerequisites / corequisites