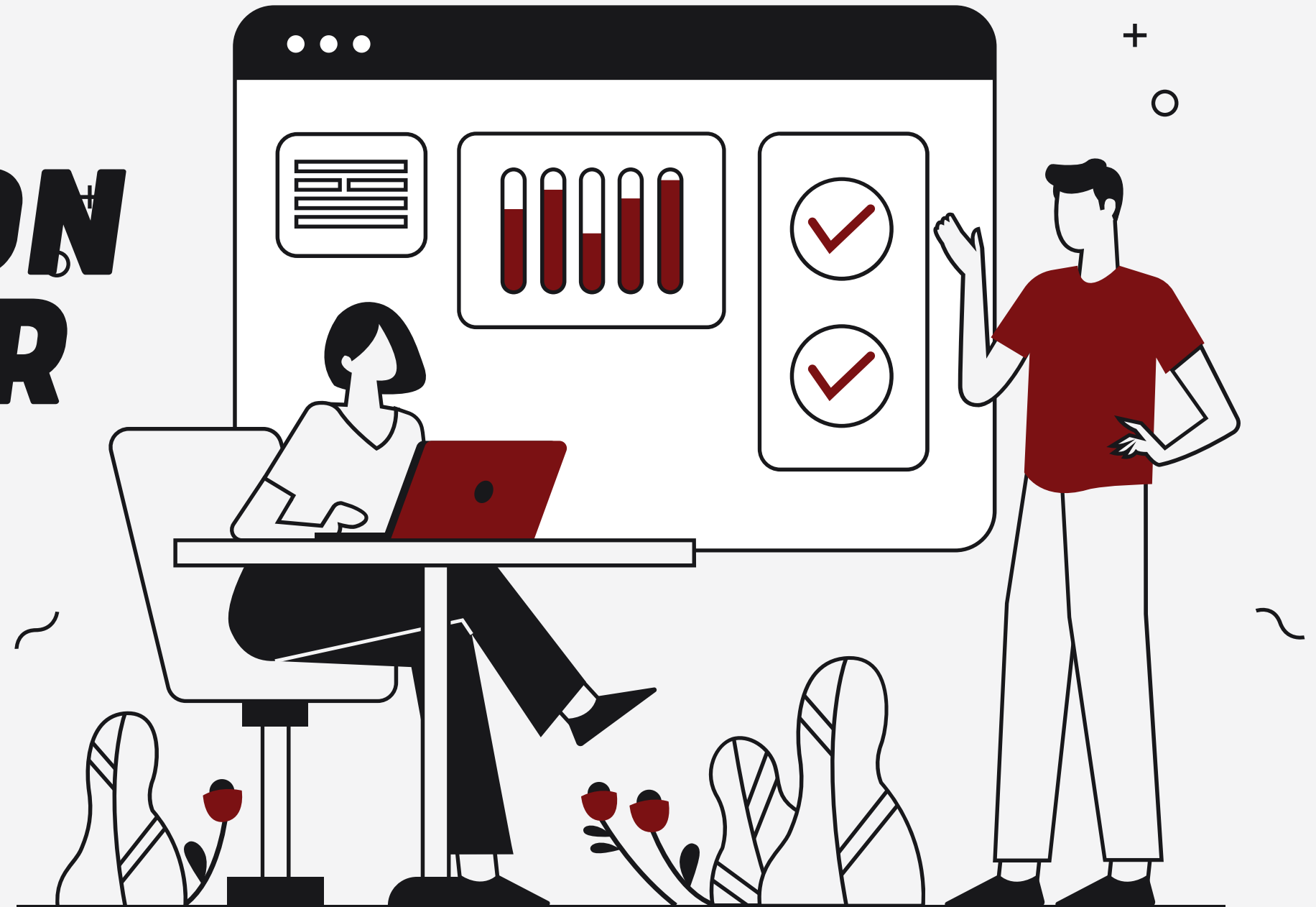




# A SPECIALIZED WEB APPLICATION DEGREE PLANNER FOR UPLB STUDENTS

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## ***BACKGROUND***

Degree programs are made up of ordered sets of courses. The way the courses are ordered and structured is called a curriculum.

In UPLB, each degree program has one or more curricula. These curricula are used as guides for students to graduate on time.

However, various factors can affect a student's ability to follow a curriculum.



# ***DEGREE PLANNERS***

Degree planners are tools that are used to plan a degree program.

Common features:

- layout or list courses in the order that a student is going to take it
- editing of the order of courses
- visualize relationships between the courses
- recommend courses for students to take based on other variables



## ***Universal degree planners***

Degree planners that can be used for any degree program at any institution.



## ***Specialized degree planners***

Degree planners specifically made for a specific institution.

# PROBLEMS



"My Planner" integrates with the course catalog but lacks features like validation of degree plan or personalized recommendations



The interface could be improved through the application of visualization techniques

## My Planner

Add courses to Planner using

Browse Course Catalog

Plan by My Requirements

Delete all courses in Planner

Delete All

### ▼ Unassigned Courses

Select	Course	Description	Units	Typically Offered	Delete
<input type="checkbox"/>	STAT 162	Experimental Designs	3.00	First & Second Semesters	

Move selected courses to Term



Move

### ▼ Semester 1 2018-2019

Select	Course	Description	Units	Typically Offered	Delete
<input type="checkbox"/>	CMSC 12	Foundations of CMSC	3.00	Semester	
<input type="checkbox"/>	CMSC 56	DiscreteMathStruct in CompSci I	3.00	First & Second Semesters	
<input type="checkbox"/>	ETHICS 1	Ethics and Moral Reasoning	3.00	First & Second Semesters	
<input type="checkbox"/>	MATH 27	Analytic GeometryCalculus II	3.00	Semester	
<input type="checkbox"/>	STS 1	Science, Technology,& Society	3.00	Semester	

Move selected courses to Term



Move

### ▼ Semester 2 2018-2019

Select	Course	Description	Prereq	Units	Typically Offered	Delete
<input type="checkbox"/>	CMSC 21	Fundamentals of Programming	yes	3.00	First & Second Semesters	
<input type="checkbox"/>	CMSC 57	DiscreteMathStruct in CompScII	yes	3.00	Second Semester & Mid-Year	
<input type="checkbox"/>	HK 11	Injury Management		2.00	First & Second Semesters	
<input type="checkbox"/>	KAS 1	Kasaysayan ng Pilipinas		3.00	Semester	
<input type="checkbox"/>	MATH 28	Analytic GeometryCalculus III		0.00		
<input type="checkbox"/>	PI 10	The Life & Works of Jose Rizal		3.00	Semester	

Move selected courses to Term



Move

# ***OBJECTIVES***



Develop a web application for planning, tracking, and visualizing the coursework of UPLB students.



Give users the ability to generate forms/documents that use information from the planner.



Implement features that help student in making sure that their plans are valid and feasible by university standards.



Evaluate the user experience by conducting a usability assessment of the web application

# ***SIGNIFICANCE***



Addresses the gap in specialized degree planners for UPLB students. The application can help the students better plan and track their progress in the university.



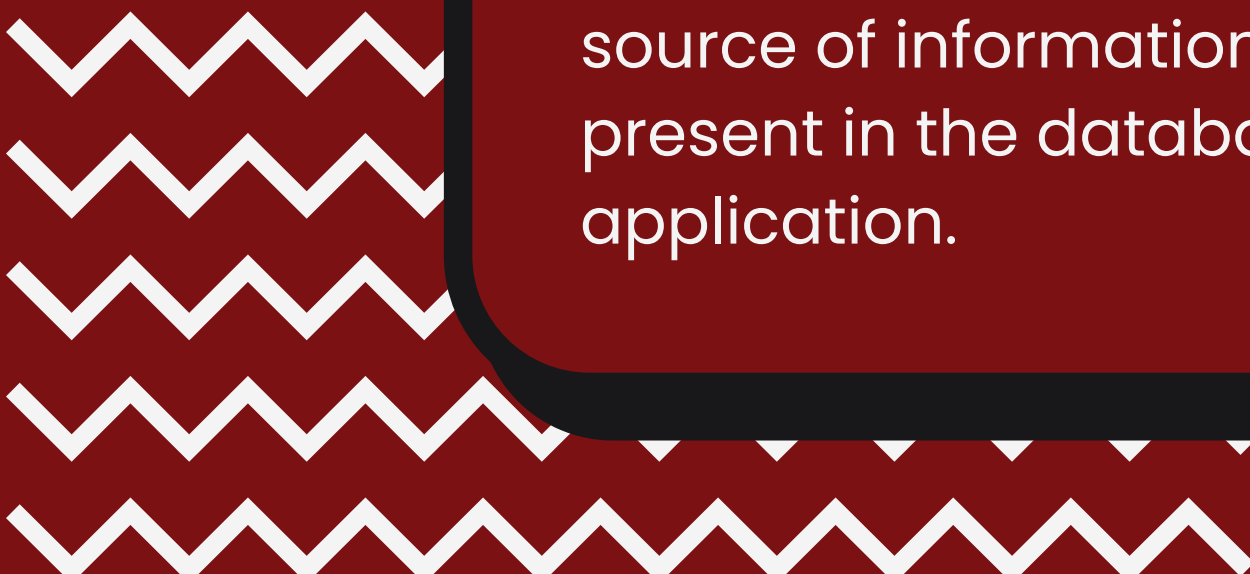
Strengthens academic advising in the university by providing a platform to supplement interactions between advisees and advisers .



Contributes to the academic community's understanding of the design, implementation, and evaluation of degree planners and curriculum visualization tools

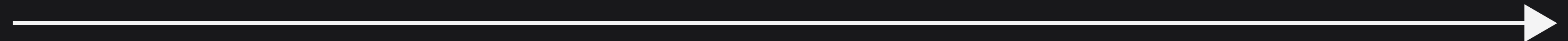
# ***SCOPE AND LIMITATIONS***

The evaluation of the application will only assess it's usability. The effects of the planner on other metrics like grades and graduation rates will need a more comprehensive research.



The application relies on UPLB's database as the source of information, errors and inconsistencies present in the database will be inherited by the application.

# ***METHODS AND MATERIALS***







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# ***DEVELOPMENT TOOLS***

- Written in ***TypeScript***, a programming language that adds typings to JavaScript
- Built using ***Next.js***, a web development framework that offers an optimized approach in creating applications using React
- The main layout was built using ***react-grid-layout***, a layout system that provides an interactive grid interface



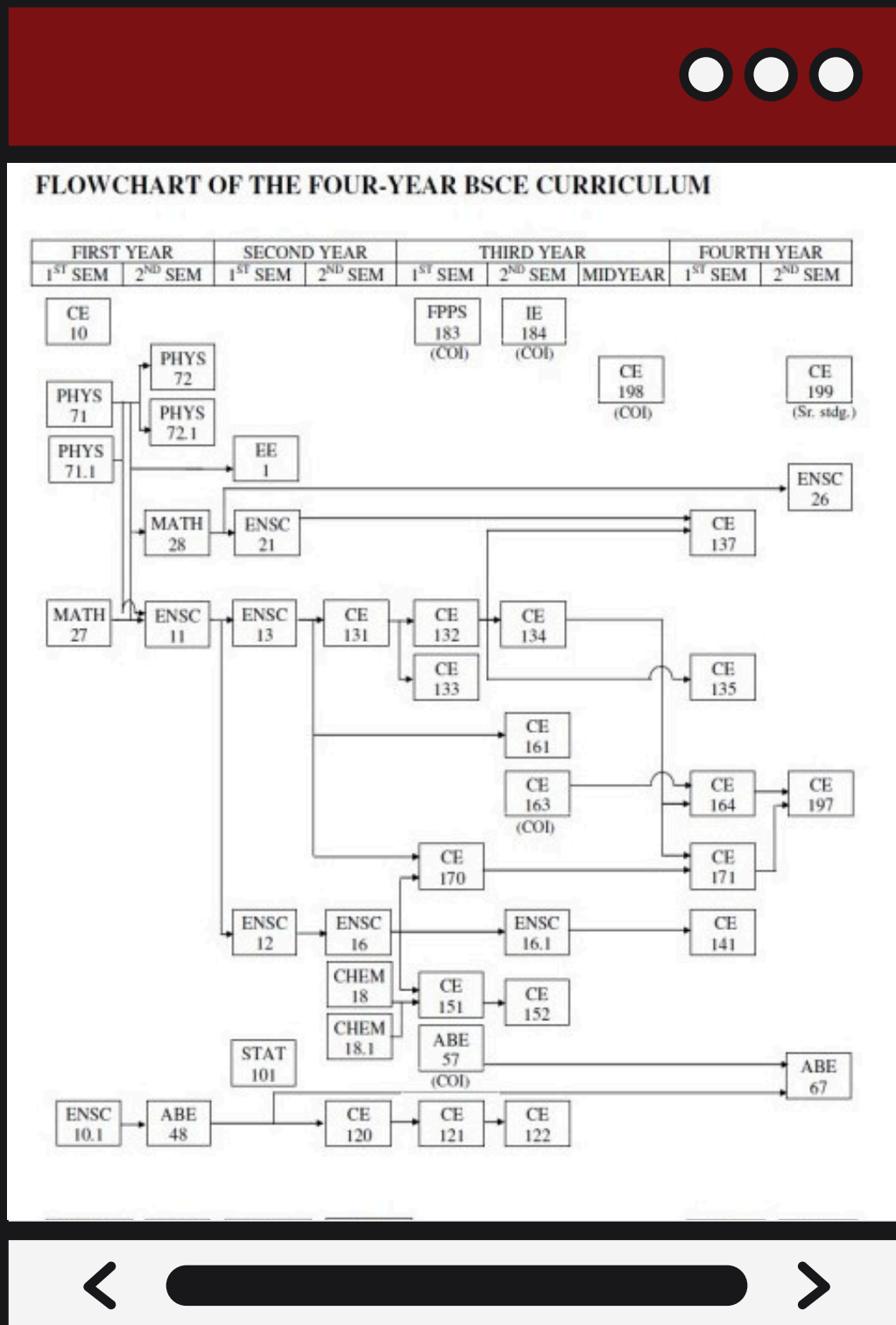
# DATA SCRAPING AND PROCESSING

The course and curriculum data is scraped from UPLB Academic Management Information System (AMIS).

The raw data then underwent a cleaning process to remove unnecessary attributes. Afterwards, the data was formatted to make it easier to import the data into the application

```
{
  "course_id": 550,
  "sais_course_id": 11736,
  "title": "Data Structures",
  "type": "NA",
  "description": "Abstract data types and implementation",
  "course_code": "CMSC 123",
  "sem_offered": "2s,M",
  "career": "UGRD",
  "units": "3",
  "is_repeatable": false,
  "is_active": true,
  "campus": "LB",
  "equivalent": 0,
  "is_multiple_enrollment": false,
  "subject": "CMSC",
  "course_number": "123",
  "contact_hours": "5 hrs (2 class, 3 lab)",
  "grading": "GRD",
  "tm_id": 0,
  "acad_org": "LBICS",
  "acad_group": "CAS",
  "created_at": null,
  "updated_at": null,
  "status": null,
  "is_academic": true,
  "teaching_model": null,
  "requisites": [
    {
      "req_id": 595,
      "course_id": 550,
      "req_courses": "(CMSC 57 and CMSC 21)",
      "req_type": "PRE",
      "description": null,
      "count": 0,
      "is_active": true,
      "created_at": null,
      "updated_at": null,
      "course_id_req": "548,544"
    }
  ]
},
```

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{
  "id": 550,
  "title": "Data Structures",
  "description": "Abstract data types and implementation",
  "code": "CMSC 123",
  "is_repeatable": false,
  "units": 3,
  "sem_offered": [1, 2],
  "requisites": [
    {
      "req_id": 595,
      "courses": ["CMSC 57", "CMSC 21"],
      "course_ids": [548, 544],
      "type": "PRE"
    }
  ]
},
```



# INTERFACE

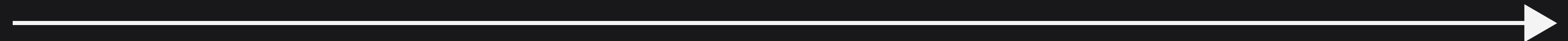


A grid-based layout where columns are semesters and each item in a column is a course.



Prerequisite relationships are denoted by arrows pointing from one course to another.

# ***DEMONSTRATION***





# ***USER EVALUATION***


The respondents are UPLB students since they are the intended users of the web application. Respondents were selected using convenience sampling. The respondents were tasked to create a degree plan that reflects their current academic standing. Additionally, they were tasked to generate a GE Plan of Study form using the application

They were then asked to answer a survey to evaluate the usability of the application. The survey employed the System Usability Scale (SUS). The respondents were also asked for a general comment about the application.



# RESULTS

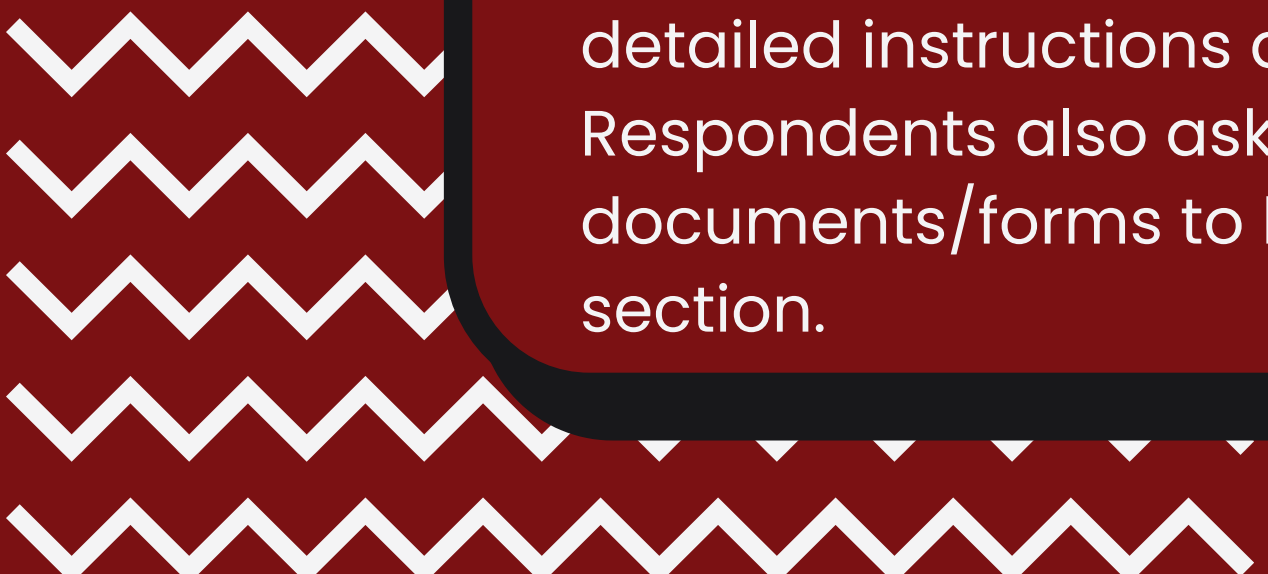
The evaluation involved 10 UPLB students from various degree programs. The average score was 84.75. This indicates that the application has above average usability.



Users noted the general usefulness of the application, with many stating that they plan on using it for the remainder of their time in the university.

# RESULTS

The respondents also appreciated the ability to customize a curriculum using the drag and drop functionality.

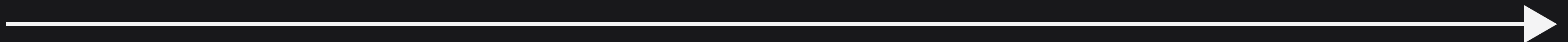


Areas for improvement include the need for more detailed instructions and a mobile-friendly interface. Respondents also asked for specific documents/forms to be added in the Download section.

# ***CONCLUSION***

A specialized degree planner was developed to address gaps in existing tools to help students plan their degree.

The degree planner features curriculum visualization, prerequisite checking, unit requirement verification, and document generation.





# ***CONCLUSION***

User evaluation was positive with an SUS score of 84.75. Additional comments from respondents were also positive.

Further improvements on the web application can be made by adding detailed instructions and adding more documents for downloading.



# ***CONCLUSION***

Additional research could also explore the effect of the degree planner on student success metrics, such as grades and on-time graduation rates. The study could collaborate with other UP campuses and universities to investigate the possibility of adapting the application for use in their schools.

