

Milestone 2: Ideation and Low-Fidelity Prototyping

October 22 2024

Part (a): Group Brainstorming

Our project aims to combine the features of MyTimetable, the Advisement Report, and the Academic Planner into **one new standalone** website, where students can create their schedules easily and with convenience.

For our brainstorming, each group member provided sketched examples of designs with focus on a particular idea and single elements of the interfaces. As target users of the project, we discovered many features which may be helpful when using the webpage. This is reflected in our sketches, which include a planner page, an option to filter courses, a page to see program requirements, and other helpful features. A wide variety of aspects were covered, taking into account the requirements outlined in Milestone 1.

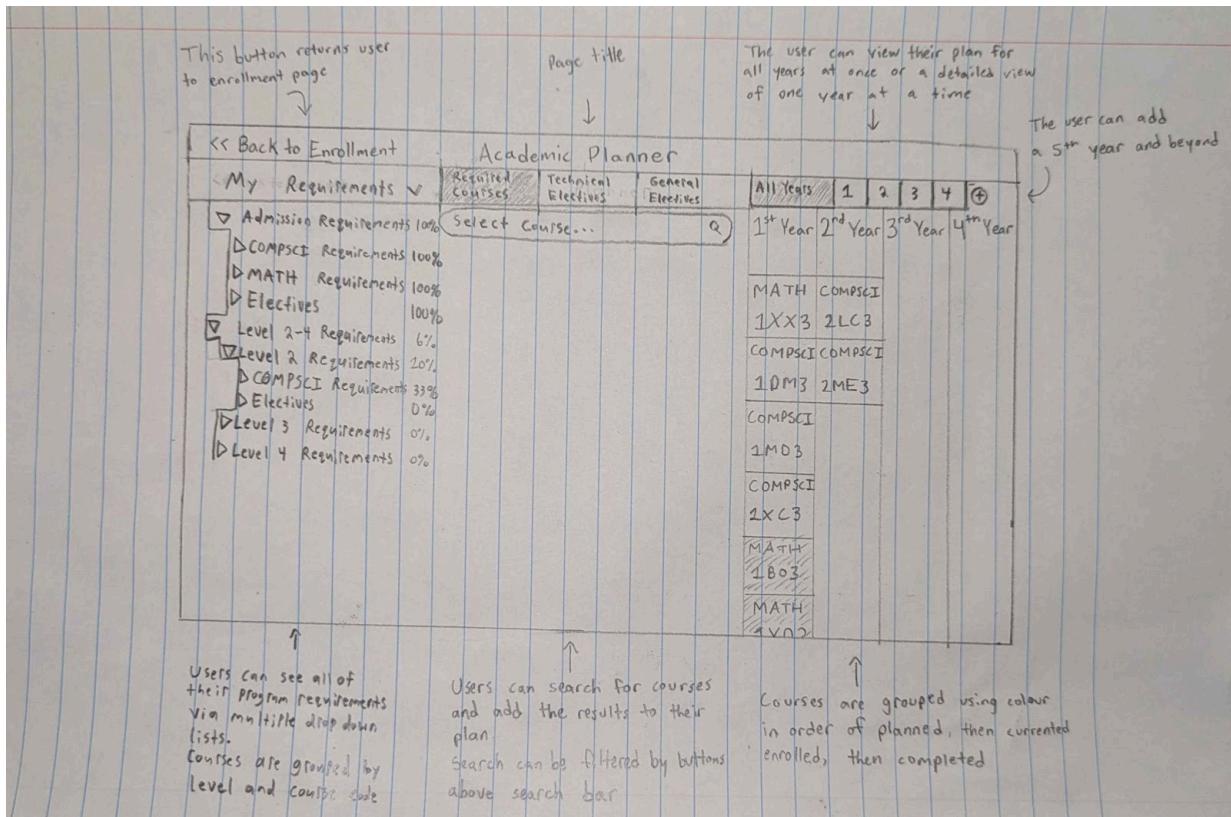
One of the sketches included a page where all available courses will be displayed with options to filter through them. This helps users access all courses and students can enroll in the ones they need and/or want to take. This also allows the department chairs to properly allocate rooms and times for courses with higher interest.

Students must be able to enroll in courses they are eligible for, which is shown through hovering over a button on the course details. In the details students can see exactly what requirements they are missing, whether it's the prerequisite, corequisite, or antirequisite. The course details also show how many seats in the class are available and the times the classes are held. This helps students take note of courses which may fill up or any possible conflicts in their schedule.

Another idea reflected in our sketches was that everything would be on one page, with toggles between certain pages or through using tabs. Efficiency would be maximized by saving the user time since they don't have to switch between different web pages. One sketch showed how users can toggle between the course selection page and the timetable page. Another showed how users can view their program requirements simply by clicking the tab.

Part (b): Idea Polishing

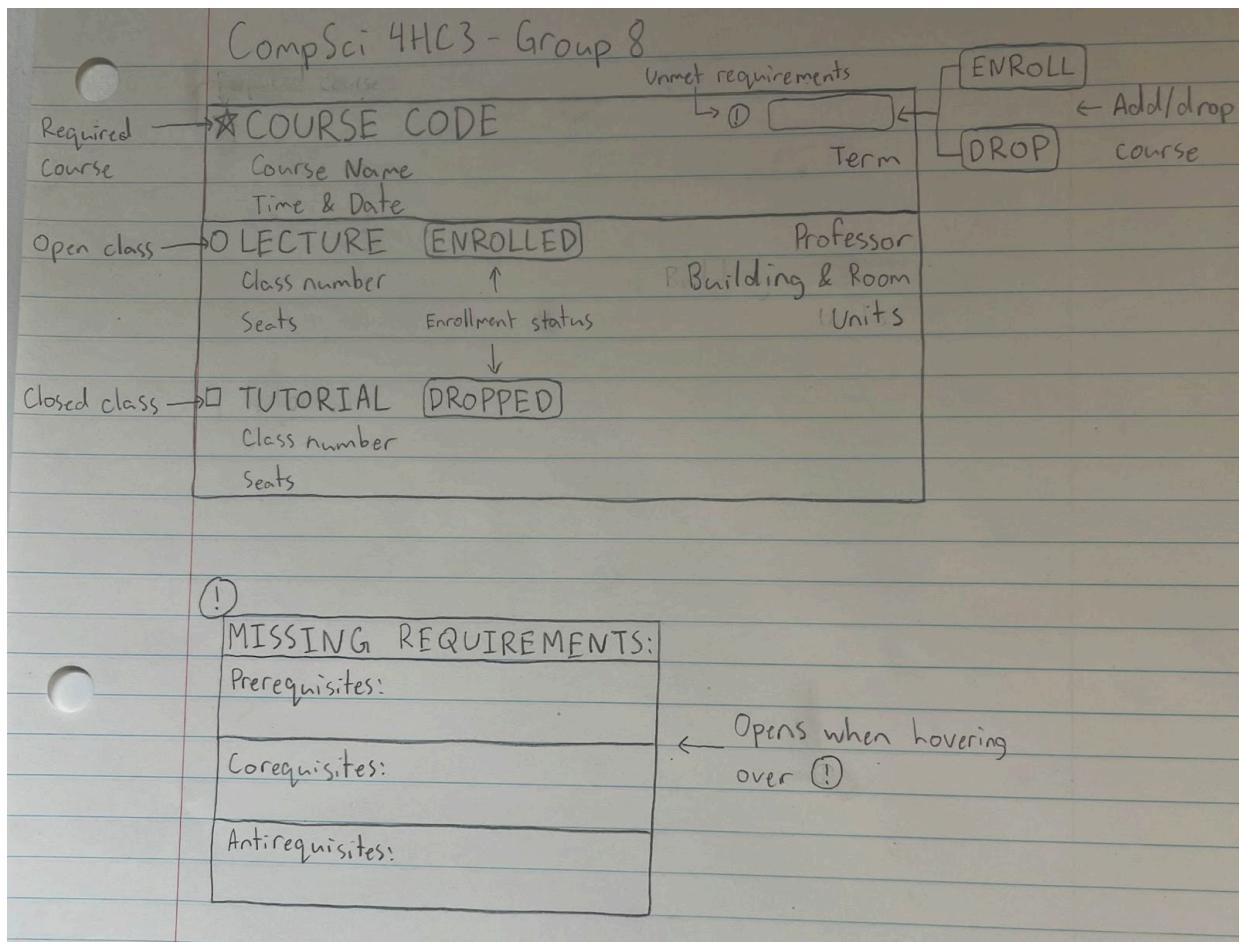
Academic Planner:



This is an academic planner. Here, students can see what requirements they have met, and what requirements they still need via a dropdown menu. The courses are grouped by level and course code, and each group shows a percentage of completion. There are three buttons that can be selected when searching for a course and act as filters: “Required Courses”, “Technical Electives”, and “General Electives”. The first two buttons will show a list of all courses in that category that can be searched through with the search bar. The “General Electives” button allows the user to search through all other courses McMaster has to offer. On the right hand side, the user is able to view their planned courses for a given year, or for all years at once. Courses are grouped using colour in the order of planned, currently enrolled, and completed.

This sketch is appropriate for our design because it stores a variety of useful information on one page. During the user research stage, we noticed that users would plan their courses separately from mosaic using third party software and McMaster’s Academic Calendar. This would force them to constantly be switching through multiple tabs at once. With this sketch, the user can see everything they need for a successful enrollment experience, all on one page. This interface also shows all courses being offered in a given term, stores course details and courses that a user is enrolled in, and gives information on program requirements. These were also requirements from Milestone 1.

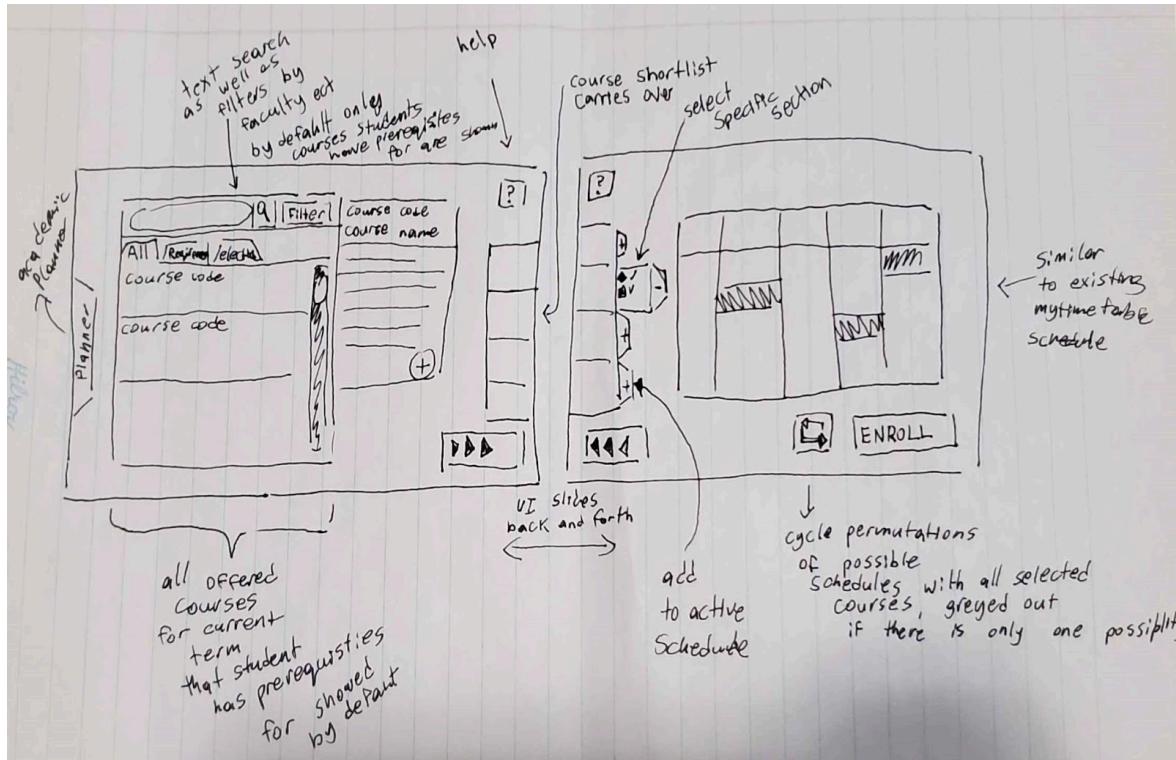
Course Details:



This sketch shows how our interface can display course information. When appearing in search results, a course will display its course code and course name. It will also have an icon displaying if requirements have been met for that course. While hovering over this icon, it will show either missing prerequisites, corequisites, or antirequisites that have been taken already. After clicking on a course, the UI shows much more information, including the class number, number of seats available, if a user has enrolled/dropped/planned the course, the professor etc.

This sketch is appropriate for our design because it displays all information a user needs to see for a course. It stores course details from McMaster, including requirements and number of seats available, for each specific course. These were data and functional requirements from Milestone 1. It also only allows students to enroll in courses they are eligible for, which meets the safety goal from the usability requirements of Milestone 1. This is important because it stops users from trying to take a forbidden course in the planning stage, instead of trying to enroll in a forbidden course during their enrollment appointment.

Course Enrollment Page:

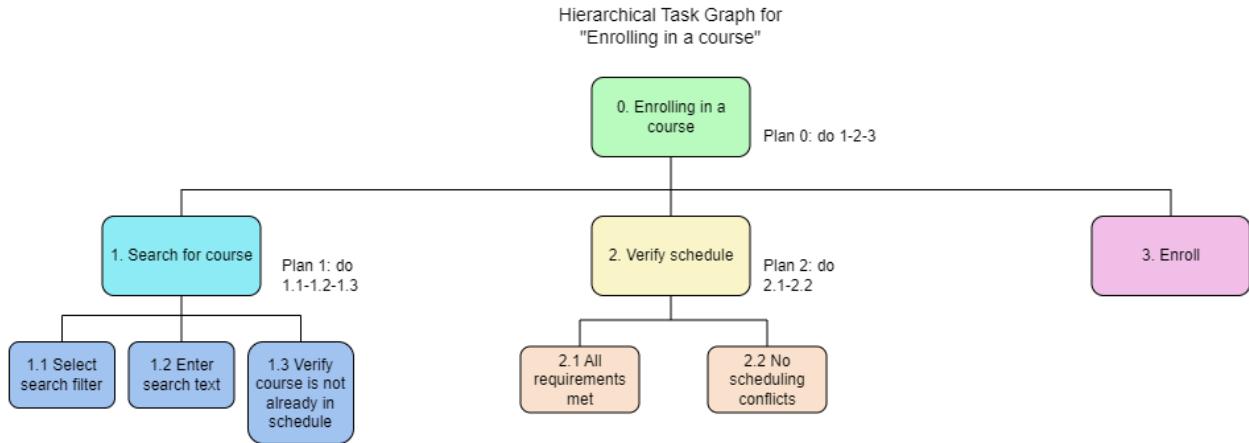


This is a course enrollment page. Here students can search through their courses and display them on a weekly calendar. For the search, as default, only courses that a user is eligible to take will be displayed. The user can easily change between the planner and the enrollment page using the button on the left. When a course is searched for, it is added to the shortlist and “active schedule”, which displays each course in a calendar format. From the shortlist, the user can press a button to view lecture and tutorial times. There is a button to cycle through each possible course combination, so the user can find a schedule that aligns best with their goals. There is also a help button at the top of the page that provides instructions for how to use certain features of the page.

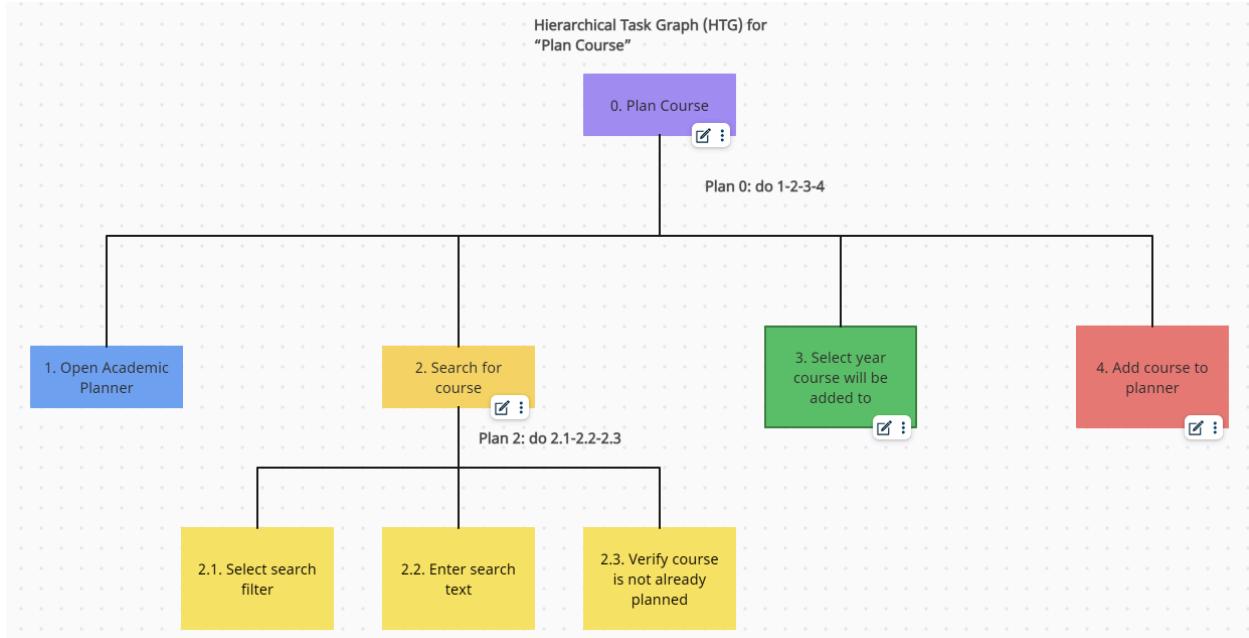
This sketch is appropriate for our design because it demonstrates a clean and efficient way for students to search for and enroll in their courses. The default setting that hides courses the student is ineligible for meets the safety goal from the usability requirements. The sketch also displays all courses being offered and allows users to enroll in these courses for the given term. These were functional requirements from Milestone 1. Additionally, there is a help button to provide instructions for a variety of tasks, which was a user experience requirement from Milestone 1.

Part (c): Hierarchical Task Graphs

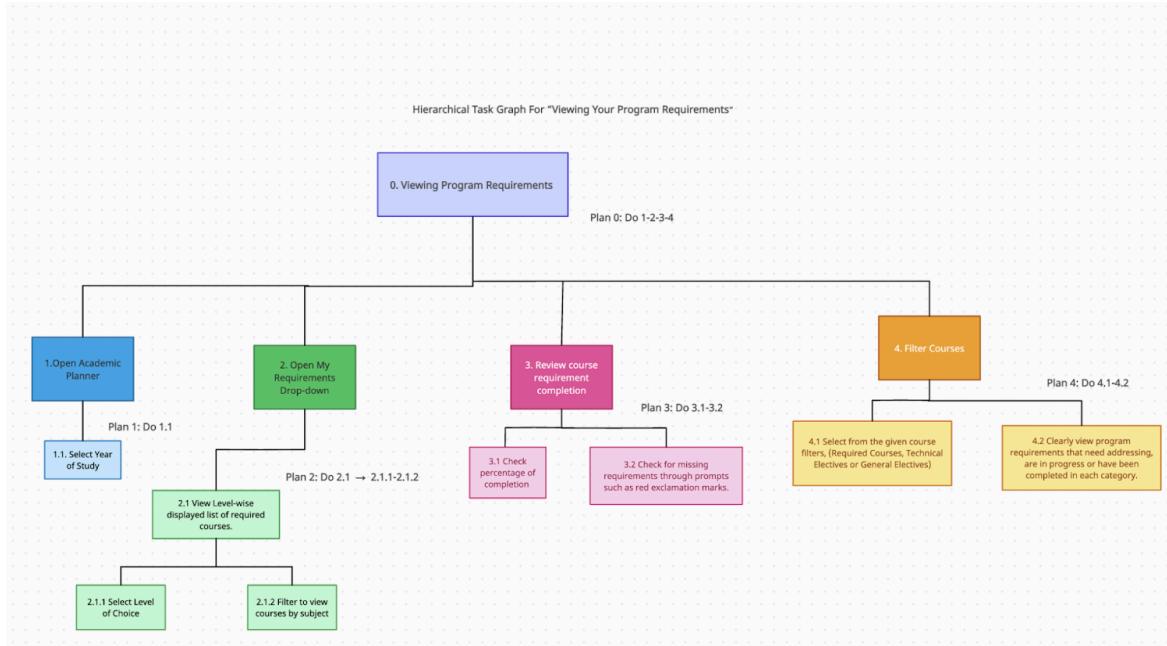
Enrolling in a Course



Planning a Course



Viewing Program Requirements



Part (d): Low-Fidelity Prototypes

[Link to Prototype Demo Video](#)

The goal of the prototype is to convey how the three main features of our interface connect together and can be navigated between. These main features are the same as those represented in the task hierarchies in part (c), namely enrolling in courses, planning future courses, and viewing program requirements. We represent connection and navigation between features through physical mechanisms which dictate visibility of and access to various elements as well as placing symbols and elements on physically separated components to convey where they should be placed to emulate a pop-up.

The main body of our low-fidelity prototype is a paper belt on a cardboard track which represents the primary web page views users will interact with while enrolling. This structure allows the belt to “scroll” left and right to move between picking courses and building schedules with them. This mimics the desired user flow of our webpage, with the user adding courses on the search page, then assessing possible schedules with those courses, and either enrolling in one of the schedules or returning to the search page to add new courses for extra options. The side to side motion of this component is particularly important since it emulates animation we hope to implement while transitioning between these pages. This is intended to make our interface more learnable and memorable by introducing the idea of relative physical location between pages. The search page is to the left of the scheduling page with the course shortlist in the middle between them. This is why the shortlist appears on the left of the scheduling page but on the right

of the search page. The idea of relationships in physical space between elements of these pages also serves to emphasize that changes to the shortlist carry between pages as it is visibly the same object in the same place and when a user moves between pages it is simply their field of view to either side of the shortlist that changes.

We will now expand on the various interactions modeled by our prototype. First, in the section below the search bar listing courses that meet the criteria of the search, clicking on the “+” icon next to a course's code and name will show a box with in-depth information such as the full course description, the lecture times, seats, locations, etc. This can be simulated with the paper prototype by flipping open the “COURSE CODE 1” flap and unfolding it to reveal the details.

Once details for a course are opened it can be added to the shortlist with a button in the top right of the information box reading “ADD”. This is represented in our prototype with a slip of loose paper with the course code placed inside the folded information box which can be removed and placed into the loops on the third shortlist slot.

This also allows the course to appear in the shortlist on the other side of the page next to the schedule. This is important to mimicking the flow of the final webpage, as courses placed into or removed from the shortlist carry over when the page scrolls.

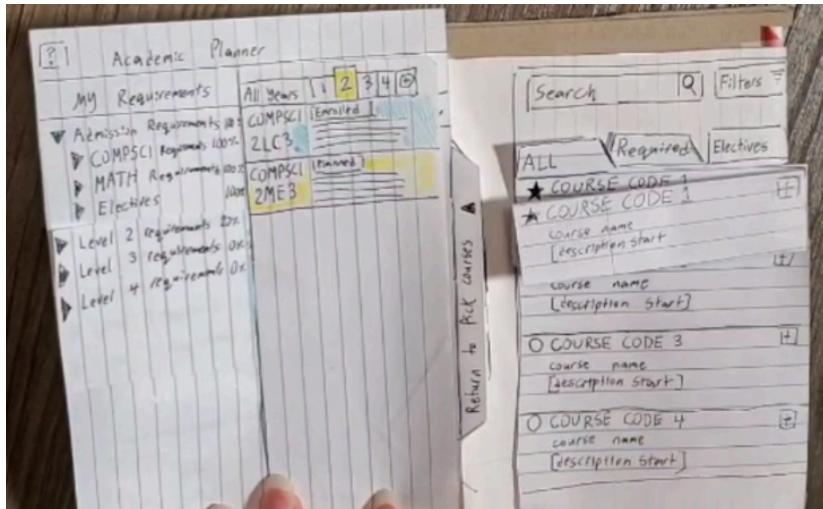
Another interactive element under the search bar are the “ALL” “Required” and “Electives” tabs. You can change tabs by pulling the paper they are written on down. We included this to simulate returning broad categories of search results in the final product. The purpose of these categories is to improve the efficiency of finding a course to add to your list as well as affording simpler browsing of the term's offerings. There are additional more advanced filters accessible through the filters button next to the search bar. These filters are not functional in our prototype but we do have a mockup of the menu as an additional paper piece which can be placed over the button to show what other types of filtering can be used.

Next, to transition to the schedule, press the “Proceed to Schedule” button in the bottom right. This can be simulated in our paper prototype by physically sliding the paper belt to the left around the cardboard. This is a representation of the horizontal slide transition we plan to implement on the webpage. The shortlist information, primarily the courses selected, will transfer between pages. This function is also captured in our paper prototype.

For each course on the short list, the user can press a button which is simulated by pulling the paper tab to the right of the course code. This reveals lecture and tutorial information, allowing the user to see all of the different class times. This gives the user more freedom while allowing less clutter on the page.

The user can cycle through different possible schedules by clicking the cycle button below the calendar. The prototype models this by making the button a tab that can be pulled up to reveal a new schedule. The “Return to Pick Courses” button scrolls the page backwards so that the user can search for more courses. This acts as the inverse of the “Proceed to Schedule” button.

The second page is separate from the cardboard and represents the Academic Planner page of our interface. Pressing the Academic Planner button on the left side of enrollment opens this side menu, while retaining the search feature of the enrollment page. For reference:



On the Academic Planner page, users can view their program requirements using the dropdowns on the left. We've simulated these dropdowns in our prototype by using paper tabs which fold down to reveal courses in each category. Viewing required courses is important to the design since, per our user requirements, users need an easy way to follow their requirements while selecting their courses.

Also, users can view their plan by year or with all years. The option to change view is given by the tabs in the top right of the planner. Our prototype includes this interaction by using paper tabs which fold down as well. This gives the user flexibility in how they plan future years and keep the interface clean and flowing well.

As mentioned before, the search feature on the Academic Planner page is nearly identical to that of the enrollment page. Users can filter, search and view courses the same way as the other page, however on this page, the courses are added to the planner instead. Users can also select which year of the planner the course will be added to.

Part (e): Informal Prototype Evaluation

Our method for obtaining feedback on our paper prototype was to show the participants video examples of the prototype in use. Due to the limitations of having a physical prototype, not all participants can interact with the paper components during evaluation. The prototype can only be in one place at a time and with the distance of team members during reading week, it was not feasible to get feedback of the prototype in person.

We instructed users to view the prototype as a still image, then showed them it being interacted with. This way, we can find out if the interaction did what the user expected it to. Also, we asked users what steps they would take to complete each task to see if the interaction took the steps they expected it to. We gathered feedback from four university students, because they are the target users for our interface.

With respect to the Enrollment Page, there were many suggestions. Students recommended being able to see the number of possible course combinations and having an option to go back when shuffling through these combinations. This would be more efficient for picking the schedule that fits the user's needs the most. Additionally, the students questioned what would happen after the enroll button was pressed. This was important, as our task had covered all of the steps up to the point of pressing the enroll button. Moreover, another proposal was the ability to see the number of seats remaining in a class during enrollment. These suggestions are all extremely important to the design moving forward.

The Academic Planner page also received valuable feedback. Users didn't find it obvious that the search results would now be added to their planner rather than their short list. One suggestion to remedy this would be making the academic planner clearly its own page, not related to the short list of the enrollment page. The option to see all courses left to graduate was also requested by users. Users with concurrent certificates also suggested a way of being able to track their progress.

There were many aspects of the design that users were fond of. In general, these students were able to easily infer most of the functionality of the website. They loved being able to slide between pages while retaining course information. These students also liked the ability to expand the courses to see more information when necessary.

There were also some aspects of the design which users found confusing. First, the completion percentages in the academic requirements section could indicate the courses have just been planned/enrolled, or they could actually be completed with a passing grade. Next, it is unclear what courses are displayed under the ALL tab when searching. Finally, users found adding courses to the planner to be confusing. It was unclear that the add button changed from adding courses to the shortlist, as well as what year of the plan they were being added to.

Appendix

Evidence of Brainstorming:

Program Requirements Sketch				
④	Level 1	Level 2	Level 3	Level 4
MISSING Not taken yet	,	,	,	,
MISSING	,	,	✓	✓
Course added to plan/ schedule	,	✓	✓	✓
Course You Completed	✓	✓	✓	✓

Academic Planner

Year 1	Year 2	Year 3	Year 4	(+)
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Search for Course... q

MATH	Calculus for Math and Stats I	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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1X03	Taken	Taken	3 units
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Core Course List ✓

MATH	Calculus for Math and Stats II	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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1XX3	Planned	Planned	3 units
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Scientific Course List ✓

ECON	Microeconomics	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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1B03	Planned	Planned	3 units
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My Requirements ✓

D'Admission Requirements

- Level 2-4 Requirements
- Compsci Requirements 0%
- Math Requirements 0%
- Elective Requirements 5%
- Commerce 2FA3 3 units

B Level - 1 Requirements

req'd

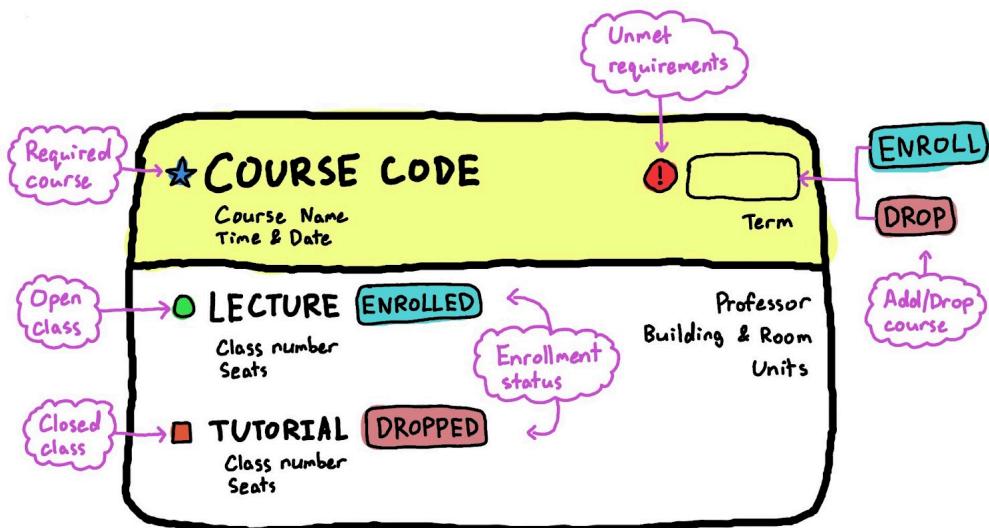
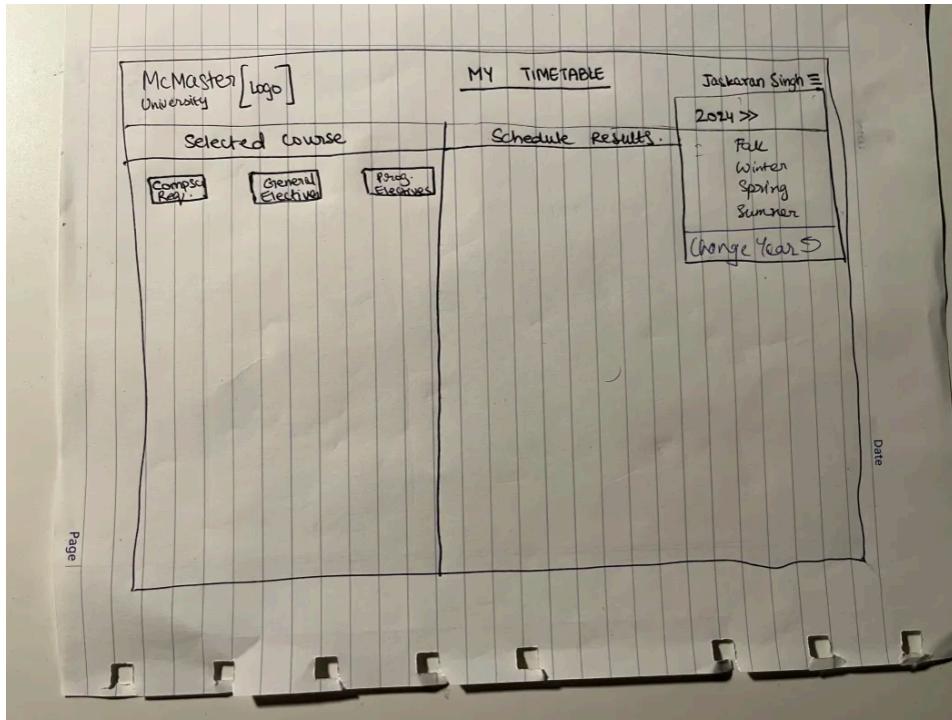
Course code	?
CO DE S	
<input checked="" type="checkbox"/>	
<input type="button" value="PICK!"/>	

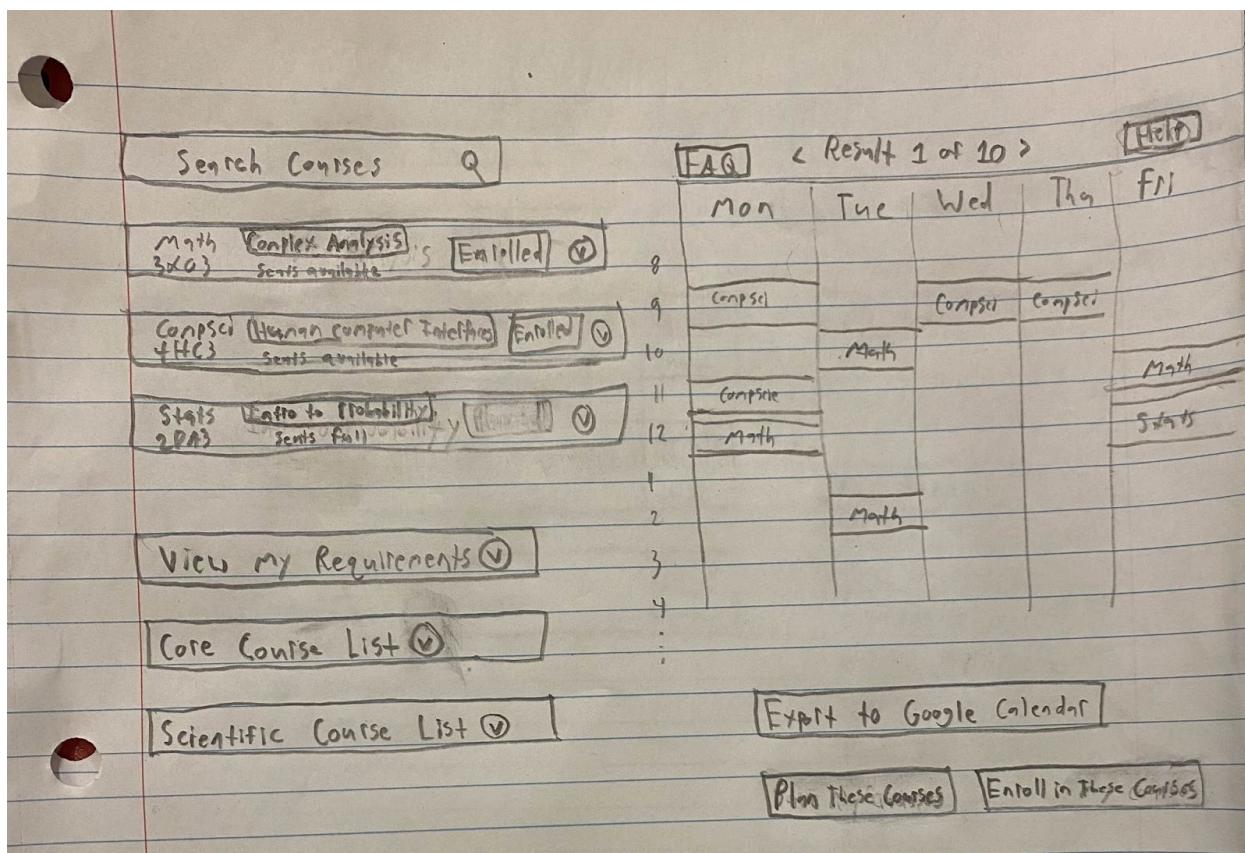
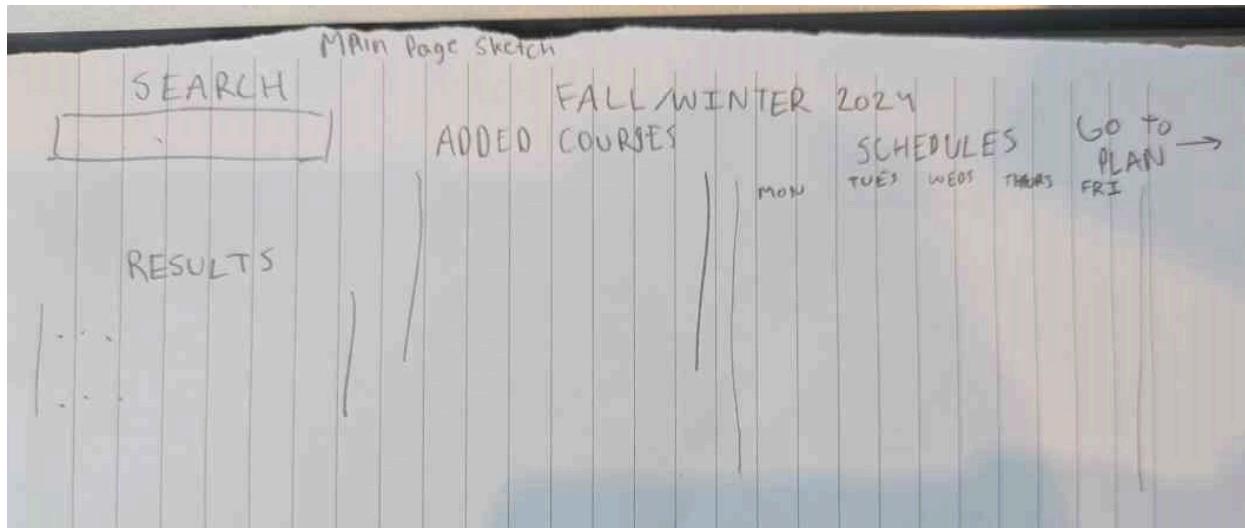
toggle back button

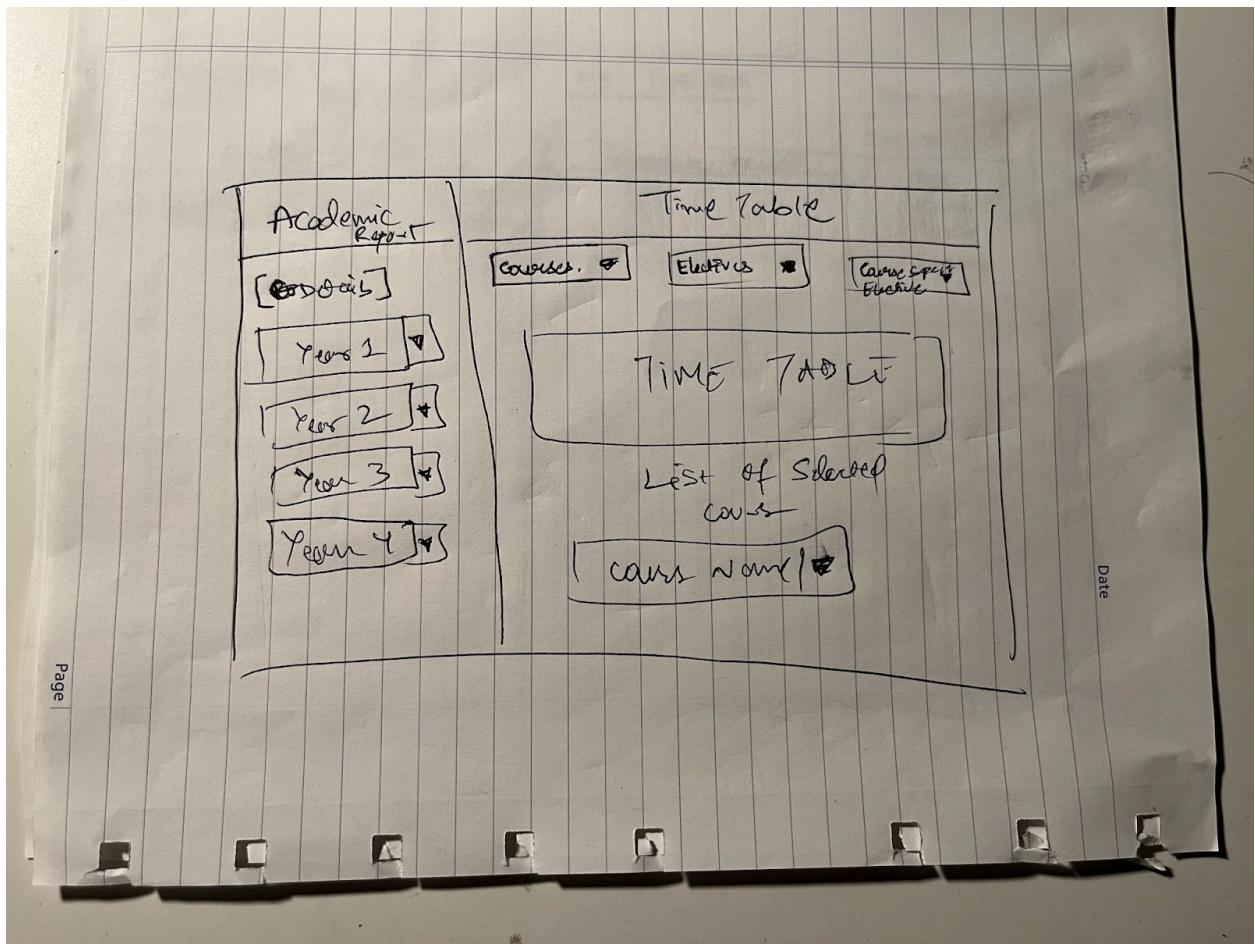
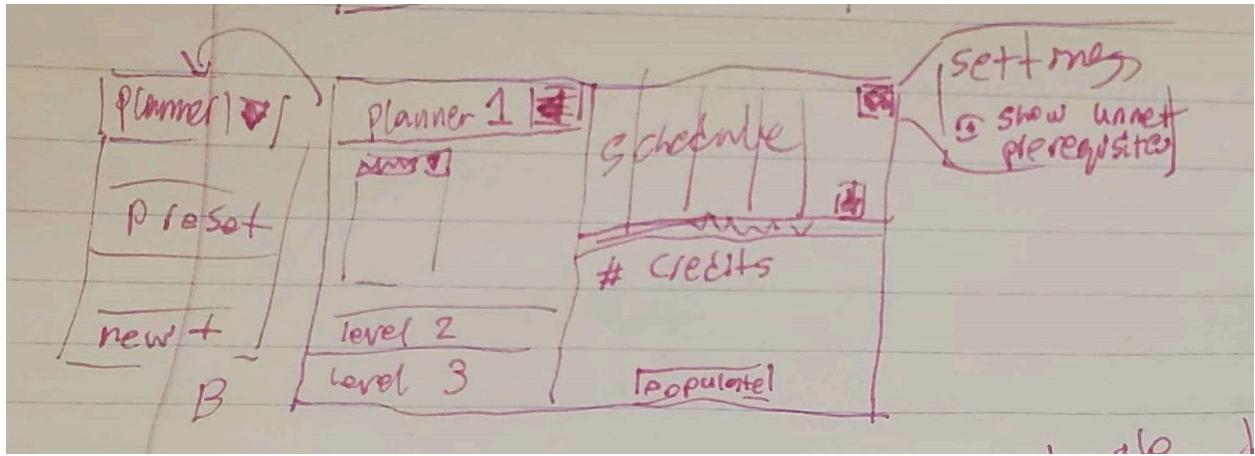
!

<input type="button" value="RESUME"/>	<input type="button" value="ENROLL"/>
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brings up the confirmation window probably







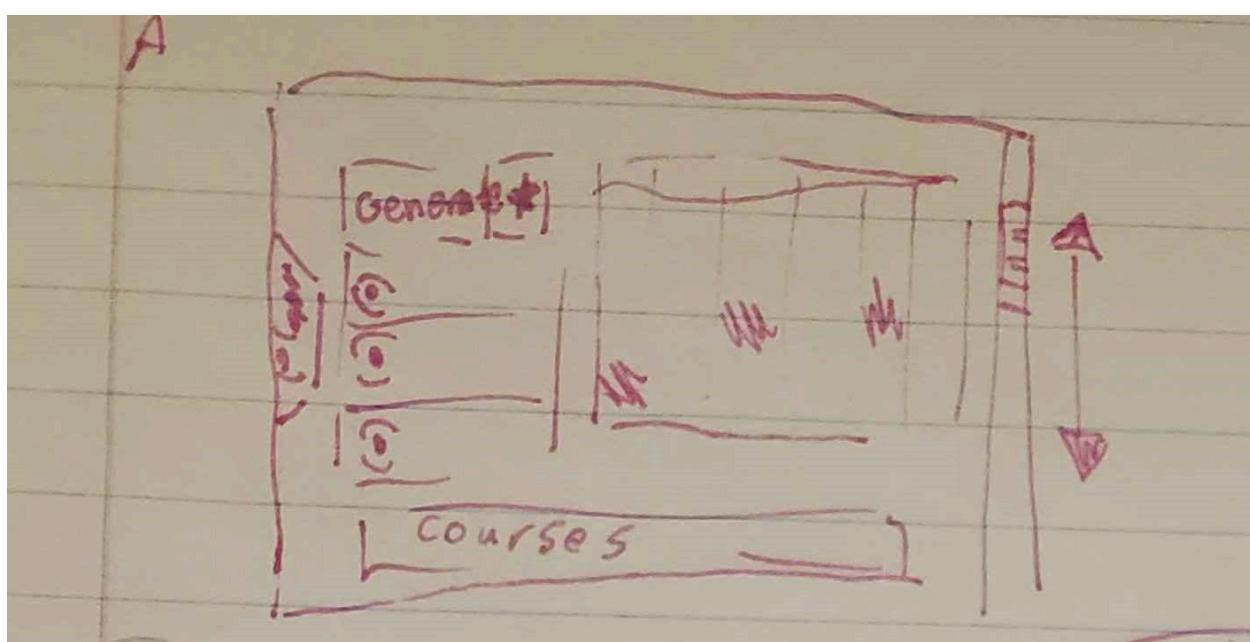
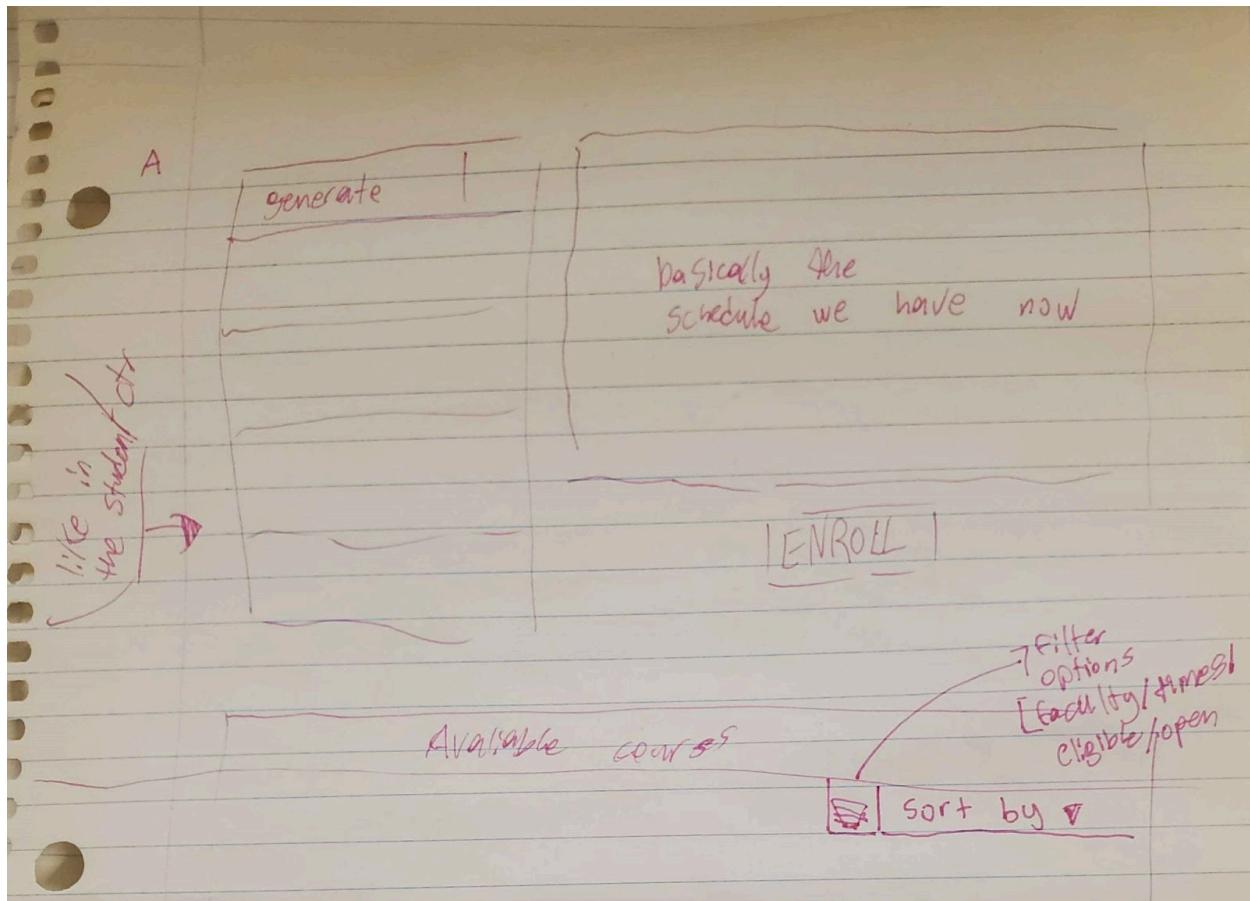


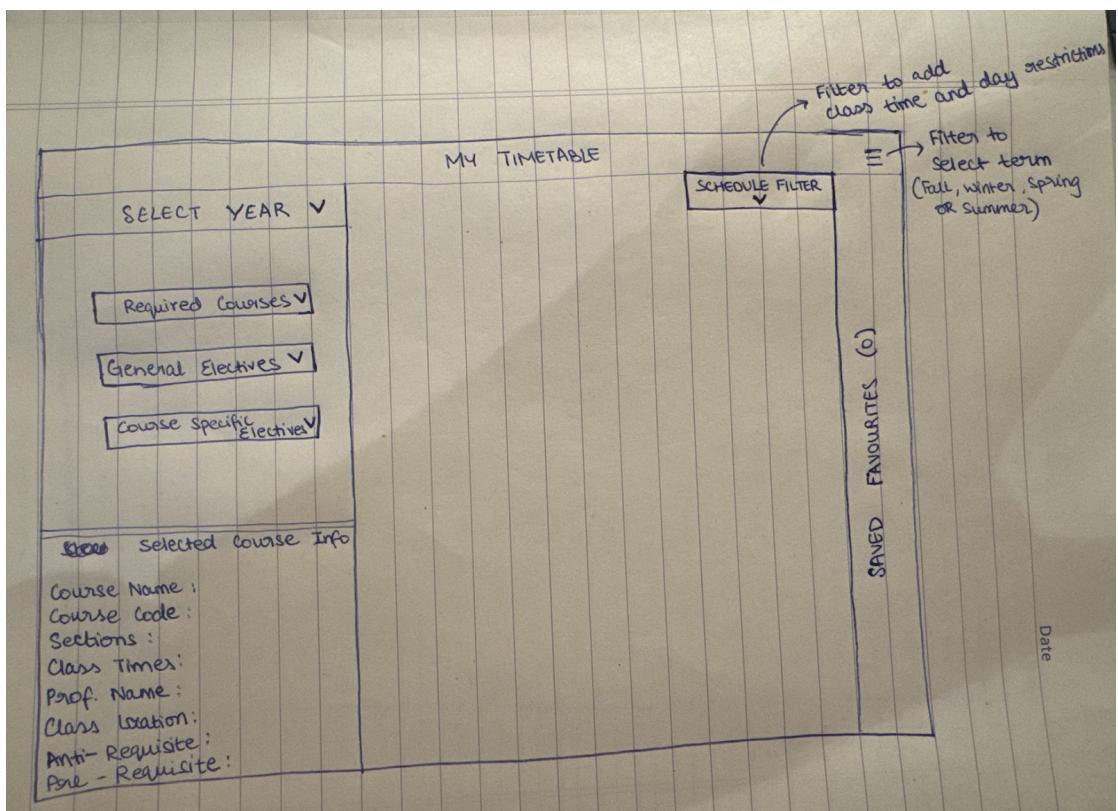
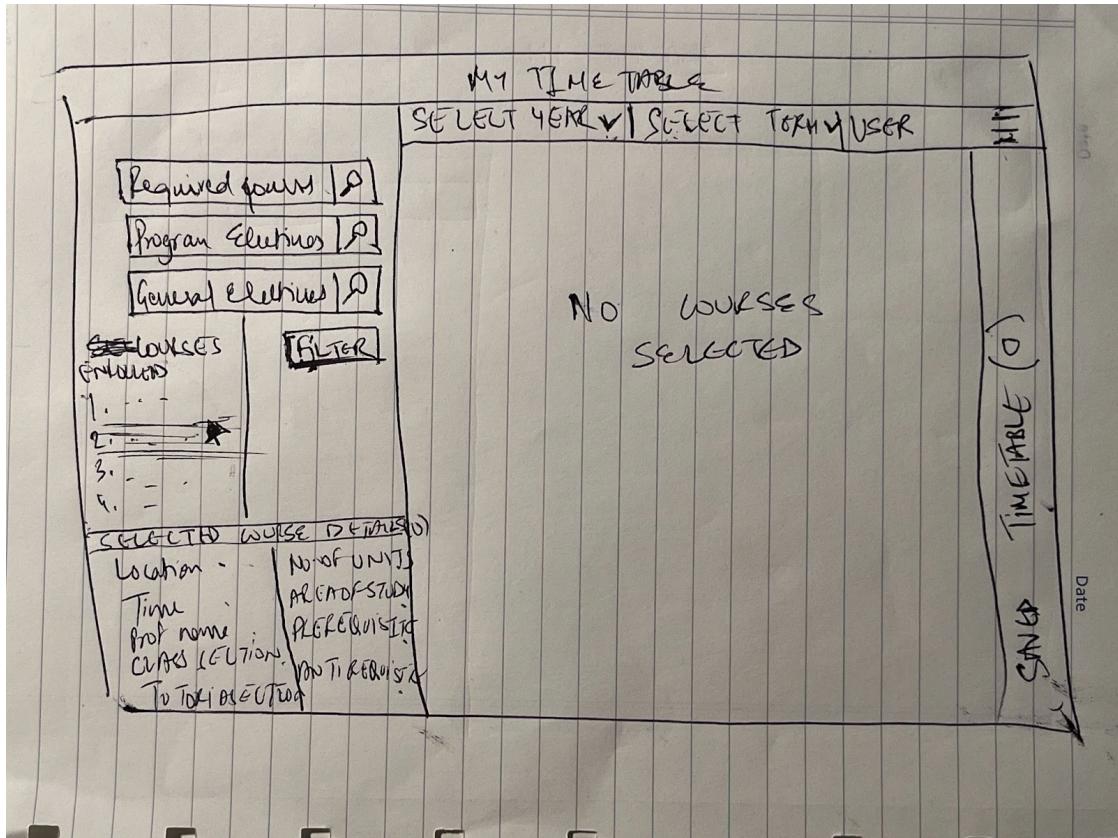
Course Details Sketch

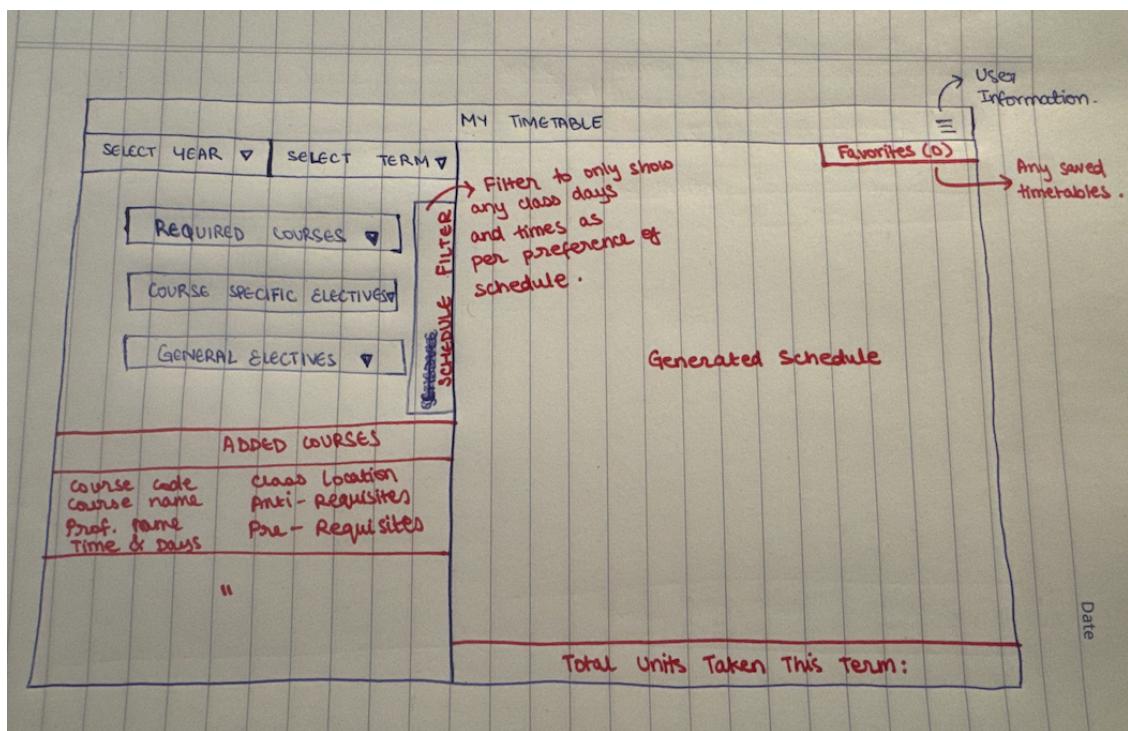
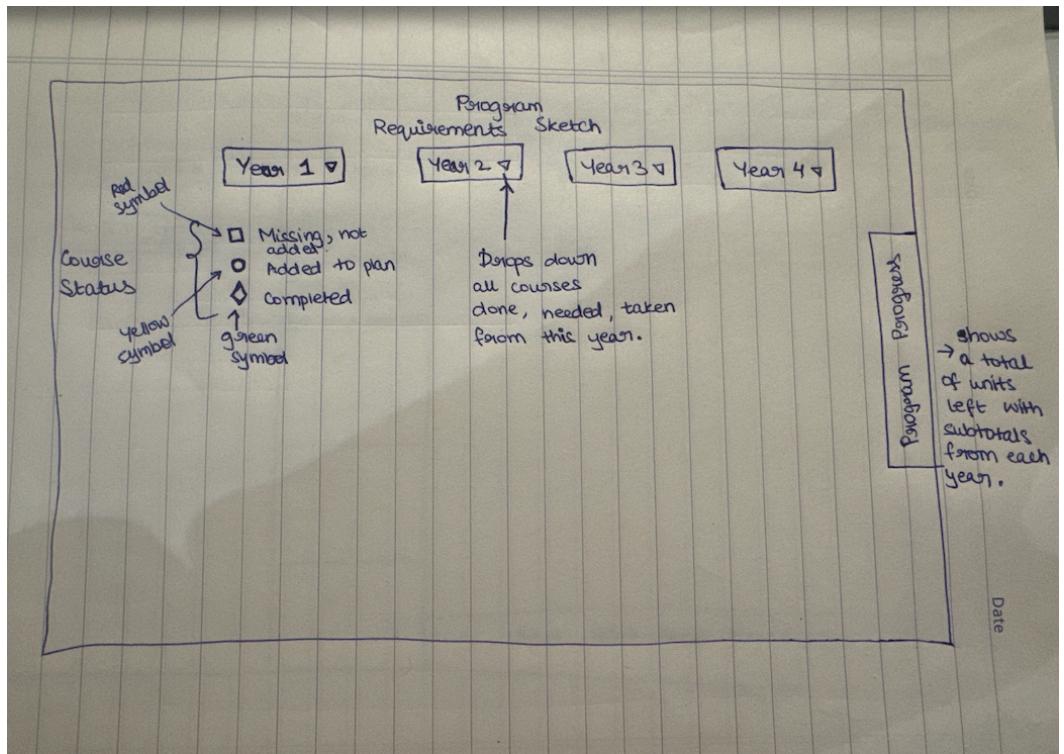
COURSE CODE - Course Name	<input type="button" value="ADD"/> You meet the prereqs
Fall/Winter	
Days - Times	

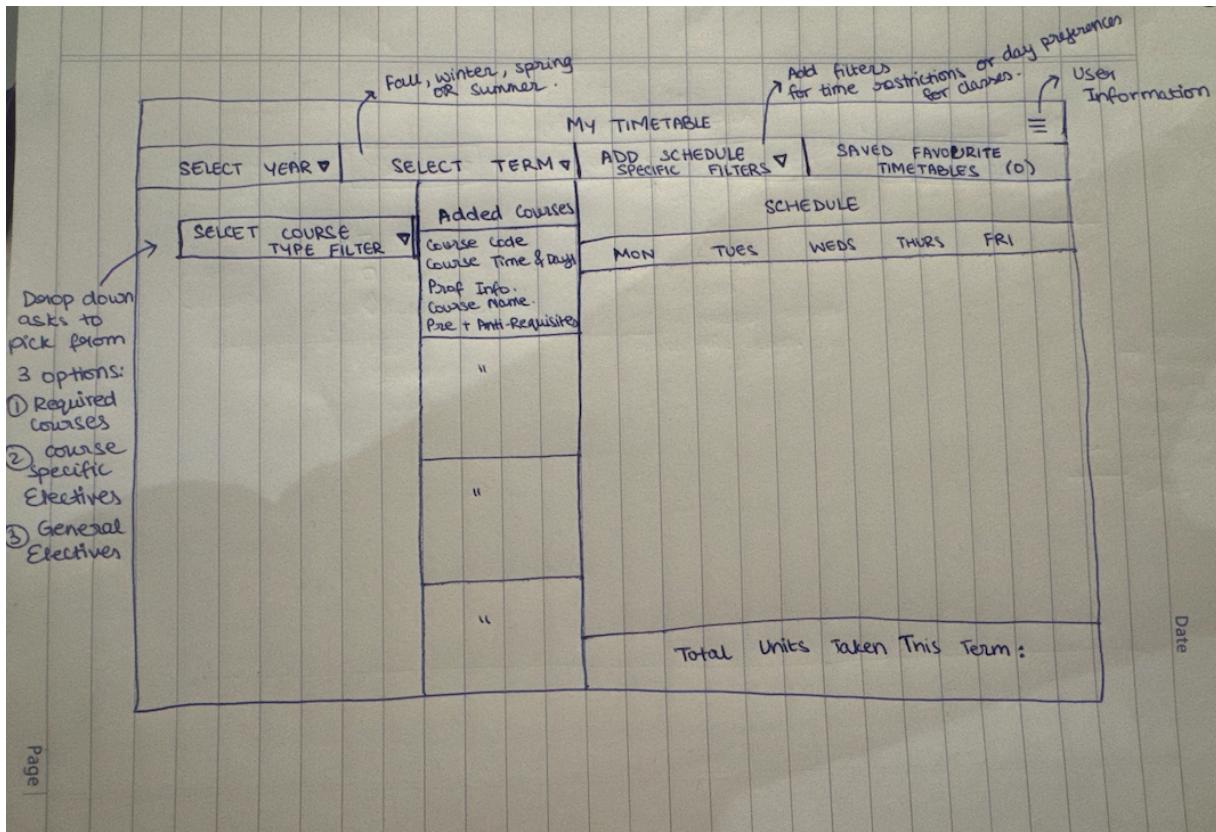
COURSE CODE - Course Name	<input type="button" value="ADD"/> You are missing prereq/You have antireq
Fall/Winter	
Days - Times	FULL

Notify me when
seats become available









Raw Notes From Informal User Testing:

Feedback from a fourth year university of toronto comp sci student:

suggestions

- I feel like the shortlist can take up the empty space on the enrollment screen. you could have the shortlist as wide as the search results.
- it should display what the times are, when you lock in what lecture or tutorial option
- the double arrow button should have a back button like view next/view previous

confusion

- its unclear how you add courses to a specific year in your planner
- its unclear that the add button changes to adding to your plan instead of shortlist
- maybe actually going to a new page would be better for the planner, so the user doesn't think you're adding courses to the shortlist

Feedback from a fourth year mcmaster university actuary student:

- ability to enable and disable courses when building your schedule
- on enrollment page under "requires" show all requirements
- it might be useful to view requirements while searching for courses
- consider what happens after pressing enroll button
- academic requirements not needed on calendar screen

Feedback from fourth year McMaster Biochemistry co-op student:

- Is the “ALL” all courses offered at Mac? The courses I have favoured plus courses I need to take? Is it courses in my planned scheduled?
- Some schools show how many seats are left when enrolling in a course ex “seats remaining: 10/100”
 - If possible maybe also have it listed “10 seats reserved for biochemistry students, 10 seats reserved for chemistry students, Reserved seats will become available to all students on August 1st at 12:00 am”
- wants to see concurrent certificate progress under requirements in academic planner
 - Have separate section for my requirements for degree -> then this has everything currently listed on the prototype
 - Another section could then be concurrent certification requirements
 - Maybe a section for if people are on track for completing a concurrent certificate but do not know this is a thing there could be a pop up saying “you have completed 50% of course requirements for this certificate *button for learn more*”

Feedback from first year McMaster Life Sciences student:

- Suggest to see how many different course schedule shuffles are available
- Suggested moving back and forth between course schedule shuffles
- Wanted the ability to filter by “most days off” “morning classes” etc, typically found on the top right corner when viewing the visual timetable
- Was unsure if the percentages included planned and enrolled courses or just completed courses