



## **Web-Based Student Course Prediction System of DOrSU**

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## Abstract

**DOREEN GELINE M. DIAMPON, HOSNA B. GODOY and RYAN S. SIABOC.**  
**“WEB-BASED STUDENT COURSE PREDICTION SYSTEM OF DORSU.”** (BSIT Capstone Project). Davao Oriental State University, July 2023.

Adviser: **Mr. Wilkin F. Simo**

The Web-based Student Course Prediction System of DOrSU is a capstone project that aims to assist incoming first-year students make informed course selection decisions. The majority of entering college students are unsure of what courses they want to take, which makes it challenging to choose the ones that are best for them. Our project uses predictive model and machine learning algorithms to offer students individualized course prediction based on their socio-demographic data (age, gender, and marital status), and high school grades (math, science, and english) in order to address this difficulty. The system also provides test questionnaire with factors, including decision-making and interest, peer influence, consideration about the institution, and future job opportunities, to generate accurate and timely course prediction. By using the web-based approach, students may choose their courses with greater knowledge, which improves academic success and cuts down on time wasted on scheduling conflicts. Overall, the Web-based Student Course Prediction System of DOrSU will assist incoming first-year student who are undecided in selecting a course that matches them, fostering student success and improving the overall effectiveness of academic operations at the university.

**Keywords:** Web-based, course prediction, predictive model, machine learning algorithms, socio-demographic data, high school grades, factors

# **CHAPTER I**

## **INTRODUCTION**

### **1.1 Rationale**

Various strategies for forecasting specific college courses were studied based on a limited number of observations. The refined within-group parameter estimates can be obtained with the help of these methods by utilizing collateral information across possibly varied courses.

With the advent of electronic learning and the diversity of learners, using learning management systems, educational data mining, prediction models, performance prediction, attribute selection, course content recommendation, and index of learning styles in higher education, it is necessary to study an application that can provide a more individualized approach to the teaching and learning process. (Digna Evale, 2017).

Although there are models that can predict a student's success in college, little is known about how to improve students' semester-to-semester course decisions through interventions (Journal of Educational Data Mining, 2016). The course prediction system in web-based aims to forecast the optimal course combination based on the student's preferences. In this light, the researchers dare to achieve this Web-based student course prediction system of DOrSU to help the incoming first-year students of Davao Oriental State University choose a course by using data collection to anticipate their future courses.

## **1.2 Purpose and Project Description**

This study intends to create a web-based system to predict the students' future courses through data gathering and help them decide what course they should choose.

## **1.3 Objectives of the Study**

This study aims to develop a web-based system for the course prediction of the incoming first-year students of Davao Oriental State University. These objectives will help the incoming undecided first-year students choose a course that suits them. The researchers will use random questions for them to answer. That will give the possible output and help the incoming first-year students to decide and choose the course that's suitable for them. That's what the study researchers would do.

The main goals are the following:

- Create a predictive model to determine student academic performance using machine learning algorithms.
- To develop a user-friendly web-based system that provides test questionnaires for the student to answer and displays the recommended course of the student based on the following data:
  - High School Grades (English, Mathematics, Science)
  - Socio-demographic Data
  - Standardize Questionnaire on influencing student Courses in College
- Store all the data in the database gathered from the students that will take the test.
- Provide recommendations based on the given result coming from the Questionnaire.

## **1.4 Significance of the Study**

This study is envisioned to exhibit its significance well by providing inclusive information on the aforementioned objectives. To help and guide the incoming undecided first-year students of Davao Oriental State University (DOrSU) to choose their course.

The following are the beneficiaries:

- DOrSU Incoming Freshmen – Instead of choosing the course that they didn't like, with the help of this system, they can decide what to choose.
- Future Researcher – This study could help future researchers by serving as a foundation and basis, and this will be beneficial and a great help. Its content may serve as a guide to future researchers.

## **1.5 Scope and limitations**

In addition, this study is bound to satisfy the aforementioned, defining the scope of this research. Furthermore, this study focuses only on predicting the future course of the undecided incoming first-year students of Davao Oriental State University.

### **1.5.1 Scope**

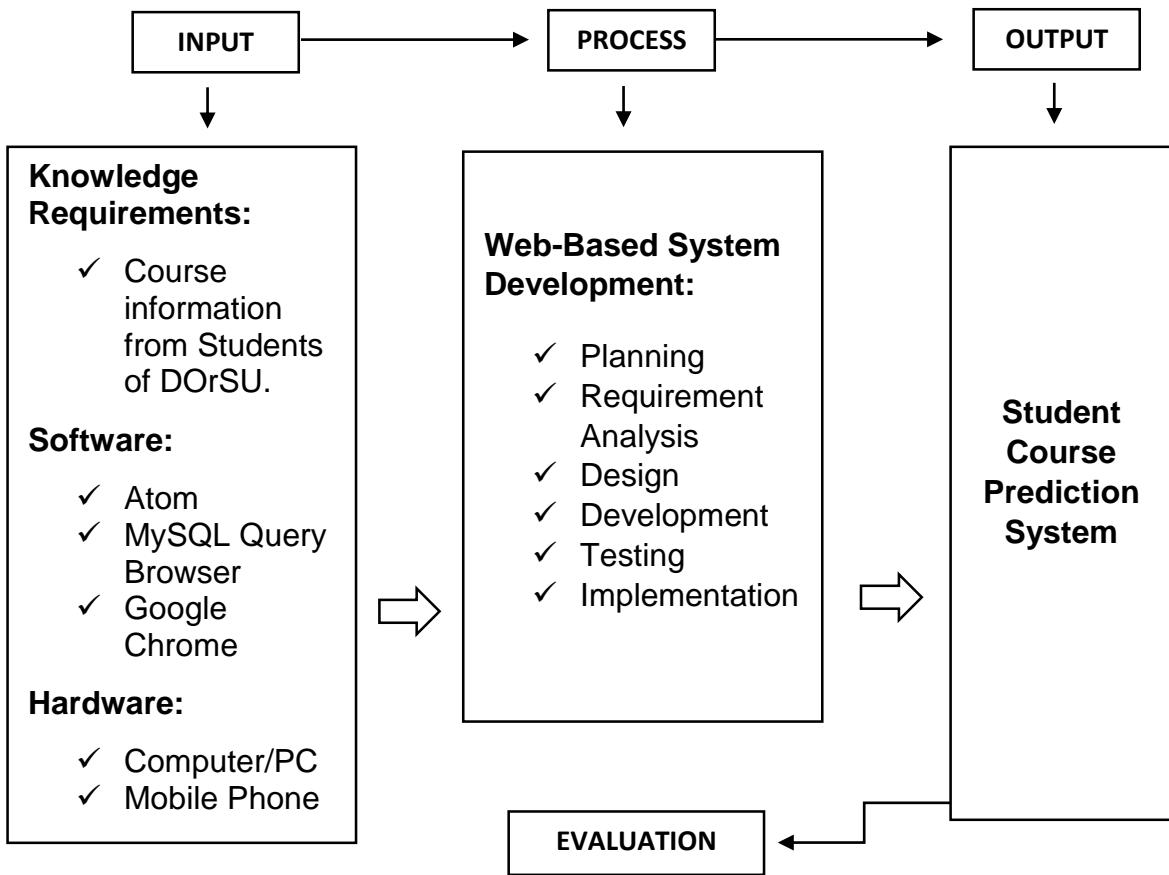
The data gathered from the respondents are only from the students of Davao Oriental State University (DOrSU) under the Faculty of Computing, Data Sciences, Engineering, and Technology. The main target who will use the system is the incoming first-year students of Davao Oriental State University (DOrSU).

### **1.5.2 Limitation**

The data respondents that the researchers will gather are only from 3rd year and 4th-year students of Davao Oriental State University (DOrSU). The

system will only show the courses available at Davao Oriental State University (DOrSU) under the Faculty of Computing, Data Sciences, Engineering, and Technology.

### 1.6 Conceptual Framework



**Figure 1.6 Conceptual Framework**

The diagram in Figure 1.6 shows the Input-Process-Output (IPO) flow of the "Web-Based Student Course Prediction System of DOrSU," which contains the concepts of the development of the system. To develop the system, the researchers should meet all of the requirements stated in the input. During the process, the researchers will use HTML

(HyperText Markup Language) and CSS (Cascading Style Sheets) for web designing by following the mockup design and layout and the open-source scripting language called PHP for web development. Once the system is developed and undergoes the testing phase, it needs to be performed by the users (students), who will use their feedback to improve the system.

### **1.7 Definition of terms**

**Web-Based** – A program accessed via a web browser and the internet. A web-based application is any software that can be accessed through a network connection using HTTP instead of being stored on a device.

**Database** – A database is a collection of structured information or data often saved electronically on a computer system. Typically, a database is managed via a database management system.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

#### **2.1 Technical Background**

To develop the system, the researchers will use the necessary technological tools; below are the tools that the researchers will use.

##### **2.1.1 Atom**

Atom is a desktop program developed using web technologies such as HTML, CSS, JavaScript, and NodeJS. Atom is compatible with major operating systems, including Windows, Linux, and MacOS. Atom is also a modern and highly configurable text editor. Atom can be modified and expanded by web developers to meet their requirements utilizing a variety of in-built and third-party packages. In addition, they can use Atom's functionality to keep web application source code structured and readable (Mindfire Solutions, 2017).

##### **2.1.2 MySQL**

MySQL is an open-source technology for managing relational databases. Like other relational databases, MySQL stores data in tables consisting of rows and columns. Using Structured Query Language, also known as SQL, users can define, manipulate, control, and query data. MySQL's name is derived from "My," the daughter's name of MySQL developer Michael Widenius, and "SQL" (Mark Drake, 2020).

##### **2.1.3 Chrome**

Google Chrome or Chromium is based on open-source code, although Chrome is not open-source. The first beta version of Chrome for personal computers (PCs) running various versions of Microsoft Corporation's Windows

operating system was published on September 2, 2008. (Operating system). (William Hosch, 2020).

## **2.2 Related Literature**

### **2.2.1 Prediction System for Students' Academic Performance**

Academic achievement is an integral component of schooling. Students with poor academic performance will encounter various problems, including graduation delays and possibly dropping out. Therefore, educational institutions should closely monitor their student's academic performance and provide quick support to pupils with poor academic performance. Predicting the academic success of kids is one approach to achieving this goal. This strategy will assist educational institutions in identifying and assisting underachieving pupils at an early stage (DabiahAlboaneen et al., 2021).

Using Machine Learning (ML) methods, Educational Data Mining (EDM) is used to uncover and extract patterns of interest from educational institution datasets. There is a wealth of student-related academic material available. Therefore, it is advantageous to use data mining to identify factors that influence the academic performance of pupils. Through academic and demographic factors, this article develops a web-based method for forecasting academic success and identifying students in danger of failing.

### **2.2.2 Students` Performance Prediction System using Multi Agent Data Mining Technique**

Identifying low-performing pupils at the outset of the learning process is facilitated by high performance prediction accuracy. This objective is achieved using data mining. Data mining techniques are utilized to identify data models or

patterns, which is quite useful for decision-making. Boosting is the most widely used strategy for generating ensembles of classifiers in order to increase classification accuracy. AdaBoost is the next iteration of the algorithm for boosting. It is only relevant to binary classification and not multiclass classification directly. SAMME boosting expands AdaBoost to a multiclass classification without reducing it to a set of sub-binary classifications (Abdullah AL-Malaise et al., 2014).

Using data mining techniques in education is attracting a growing body of research. This burgeoning discipline is known as Educational Data Mining. It may be applied to data pertaining to the field of education. Predicting students' academic achievement is one of the educational difficulties tackled by data mining. Identifying students with poor academic achievement is enhanced by the ability to predict their performance. Retention of students is a measure of a university's academic success and enrolment management. In educational settings, it is crucial to be able to forecast a student's performance. Variables such as social, personal, psychological, and environmental variables influence the academic achievement of students. Data Mining is a highly promising method for accomplishing this purpose. Data mining techniques are used to uncover hidden patterns and relationships in data, which is extremely useful for making decisions.

### **2.2.3 Course Recommender System**

Attempts to anticipate the optimal combination of courses chosen by students. In this research, we demonstrate how the combination of the clustering algorithm - Simple K-means Algorithm - and the association rule algorithm - Apriori Association Rule - is advantageous for the Course Recommender system. If we only utilize the Apriori association rule algorithm, we must pre-process the Moodle

database data. However, if we apply this clustering and association rule combination, there is no need to pre-process the data. Therefore, we present this innovative strategy as well as the outcome (Sunita Milind Dol Aher, 2012).

In the age of information and communication technology, technology is utilized across all fields. Education is a fundamental component of our society, consisting of the processes of teaching, learning, and evaluation. Information and communication technologies are utilized for e-learning, measuring student learning, course design, and evaluating student performance, among other purposes. Utilizing machine learning techniques, the academic performance of students has been evaluated, and valuable conclusions have been drawn (Pamela Chaudhury, 2016).

## **2.3 Related System**

### **2.3.1 Prediction of Student Course Selection in Online Higher Education**

#### **Institutes using Neural Network**

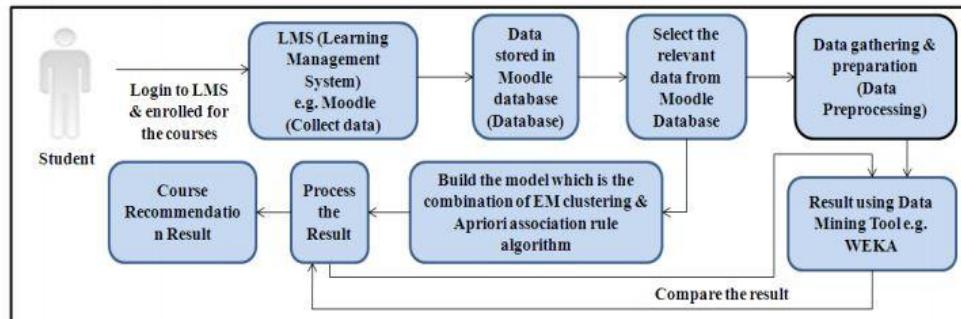
Students must select classes that interest them for the upcoming semester. Some colleges may not provide all of a student's desired courses due to constraints such as insufficient resources and the costs associated with operating several courses. Prior to each semester, universities must be aware of each student's course preferences for optimal course scheduling. In the context of e-learning, the challenges related to course selection are investigated. This study is concerned with identifying the potential factors that influence student satisfaction with the online courses they select, modeling student course selection behavior and fitting a function to the training data using a neural network approach, and

applying the obtained function to predict the final number of registrations in each course after the drop-and-add period. (Ahmad Kardanaet al., (2013)

The elements influencing student satisfaction with the available e-courses were presented.

- The student course selection behaviour was represented using a neural network.
- The model was utilized to predict the number of final registrants for each e-course.
- The outcomes demonstrated that the model outperforms three regression and two conventional techniques.
- Several expansion and personalization suggestions for the system were offered.

### **2.3.2 Prediction of Course Selection by Student using Combination of Data Mining Algorithms in E-Learning**



**Figure 2.3 Prediction of Course Selection by Student using Combination of Data Mining Algorithms in E-Learning**

When it comes to e-learning, a course recommendation system is a piece of software that helps students find the most beneficial combination of classes based on their individual interests. If a student is interested in learning about the

data structure, then it follows that the student is likewise interested in learning about the C programming language.

After gathering data from the Moodle database, we clustered it using a clustering technique, such as the EM algorithm, in the combined approach of clustering and association rule algorithm. After data clustering, the Apriori Association Rule method is used to determine the optimal combination of courses. We must pre-process the Moodle database data to get the result using only the Apriori association rule method; however, if we combine the clustering and association rule algorithms, there is no need to pre-process the Moodle database data. (Sunita Milind Dol Aher, 2012).

### **2.3.3 Learning Management System with Prediction Model and Course-Content Recommendation Module**

With the rise of online learning and the variety of students, it's important to find a way to make teaching and learning more personal. This can be done by using learning management systems, educational data mining, prediction models, performance prediction, attribute selection, course content recommendations, and an index of learning styles in higher education. Since using Recommender Systems (RS) in education is still a new area to study, the goal of this study is to combine a learning management system (LMS) and RS to create a web-based learning environment for a JAVA SE Programming course. The final product will give each learner personalized suggestions for specific topics and learning activities that are a good fit for them based on their personal profile, learning style, prior knowledge, and level of expertise. (Digna Evale, 2017).

## 2.4 Synthesis

The systems above show that there is a related system that was already developed and available. To address the issue, the researchers will develop their own system and models that help the incoming freshmen to choose the course that suits them.

Most of the features of the web-based application were based on the related system. Meanwhile, the idea synthesized from the related literature became the basis for the creation of the model, which in turn led to the development of the application, "Web-based Course Prediction System of DOrSU", a web-based application intended to help incoming freshmen of DOrSU to choose the course that suits to them.

## CHAPTER III

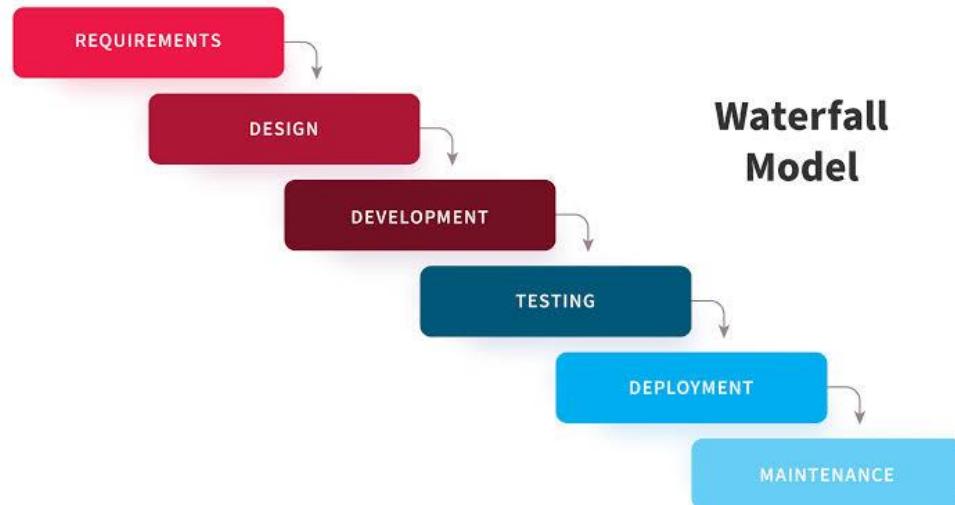
## METHODOLOGY

### 3.1 Software Methodology

Software Methodology will serve as the systematic procedure that will involve during the development of this project. It will be considered as a guide for the researchers as they will follow the step-by-step process of software development.

#### 3.1.1 Software Development Life Cycle

The researchers used Software Development Life Cycle (SDLC) as a detailed methodology to generate a well-defined procedure. The water model, as shown in Figure 3.1, is the chosen methodology for this project. The phases of this model contain requirements gathering, design, development, testing, deployment, and maintenance.



*Figure 3.1 Waterfall Methodology*

The Waterfall Model is a sequential model that divides software development into pre-defined phases. Each phase must be completed before the next phase can begin, with no overlap between the phases. During the SDLC phase, each phase is designed to carry out a specific activity. The Waterfall Methodology can be implemented when the requirement is clear (Matthew Martin, 2022).

The first phase of the waterfall methodology begins with the requirement gathering, which means the researchers need to gather and complete the listed necessary requirements in order to develop this whole project. It is important that the necessary requirements must be documented and analyzed to achieve the desired outcome of the system.

The next phase is called system design, which means the researchers need to decide on how to build the proposed system as well as how's it going to work. This is the phase where the researchers are needed to create the mock-up design and the user interface (UI) design.

System development is the third phase, where researchers will be turning the physical design into a functioning product. This phase is where the system starts to get built by creating codes and the database, using the scripting language that the researchers have preferred.

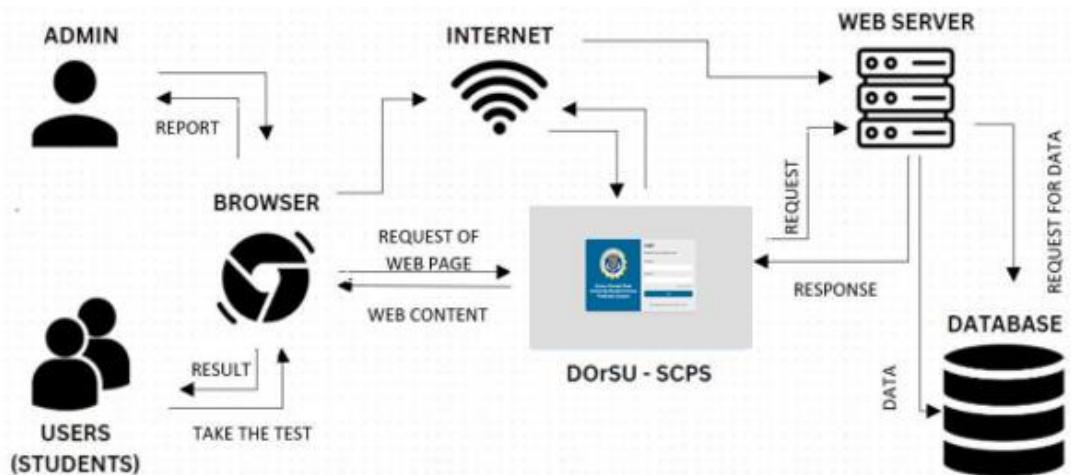
The fourth phase is called the testing phase. This is where the researchers will start testing the developed system to ensure and determine that it is completely functional and will fix any existing bugs.

After successfully testing the developed system, the fifth phase, the deployment phase, will occur. The researchers will release the developed system to the users in order to test its performance.

The final phase, the maintenance phase, will only take place based on the users' feedback. If necessary, the researchers will need to update the system and fix any bugs and errors.

The final phase called maintenance phase will only take place base on the feedback of the users. If necessary, the researchers will need to update the system as well as to fix any bugs and errors.

### 3.2 System Architecture



**Figure 3.2 Student Course Prediction System Architecture**

Illustrated in Figure 3.2 is the system architecture of the Student Course Prediction System of DOrSU. Users who interact with the system fall into one of two categories. The first one is the system admin. This category of user controls the system's user's data. Additionally, this user has access to reports, records, and the list of students. The system displays all the questions; if they are answered and submitted, they will be saved on the web server. The second type of user is the incoming student of DOrSU; this user can take

the test if he/she creates an account and logs in to the system. The system was designed to save the output on the server, which could then be accessed and viewed by the user upon request.

### **3.2.1 Requirements Specification**

The researchers developed a system that intends to help incoming first-year students choose the course that suits them based on the test result from the system. In order to register in the system, the user needs to enter their Learner's Registration Number (LRN), and if it matches the database that the researchers have made, the user will be registered successfully. Using the student's LRN will identify that the user is an incoming student of Davao Oriental State University. The system will show the course result for the registered user by answering the provided Questionnaire and by entering their high school grades (math, science, and english) as well as their socio-demographic data (age, gender, and marital status). Aside from providing course results, the researchers also provide recommendations based on the results of every factor from the Questionnaire. With the help of an internet connection, students can use the web-based system and take the test in order to predict their course.

### **3.2.2 Product Perspective**

The researchers developed a system that intends to help the incoming freshmen to choose the course that suits them based on the result of the test from the system. The system can be opened on an Android phone, and the user can take the test anywhere, requiring a stable internet connection. Furthermore, the info of every user is secured and hidden from other users to ensure the privacy of every individual user.

### **3.2.2.1 Product Features**

With the help of the proponent-made dataset, the system can accurately predict the student's course based on their answers, high school grades, and socio-demographic data. The system allows the incoming first-year students of DOrSU to take the test and shows the result with its recommendation.

### **3.2.2.2 User Classes and Characteristics**

The system accommodates two types of users:

- Admin Personnel who is responsible for administering and managing the test questionnaire and students' results, and
- All the incoming freshmen of DOrSU that takes the test will be given a best choice of course with its recommendation.

### **3.2.2.3 Operating Environment**

The researchers used a variety of software components in the development while ensuring that they met the hardware requirements when developing the system.

#### **3.2.2.3.1 Software Components**

In developing the system, the proponents used a different kind of software application based on the requirements. The proponents used Atom for frontend development, utilizing fundamental web development technologies such as HTML and CSS. JavaScript was also used for the website's functions and animation, PHP for backend development, a server-side scripting

language that prioritizes system functionality, and phpMyAdmin for the system's database.

#### **3.2.2.3.2 Hardware Components**

In the system development, the hardware specifications that the researchers ensured were met: the computer has at least 4GB of RAM with a quad-core processor and enough storage of hard drive to install and run the system and application needed for the system development.

#### **3.2.2.4 Design and Implementation Constraints**

These are the limits that are taken into account during the system's development:

- All user information, including test results, is secured and must be saved in the database.
- PhpMyAdmin server was used as a system's database.
- To obtain access to the website, users must enter their correct login credentials.
- Users can use any device, such as a PC, laptop, or Android phone, with internet browsing skills and an internet connection to gain access.

#### **3.2.2.5 Other non-functional requirements**

The following are the various non-functional requirements that deal with topics such as safety, security, and software quality attributes.

### **3.2.2.5.1 Safety Requirements**

To ensure user safety, the system's developer ensured no dangerous or harmful information; this includes elements such as click bait and links containing malicious software such as malware, viruses, and adware.

### **3.2.2.5.2 Security Requirements**

Security measures are built into the system to protect against unintentional harm, and the system and its data are safeguarded against unauthorized access. In addition, the security measures employed in this system are mainly intended to fulfill the privacy requirements of its users.

### **3.2.2.5.3 Software Quality Attributes**

The student course prediction system of DOrSU has the following software quality attributes:

#### **3.2.2.5.3.1 Usability**

The system's user interface was developed with a focus on user-friendliness, allowing users to become accustomed to its operation in a brief period. Furthermore, the system guarantees accessibility for all users, regardless of their abilities.

#### **3.2.2.5.3.2 Reliability**

To avoid the incidence of errors and system crashes, the system underwent a series of quality testing and debugging.

#### **3.2.2.5.3.3 Portability**

The researchers ensured that the system can run on any platform, such as Windows and Android, which is compatible with any of these devices.

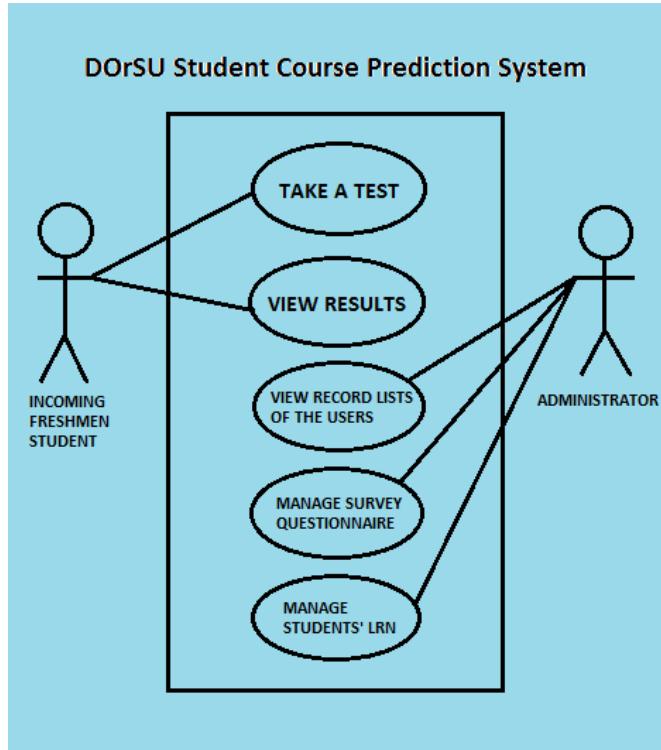
#### **3.2.2.5.3.4 Maintainability**

The researchers ensured that the system was easy to update in case it required to be modified or updated the system itself.

#### **3.2.2.5.3.5 Efficiency**

The researchers ensured that the necessary resources were accessible to make the system function in accordance with the concept.

### 3.3 Use Case Diagram



**Figure 3.3 Student Course Prediction System Use Case Diagram**

The proponents generated a use case diagram for the DOrSU Student Course Prediction System, as shown in Figure 3.3. This diagram summarizes the system's details and its users by illustrating the users' interactions with the system through use cases. The system has two types of users: DOrSU incoming first-year students and the Administrator. The incoming first-year students are able to answer the Questionnaire under the supervision of the Administrator and view the results. The Administrator is responsible for managing the survey questionnaire and students' LRN, as well as accessing the record lists of the respondents.

### 3.3.1 Use Case Description

In line with the use case diagram presented in the previous section, the developer provided a description for each use case through a table, as demonstrated below.

Table 3.1 "Take a Test" Use-case

<b>Use Case</b>	Take a Test
<b>Description</b>	Students can take the test administered by the administrator
<b>Actors</b>	Incoming freshmen students in DOrSU
<b>Pre-Condition</b>	Student is logged in the system
<b>Post-Condition</b>	Expected GPA shows up along with the assessment on the given questionnaire who took the test.
<b>Basic Flow</b>	<ol style="list-style-type: none"> <li>1. Student click the "Take a Test" button.</li> <li>2. System directs student to the Test Page.</li> <li>3. Student answer the test.</li> <li>4. Student click the "Submit" button.</li> <li>5. System reveals the results.</li> </ol>
<b>Alternative Flow</b>	<ol style="list-style-type: none"> <li>5.1 Some questions are left unanswered.</li> <li>5.1.1 System prompts user to respond to all unanswered questions.</li> <li>5.1.2 If student responds to all unanswered questions, go back to 5.</li> <li>5.1.3 Else terminate use case.</li> </ol>

The use case description for 'Take a Test' is presented in Table 3.1, which outlines the functionality involving a comprehensive, sequential interaction between the user and the system, including the outcomes of the user's actions.

Table 3.2 "View Results" Use-case

<b>Use Case</b>	View Results
<b>Description</b>	Students can view their previous and recent test results.
<b>Actors</b>	Incoming freshmen students in DOrSU
<b>Pre-condition</b>	Student is logged in the system
<b>Post-condition</b>	System directs student to the results page
<b>Basic Flow</b>	<ol style="list-style-type: none"> <li>1. Students enters Profile page &gt;History</li> </ol>

	2. System shows all previous and test results.
<b>Alternative Flow</b>	2.1 Student had not taken at least one test. 2.1.1 If student take the test, go back to 2. 2.1.2 Else terminate use case

The use case description for 'View Results' is presented in Table 3.2, which details the functionality that involves a comprehensive, sequential interaction between the user and the system, along with the outcomes resulting from the user's action.

Table 3.3 "View Record lists of the Users" Use-case

<b>Use Case</b>	View Record lists of the Users
<b>Description</b>	Admin can view the records of the users who took the test.
<b>Actors</b>	Administrator
<b>Pre-condition</b>	Administrator is logged in the system
<b>Post-condition</b>	System directs administrator to the record page.
<b>Basic Flow</b>	1. Administrator enters record page. 2. System shows all the responds from the users.
<b>Alternative Flow</b>	N/A

The use case description for 'View Record lists of the Users' has been provided in Table 3.3. This table provides an overview of the system's functionality, which encompasses a detailed, step-by-step interaction between the actor and the system, culminating in the outcomes resulting from the user's action.

Table 3.4 "Manage Survey Questionnaire" Use-case

<b>Use Case</b>	Manage Survey Questionnaire
<b>Description</b>	The administrator can edit the survey questionnaire.
<b>Actors</b>	Administrator
<b>Pre-condition</b>	Administrator is logged in the system
<b>Post-condition</b>	System prompts that the survey questionnaire is successfully edited.
<b>Basic Flow</b>	1. Admin clicks Questionnaire.

	<ol style="list-style-type: none"> <li>2. System shows all pending questionnaires.</li> <li>3. Administrator edits the questionnaire.</li> <li>4. System confirms that the transaction is successful.</li> </ol>
<b>Alternative Flow</b>	N/A

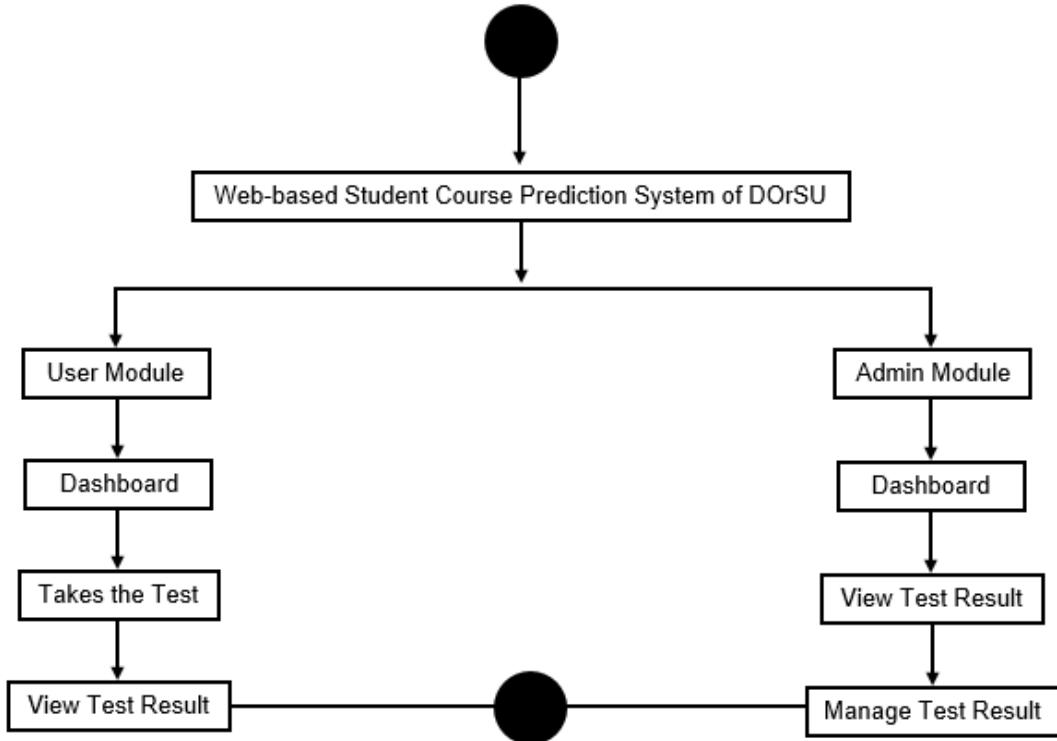
Table 3.4 provides the use case description for the 'Manage Survey Questionnaire.' This description outlines the system's functionality that involves a comprehensive, sequential interaction between the actor and the system, along with the outcomes resulting from the user's action.

Table 3.5 "Manage Students' LRN" Use-case

<b>Use Case</b>	Manage Students' LRN
<b>Description</b>	Admin can add, edit, and delete the students' LRN.
<b>Actors</b>	Administrator
<b>Pre-condition</b>	Administrator is logged in the system
<b>Post-condition</b>	System prompts that the LRN and its other information is successfully added, edited, and deleted.
<b>Basic Flow</b>	<ol style="list-style-type: none"> <li>1. Administrator clicks students.</li> <li>2. System shows all the list of the incoming freshmen students of DOrSU with their LRN.</li> <li>3. Administrator adds a data.</li> <li>4. Administrator edits a data.</li> <li>5. Administrator deletes a data.</li> <li>6. System confirms that the transaction is successful.</li> </ol>
<b>Alternative Flow</b>	N/A

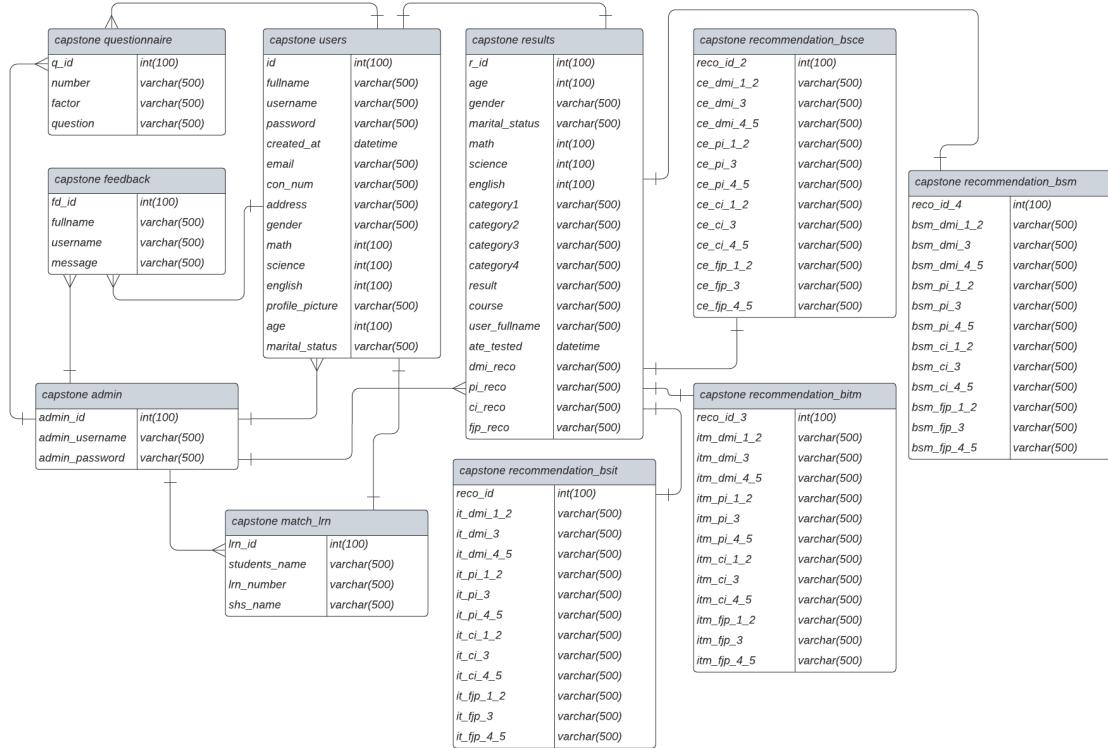
Table 3.5 provides the use case description for 'Manage Students' LRN.' This table provides an overview of the system's functionality, which shows a detailed step-by-step interaction between the actor and the system, along with the outcomes resulting from the user's action.

### 3.4 UML Design



**Figure 3.4 Student Course Prediction System UML**

### 3.5 Entity Relationship Diagram (ERD)



**Figure 3.5 Student Course Prediction System Entity Relationship Diagram**

Section 3.5 showcases an Entity Relationship Diagram (ERD) for the DOrSU Student Course Prediction System. The ERD is generated using PHP Myadmin and is represented using the Crows Foot notation. The aforementioned diagram depicts the system's database logical structure for the Student Course Prediction System of DOrSU.

### 3.6 Data Dictionary

Table 3.6: Data Dictionary of the Student Course Prediction System

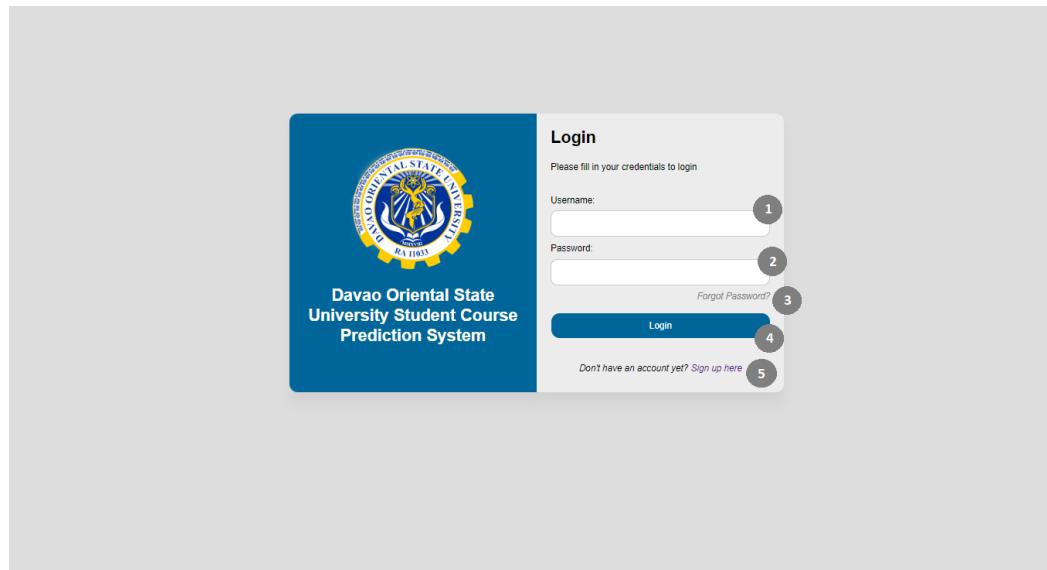
Table Name	Column Name	Type	Null	Default	Primary
users	id	int(100)	No	None	Yes
	fullname	varchar(500)	No	None	
	username	varchar(500)	No	None	
	password	varchar(500)	No	None	
	created_at	datetime	Yes	CURRENT\_TIMESTAMP	
	email	varchar(500)	Yes	NULL	
	con_num	varchar(500)	Yes	NULL	
	address	varchar(500)	Yes	NULL	
	gender	varchar(500)	Yes	NULL	
	math	int(100)	Yes	NULL	
questionnaire	science	int(100)	Yes	NULL	
	english	int(100)	Yes	NULL	
	profile_picture	varchar(500)	Yes	NULL	
	age	int(100)	Yes	NULL	
	marital_status	varchar(500)	Yes	NULL	
	admin_id	int(100)	No	None	Yes
	admin_username	varchar(500)	No	None	
	admin_password	varchar(500)	No	None	
	q_id	int(100)	No	None	Yes
	number	varchar(500)	No	None	
results	factor	varchar(500)	No	None	
	question	varchar(500)	No	None	
	r_id	int(100)	No	None	Yes
	age	varchar(500)	No	None	
	gender	varchar(500)	No	None	
	marital_status	varchar(500)	No	None	
	math	varchar(500)	No	None	
	science	varchar(500)	No	None	
	english	varchar(500)	No	None	
	category1	varchar(500)	No	None	
dmi_reco	category2	varchar(500)	No	None	
	category3	varchar(500)	No	None	
	category4	varchar(500)	No	None	
	result	varchar(500)	No	None	
	course	varchar(500)	No	None	
	user_fullname	varchar(500)	No	None	
pi_reco	date_tested	timestamp	No	CURRENT\_TIMESTAMP	
	dmi_reco	varchar(500)	No	None	
	ci_reco	varchar(500)	No	None	

	fjp_reco	varchar(500)	No	None	
recommendation_bsit	reco_id	int(100)	No	None	Yes
	it_dmi_1_2	varchar(500)	Yes	NULL	
	it_dmi_3	varchar(500)	Yes	NULL	
	it_dmi_4_5	varchar(500)	Yes	NULL	
	it_pi_1_2	varchar(500)	Yes	NULL	
	it_pi_3	varchar(500)	Yes	NULL	
	it_pi_4_5	varchar(500)	Yes	NULL	
	it_ci_1_2	varchar(500)	Yes	NULL	
	it_ci_3	varchar(500)	Yes	NULL	
	it_ci_4_5	varchar(500)	Yes	NULL	
	it_fjp_1_2	varchar(500)	Yes	NULL	
	it_fjp_3	varchar(500)	Yes	NULL	
	it_fjp_4_5	varchar(500)	Yes	NULL	
recommendation_bsce	reco_id_2	int(100)	No	None	Yes
	ce_dmi_1_2	varchar(500)	Yes	NULL	
	ce_dmi_3	varchar(500)	Yes	NULL	
	ce_dmi_4_5	varchar(500)	Yes	NULL	
	ce_pi_1_2	varchar(500)	Yes	NULL	
	ce_pi_3	varchar(500)	Yes	NULL	
	ce_pi_4_5	varchar(500)	Yes	NULL	
	ce_ci_1_2	varchar(500)	Yes	NULL	
	ce_ci_3	varchar(500)	Yes	NULL	
	ce_ci_4_5	varchar(500)	Yes	NULL	
	ce_fjp_1_2	varchar(500)	Yes	NULL	
	ce_fjp_3	varchar(500)	Yes	NULL	
	ce_fjp_4_5	varchar(500)	Yes	NULL	
recommendation_bitm	reco_id_3	int(100)	No	None	Yes
	itm_dmi_1_2	varchar(500)	Yes	NULL	
	itm_dmi_3	varchar(500)	Yes	NULL	
	itm_dmi_4_5	varchar(500)	Yes	NULL	
	itm_pi_1_2	varchar(500)	Yes	NULL	
	itm_pi_3	varchar(500)	Yes	NULL	
	itm_pi_4_5	varchar(500)	Yes	NULL	
	itm_ci_1_2	varchar(500)	Yes	NULL	
	itm_ci_3	varchar(500)	Yes	NULL	
	itm_ci_4_5	varchar(500)	Yes	NULL	
	itm_fjp_1_2	varchar(500)	Yes	NULL	
	itm_fjp_3	varchar(500)	Yes	NULL	
	itm_fjp_4_5	varchar(500)	Yes	NULL	
recommendation_bsm	reco_id_4	int(100)	No	None	Yes
	bsm_dmi_1_2	varchar(500)	Yes	NULL	
	bsm_dmi_3	varchar(500)	Yes	NULL	
	bsm_dmi_4_5	varchar(500)	Yes	NULL	
	bsm_pi_1_2	varchar(500)	Yes	NULL	
	bsm_pi_3	varchar(500)	Yes	NULL	
	bsm_pi_4_5	varchar(500)	Yes	NULL	
	bsm_ci_1_2	varchar(500)	Yes	NULL	

	bsm_ci_3	varchar(500)	Yes	NULL	
	bsm_ci_4_5	varchar(500)	Yes	NULL	
	bsm_fjp_1_2	varchar(500)	Yes	NULL	
	bsm_fjp_3	varchar(500)	Yes	NULL	
	bsm_fjp_4_5	varchar(500)	Yes	NULL	
feedback	fd_id	int(100)	No	None	Yes
	fullname	varchar(500)	No	None	
	username	varchar(500)	No	None	
	message	varchar(500)	No	None	
Match_lrn	lrn_id	int(100)	No	None	Yes
	students_name	varchar(500)	No	None	
	lrn_num	varchar(500)	No	None	
	shs_name	varchar(500)	No	None	

### 3.7 GUI Design

The Graphical User Interface of each web page of the DOrSU Student Course Prediction System is displayed in this section, along with a tabular explanation of the UI Components that are visible in each web page. Figure 3.6 shows the user interface for the Student's Login Page.



**Figure 3.6 Student Login Page**

Table 3.7 contains further information on the UI components shown on the Student Login Page.

Table 3.7 Student Login Page UI Components:

No.	UI Component	Name	Description
1	Text Field	Username	Allows user to enter their username.
2	Text Field	Password	Allows user to enter their password.
3	Button	Reset Password	Directs to the reset password page.
4	Button	Login	Directs to the home page.
5	Button	Sign up	Directs to the registration page.

Figure 3.7 shows the user interface for the Student's Registration Page.

The figure shows a screenshot of a web page titled "Sign Up". The page has a blue header with the text "DAVAO ORIENTAL STATE UNIVERSITY" and "RA 11033". Below the header, there is a circular logo with a yellow border containing a blue emblem. The main content area has a white background. It contains a form with the following fields and labels:

- Username: (1)
- Fullname: (2)
- Password: (3)
- Confirm Password: (4)
- Student LRN: (5)
- Submit: (6)
- Link: Already have an account? Sign in here (7)

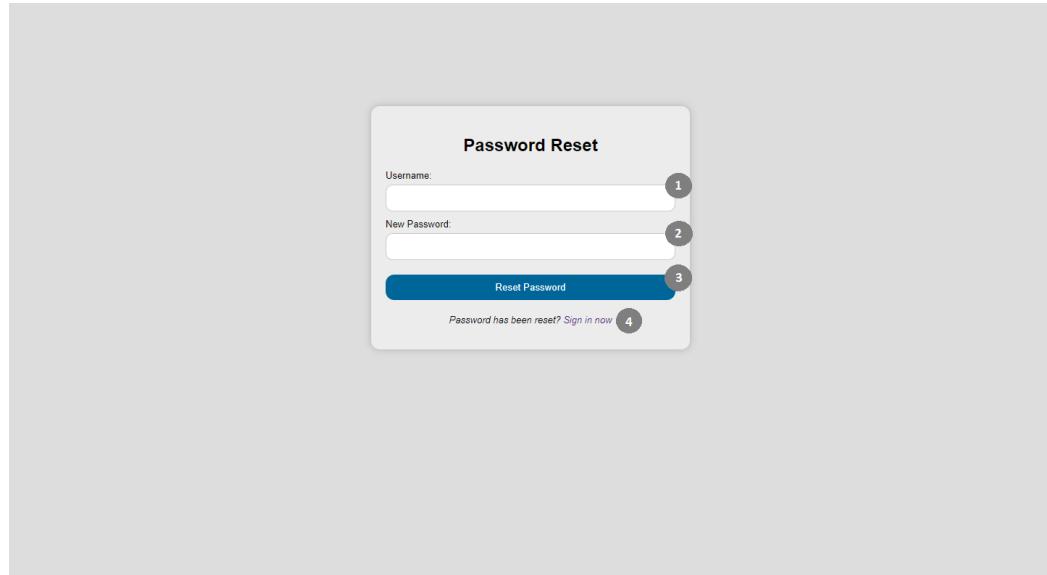
**Figure 3.7 Student Registration Page**

Table 3.8 contains further information on the UI components shown on the Student Registration Page.

Table 3.8 Student Registration Page UI Components:

No.	UI Component	Name	Description
1	Text Field	Username	Allows user to enter their username.
2	Text Field	Fullscreen	Allows user to enter their fullname.
3	Text Field	Password	Allows user to enter their password.
4	Text Field	Confirm Password	Allows user to confirm their password.
5	Text Field	Student LRN	Allows user to enter their Learner's Registration Number.
6	Button	Submit	Creates the account of the user and redirects to the login page.
7	Button	Sign In	Directs to the login page if the users already have an account.

Figure 3.8 shows the user interface for the Student's Reset Password Page.



**Figure 3.8 Student Reset Password Page**

Table 3.9 contains further information on the UI components shown on the Student Reset Password Page.

Table 3.9 Student Reset Password Page UI Components:

No.	UI Component	Name	Description
1	Text Field	Username	Allows user to enter their username.
2	Text Field	New Password	Allows user to enter their new password.
3	Button	Reset Password	Creates the user's new password.
4	Button	Sign In	Directs to the login page.

Figure 3.9 shows the user interface for the Student's Home Page.

**Welcome to DOrSU-SCPS**

**Maximize Your Potential with DOrSU-SCPS Course Recommendations**

Davao Oriental State University - Student Course Prediction System, short as DOrSU-SCPS is a web-based system that will predict the possible course of the students by answering the provided test questionnaire, entering their high school or senior high school grades, and their State University Aptitude and Scholarship Test (SUAST) result. The courses that this system will predict are the ones that are available in Davao Oriental State University (DOrSU). This serves as a guide, especially for the undecided incoming college students, on choosing the course that fits them.

**Ready to discover your academic potential?**

Prepare to embark on a journey of self-discovery and growth. Click the button below to unlock a world of insights and possibilities. Let's delve into your capabilities and pave the way for a successful academic path. Best of luck on your test!

Take the test here 5

Facebook: Team NAN Twitter: @official.team\_nan Instagram: @official.teamNAN Contact Number: 09055954292 Email: team.nan@gmail.com

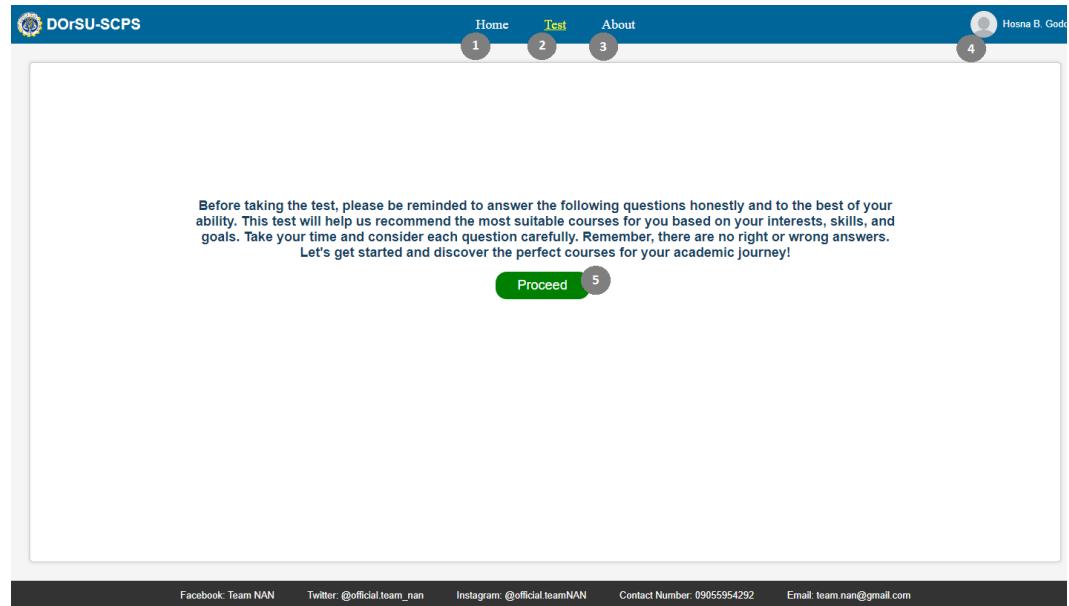
**Figure 3.9 Student Home Page**

Table 3.10 contains further information on the UI components shown on the Student Home Page.

Table 3.10 Student Home Page UI Components:

No.	UI Component	Name	Description
1	Navigation link	Home	Directs to the home page.
2	Navigation link	Test	Directs to the landing test page.
3	Navigation link	About	Directs to the about page.
4	Image	Profile Picture	Profile picture of the user (student). Allows user to click in order to generate the dropdown menu.
5	Button	Take the Test	Directs to the landing test page.

Figure 3.10 shows the user interface for the Student's Landing Test Page.



**Figure 3.10 Student Landing Test Page**

Table 3.11 contains further information on the UI components shown on the Student Landing Test Page.

Table 3.11 Student Landing Test Page UI Components:

No.	UI Component	Name	Description
1	Navigation link	Home	Directs to the home page.
2	Navigation link	Test	Directs to the landing test page.
3	Navigation link	About	Directs to the about page.
4	Image	Profile Picture	Profile picture of the user (student). Allows user to click in order to generate the dropdown menu.

5	Button	Proceed	Directs to the course selection test questionnaire.
---	--------	---------	---

Figure 3.11 shows the user interface for the Student's Course Selection Test Questionnaire Page.

The screenshot displays a web-based questionnaire titled "COURSE SELECTION TEST QUESTIONNAIRE". The interface includes a header with the DOrSU-SCPS logo, navigation links (Home, Test, About), and a user profile (Hosna B. Godoy). The main content is organized into two sections: "Decision-Making and Interest:" and "Future Job Opportunities:". Each section contains five statements with dropdown menus for responses ranging from "1 - Strongly Disagree" to "5". At the bottom of the page is a "Submit" button.

Section	Statement	Response
Decision-Making and Interest:	I consider my desire of doing things.	5
	I look my ability such as knowledge and skills.	1 - Strongly Disagree
	I choose a course based on what I feel about it.	1 - Strongly Disagree
	I decide based on my preferences for instance, family background.	1 - Strongly Disagree
	I prefer things to do what I like the most.	1 - Strongly Disagree
Future Job Opportunities:	I find the course I choose convenient in looking for a job in the future.	1 - Strongly Disagree
	I can expect for the good salary.	1 - Strongly Disagree
	I prefer for the stability status for the job.	1 - Strongly Disagree
	I favor the tenureship of the job.	1 - Strongly Disagree
	I expect the availability of the job that suits me.	1 - Strongly Disagree

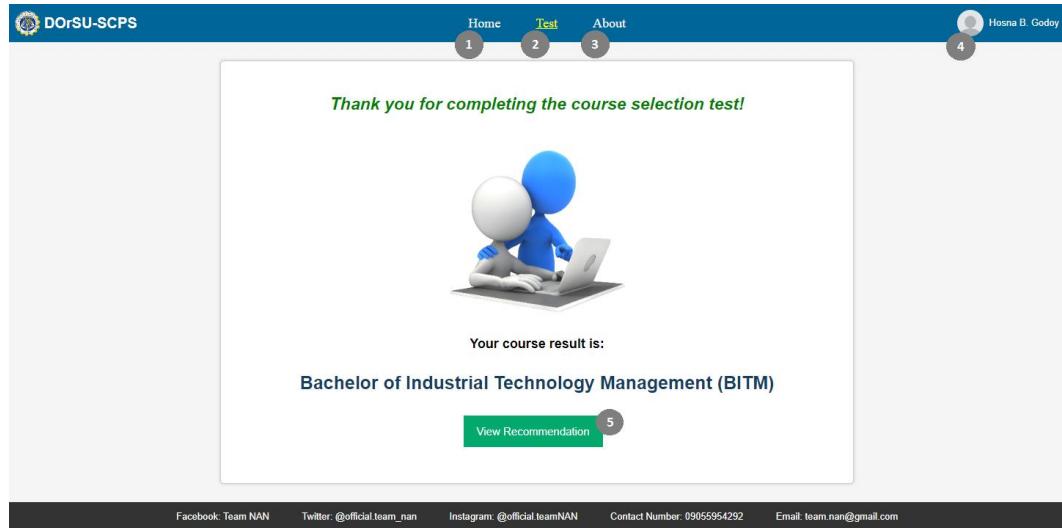
**Figure 3.11 Student Course Selection Test Questionnaire Page**

Table 3.12 contains further information on the UI components shown on the Student Course Selection Test Questionnaire Page.

Table 3.12 Student Course Selection Test Questionnaire Page UI Components:

No.	UI Component	Name	Description
1	Navigation link	Home	Directs to the home page.
2	Navigation link	Test	Directs to the landing test page.
3	Navigation link	About	Directs to the about page.
4	Image	Profile Picture	Profile picture of the user (student). Allows user to click in order to generate the dropdown menu.
5	Select Menu	Rating	Allows user to select rating on each question.
6	Button	Submit	Directs to the result page.

Figure 3.12 shows the user interface for the Student's Result Page.



**Figure 3.12 Student Result Page**

Table 3.13 contains further information on the UI components shown on the Student's Result Page.

Table 3.13 Student's Result Page UI Components:

No.	UI Component	Name	Description
1	Navigation link	Home	Directs to the home page.
2	Navigation link	Test	Directs to the landing test page.
3	Navigation link	About	Directs to the about page.
4	Image	Profile Picture	Profile picture of the user.. Allows user to click to generate the dropdown menu.
5	Button	Recommendation	Directs to the recommendation page.

Figure 3.13 shows the user interface for the Student's Recommendation Page.



**Figure 3.13 Student Recommendation Page**

Table 3.14 contains further information on the UI components shown on the Student's Recommendation Page.

Table 3.14 Student's Recommendation Page UI Components:

No.	UI Component	Name	Description
1	Image	Profile Picture	Profile picture of the user (student). Allows user to click in order to generate the dropdown menu.
2	Button	Close	Allows user to click in order to close the recommendation.

Figure 3.14 shows the user interface for the Student's About Page.

**Overview:**

DOrSU-SCPS is an innovative web-based system designed to assist high school students in predicting their possible course of study at Davao Oriental State University. It aims to provide personalized course recommendations based on the user's personal perspectives and academic data. The system begins by requesting users to fill out a questionnaire that captures their personal preferences, interests, and career aspirations. This questionnaire serves as a tool to gather relevant information and insights about the user's inclinations and goals. To proceed with the questionnaire, users are required to provide their personal information and academic data, which helps the system in generating accurate course predictions. Once the user completes the questionnaire and submits the necessary information, the system utilizes advanced algorithms and machine learning techniques to analyze the provided data. By employing predictive modeling, the system matches the user's responses and academic background with the available courses offered at Davao Oriental State University. The system prioritizes user privacy and data security, ensuring that all personal information and academic data provided by the users are handled in accordance with applicable privacy laws and regulations. DOrSU-SCPS is committed to maintaining the confidentiality and integrity of user information throughout the prediction process. Overall, DOrSU-SCPS offers a user-friendly and intuitive platform where high school students can access a personalized course prediction system. By leveraging user input and advanced algorithms, the system aims to assist students in choosing the most suitable course of study that aligns with their interests, aptitudes, and future aspirations at Davao Oriental State University.

**Mission:**

The mission of DOrSU-SCPS (Davao Oriental State University - Student Course Prediction System) is to empower high school students by providing them with personalized course predictions based on their personal perspectives, interests, and academic data. Our mission is to guide students in making informed decisions about their educational journey, helping them discover and pursue courses that align with their passions, strengths, and future aspirations. By leveraging advanced algorithms and user input, we aim to simplify the course selection process, promote student success, and contribute to the overall educational development of individuals at Davao Oriental State University. We are committed to maintaining user privacy and delivering a user-friendly platform that ensures accurate and reliable course predictions, ultimately assisting students in shaping their academic and professional paths with confidence and clarity.

**Vision:**

Our vision for DOrSU-SCPS (Davao Oriental State University - Student Course Prediction System) is to become the leading web-based platform that empowers high school students to unlock their full potential through personalized course predictions. We envision a future where every student can make well-informed decisions about their educational path, confidently pursuing courses that align with their unique interests, talents, and aspirations. By leveraging cutting-edge technology and data-driven insights, we aim to revolutionize the course selection process, enabling students to explore a wide range of possibilities and discover their true passions. We strive to foster a culture of academic excellence, where students thrive in their chosen fields, equipped with the knowledge and skills necessary to make a positive impact in their careers and communities. Our vision is to be a trusted and indispensable resource for students, educational institutions, and stakeholders, promoting student success and shaping the future of higher education.

**User Benefit:**

By utilizing DOrSU-SCPS, students can:

1. **Save Time and Effort:** The system streamlines the course selection process by eliminating the need for extensive research and manual comparison of courses. Students can quickly access personalized recommendations, reducing the time and effort required to explore and evaluate different options.
2. **Make Informed Decisions:** With access to comprehensive course predictions, students gain valuable insights into the courses that best match their interests, aptitudes, and future aspirations. This enables them to make informed decisions about their educational journey, increasing the likelihood of academic success and career satisfaction.
3. **Discover Hidden Opportunities:** DOrSU-SCPS considers a wide range of factors, including the user's personal perspectives and interests, to generate course recommendations. This helps students discover courses they may not have previously considered, uncovering hidden opportunities and expanding their horizons in terms of potential academic paths.
4. **Enhance Academic Performance:** By selecting courses that align with their strengths and interests, students are more likely to engage actively in their studies, leading to improved academic performance. DOrSU-SCPS assists students in choosing courses that foster their passion and motivation, setting the stage for a fulfilling and successful educational journey.
5. **Plan for Future Careers:** The course predictions provided by DOrSU-SCPS take into account the user's career aspirations. By choosing courses that align with their desired career path, students can better prepare themselves for future professional opportunities, ensuring they acquire the necessary knowledge and skills in their chosen fields.

In summary, DOrSU-SCPS empowers high school students with personalized course predictions, enabling them to make informed decisions, discover new opportunities, enhance their academic performance, and align their studies with their future career goals.

Facebook: Team NAN Twitter: @official\_team\_nan Instagram: @official.teamNAN Contact Number: 09055954292 Email: team.nan@gmail.com

**Figure 3.14 Student About Page**

Table 3.15 contains further information on the UI components shown on the Student's About Page.

Table 3.15 Student's About Page UI Components:

No.	UI Component	Name	Description
1	Navigation link	Home	Directs to the home page.
2	Navigation link	Test	Directs to the landing test page.
3	Navigation link	About	Directs to the about page.
4	Image	Profile Picture	Profile picture of the user (student). Allows user to click in order to generate the dropdown menu.
5	Text field	Name	Allows user to enter their full name.
6	Text field	Username	Allows user to enter their registered username.
7	Text area	Message/Feedback	Allows user to enter their message or feedback.
8	Button	Submit	Allows user to click to submit their feedback.

Figure 3.15 shows the user interface for the Student's Profile Page.

**Personal Data:**

- Fullname: Hosna B. Godoy
- Gender: Female
- Age: 23
- Marital Status: Single
- Email: dorus.godoy@hosna@gmail.com
- Contact: 09055954292
- Address: Prk. Paghiusa, Brgy. Bobon, City of Mati, Davao Oriental

**Academic Data:**

- Math: 82
- Science: 82
- English: 85

**History:**

Date	Result Course	Category 1	Category 2	Category 3	Category 4	Action
2023-06-24 18:23:52	Bachelor of Industrial Technology Management (BITM)	It appears that you have low rating for decision making and interest category. Indicating a lack of interest and confidence and you are considering this course, take some time to thoroughly research the course content of BITM. Look into the specific subjects, modules, and topics covered in the program.	It appears that you have low rating for peer influence category. Indicating a lack of peer influence and you are considering this course, take some time to reflect on your own passion and interests. Consider what motivates you and interest in pursuing a career in this course. Remind yourself of your goals and aspirations, and let your own passion drive your decision rather than relying solely on peer influence.	It appears that you have low rating for future job opportunities category. Indicating a low perception of future job opportunities and you are considering this course, conduct thorough research on the career paths available to graduates of the BITM program. Explore industries and job roles where industrial technology management professionals are in demand.		Delete
2023-07-05 20:47:49	Bachelor of Science in Information Technology (BSIT)	It appears that you have high rating on Decision Making and Interest category. Embrace this passion for the field of Information Technology and let it fuel your motivation and drive to excel in the BSIT course. Recognize that your enthusiasm will be a valuable asset throughout the program, especially in specific areas or domains that particularly interests you. Setting clear goals will provide you with direction and purpose as you progress through the program.	It appears that you have high rating for peer influence category. Your high rating suggests that your peers believe in the value and benefits of pursuing a course. Embrace this support and encouragement from your peers, build a network or like-minded individuals who can provide guidance, share resources, and collaborate on projects.	It appears that you have high rating for future job opportunities category. Indicating a high level of confidence and interest in the field of IT and you are considering BSIT, gain practical experience. Practical experience will not only enhance your skills but also make you more attractive to potential employers. Stay updated with industry trends, information technology is a rapidly evolving field, and it's crucial to stay updated with the latest industry trends.		Delete

Facebook: Team NAN Twitter: @official.team\_nan Instagram: @official.teamNAN Contact Number: 09055954292 Email: team.nan@gmail.com

**Figure 3.15 Student Profile Page**

Table 3.16 contains further information on the UI components shown on the Student's Profile Page.

**Table 3.16 Student's Profile Page UI Components:**

No.	UI Component	Name	Description
1	Button	Edit profile	Directs to the edit profile page.
2	Table column	Date	Displays the date the users took the test.
3	Table column	Course	Displays the course the users got from the test.
4	Table column	Category 1	Displays the recommendation about the category

			1 from the Questionnaire.
5	Table column	Category 2	Displays the recommendation about the category 2 from the Questionnaire.
6	Table column	Category 3	Displays the recommendation about the category 3 from the Questionnaire.
7	Table Column	Category 4	Displays the recommendation about the category 4 from the Questionnaire.
8	Table Column	Action	Displays the button that users can use.
9	Button	Delete	Allows user to click to delete a row in the table.

Figure 3.16 shows the user interface for the Student's Edit Profile Page.

The screenshot shows the 'Update Profile' section of a web application. At the top, there's a navigation bar with links for Home, Test, and About, and a user profile icon for 'Hosna B. Godoy'. Below the navigation is a note: 'Note: You are required to fill up the following personal and academic data in order to provide predictive result.' The main form area has a title 'Update Profile:' and a large circular placeholder for a profile picture.

**Personal Data:**

- Profile Picture:  No file chosen (labeled 1)
- Username: hosnagodoy29 (labeled 2)
- Fullname: Hosna B. Godoy (labeled 3)
- Email: dorsu.godoy@hosna.com (labeled 4)
- Gender: Female (labeled 5)
- Age: 23 (labeled 6)
- Marital Status: Single (labeled 7)
- Contact: 09055954292 (labeled 8)
- Address: Pk. Paghusa, Brgy. Bobon, City of Mati, Davao Oriental (labeled 9)
- Password: Enter your current password, otherwise enter a new one (labeled 10)

**Academic Data:**

- Mathematics: 82 (labeled 11)
- Science: 82 (labeled 12)
- English: 85 (labeled 13)

A green button at the bottom right is labeled 'Save Changes' (labeled 14).

At the very bottom of the page, there's a dark footer bar with social media links: Facebook: Team NAN, Twitter: @official.team\_nan, Instagram: @official.teamNAN, Contact Number: 09055954292, and Email: team.nan@gmail.com.

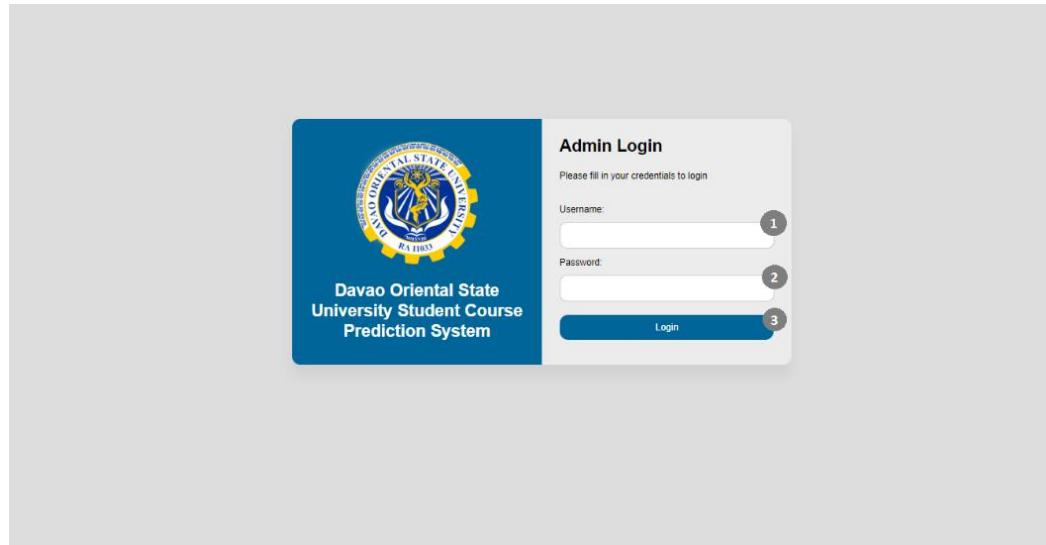
**Figure 3.16 Student Edit Profile Page**

Table 3.17 contains further information on the UI components shown on the Student's Edit Profile Page.

Table 3.17 Student's Edit Profile Page UI Components:

No.	UI Component	Name	Description
1	File upload	Profile picture	Allows user to upload their profile picture.
2	Text field	Username	Shows the registered username of the user.
3	Text field	Fullname	Shows the registered fullname of the user.
4	Text field	Email	Allows user to enter their email.
5	Text field	Gender	Allows user to enter their gender.
6	Text field	Age	Allows user to enter their age.
7	Text field	Marital Status	Allows user to enter their marital status.
8	Text field	Contact number	Allows user to enter their contact number.
9	Text field	Address	Allows user to enter their address.
10	Text field	Password	Allows user to enter their registered password or enter a new one.
11	Text field	Math	Allows user to enter their math grade during high school.
12	Text field	Science	Allows user to enter their science grade during high school.
13	Text field	English	Allows user to enter their english grade during high school.
14	Button	Submit	Allows user to click in order to save the data they've input.

Figure 3.17 shows the login page of the admin interface. This is the first page that will appear upon launching.



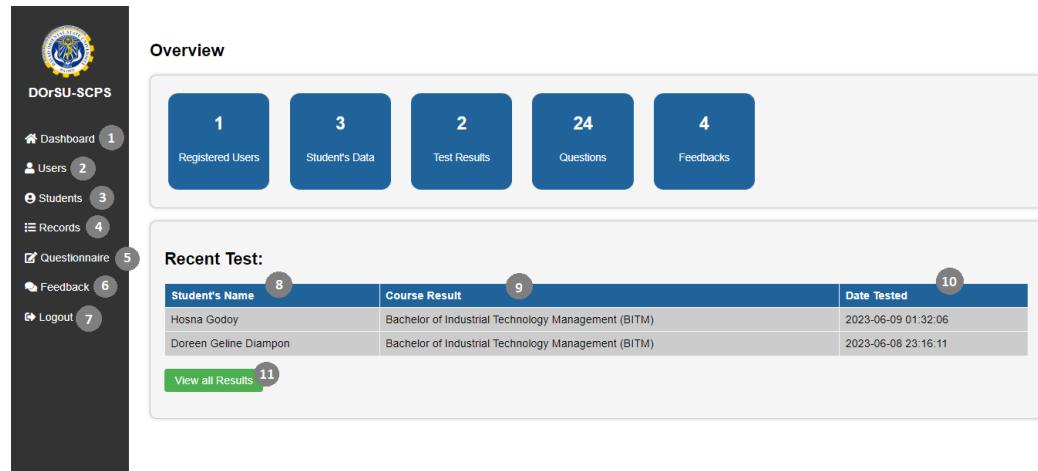
**Figure 3.17 Admin Login Page**

Table 3.18 contains further information on the UI components shown on the Admin's Login Page.

Table 3.18 Admin Login Page UI Components:

No.	UI Component	Name	Description
1	Text Field	Admin's Username	Allows admin to enter his/her username.
2	Text Field	Admin's Password	Allows admin to enter his/her password.
3	Button	Login	Directs to the admin's dashboard.

Figure 3.18 shows the dashboard of the admin interface.



**Figure 3.18 Admin Dashboard**

Table 3.19 contains further information on the UI components shown on the admin's dashboard.

Table 3.19 Admin Dashboard UI Components:

No.	UI Component	Name	Description
1	Navigation Link	Dashboard	Directs to the dashboard or home page.
2	Navigation Link	Users	Directs to the user page.
3	Navigation Link	Students	Directs to the student page.
4	Navigation Link	Records	Directs to the record page.
5	Navigation Link	Questionnaire	Directs to the questionnaire page.
6	Navigation Link	Feedbacks	Directs to the feedback page.
7	Navigation Link	Logout	Sign out from the admin interface.
8	Table Column	Student's Name	Shows the names of the students who took the test.

9	Table Column	Course Result	Shows the course result of the student who took the test.
10	Table Column	Date Tested	Shows the date that the student took the test.
11	Button	View all results	Directs to the record page.

Figure 3.19 shows the users page of the admin interface. This page contains the list of students who successfully registered to the system.

The screenshot shows the 'List of Registered Users' page. On the left is a dark sidebar with the DOrSU-SCPS logo and navigation links: Dashboard, Users, Students, Records, Questionnaire (with a checked checkbox), Feedback, and Logout. The main area has a header 'List of Registered Users'. Below it is a search bar with a placeholder 'Search by Username' (1) and a 'Search' button (2). A green button labeled 'View all User's Information' (3) is present. A table lists user information: Full Name (4), Username (5), Email (6), Date Registered (7), and Action (8). The first row shows 'Hosna B. Godoy' (4), 'hosnagodoy29' (5), 'dorsu.godoyhosna@gmail.com' (6), '2023-06-24 17:06:08' (7), and a red 'Delete' button (8). A small number '9' is located at the bottom right of the table.

**Figure 3.19 Admin Users Page**

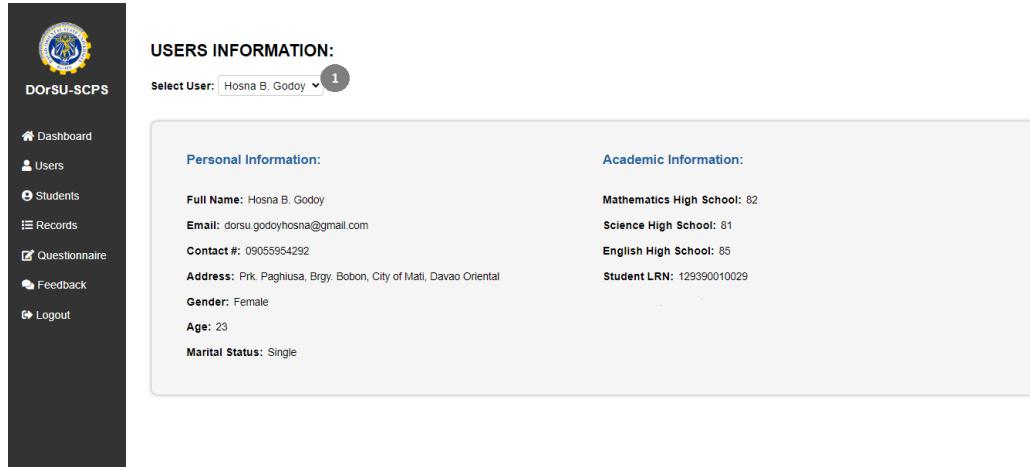
Table 3.20 contains further information on the UI components shown on the admin's user page.

Table 3.20 Admin user page UI Components:

No.	UI Component	Name	Description
1	Text Field	Username	Allows admin to input the student's

			username to search.
2	Button	Search	Allows admin to click in order to search the username they input.
3	Button	View all user's information	Directs to the users' information page.
4	Table Column	Full Name	Shows the student's name.
5	Table Column	Username	Shows the student's username.
6	Table Column	Email	Shows the student's email.
7	Table Column	Date Registered	Shows the date that the student had registered.
8	Table Column	Action	Shows the action that the admin can do.
9	Button	Delete	Allows admin to click if they want to delete a certain user.

Figure 3.20 shows the user's information page of the admin interface. This page contains all the information that the users have input from the student interface.



**Figure 3.20 Admin User Information Page**

Table 3.21 contains further information on the UI components shown on the admin's user information page.

Table 3.21 Admin user information page UI Components:

No.	UI Component	Name	Description
1	Select and Option	User's Full name	Allows admin to select a certain user in order to display all user's information.

Figure 3.21 shows the student page of the admin interface. This page contains the list of incoming freshmen students of DOrSU, with their Learner's Registration Number or LRN. This will be used for the user's registration.

The screenshot shows the 'List of Incoming Freshmen Students' page. On the left is a dark sidebar with the DOrSU-SCPS logo and navigation links: Dashboard, Users, Students, Records, Questionnaire, Feedback, and Logout. The main content area has a title 'List of Incoming Freshmen Students'. It features a search bar with 'Search by LRN' and a 'Search' button (labeled 1 and 2). Below is a green button labeled 'Add/Update Student Data' (labeled 3). A table lists three students: Hosna B. Godoy, Ryan S. Siaboc, and Doreen Geline Diampon, with columns for Student's Name (labeled 4), LRN (labeled 5), High School Name (labeled 6), and Action (labeled 7). Each row has a 'Delete' button (labeled 8) at the end.

**Figure 3.21 Admin Students Page**

Table 3.22 contains further information on the UI components shown on the admin's student page.

Table 3.22 Admin student page UI Components:

No.	UI Component	Name	Description
1	Text Field	LRN	Allows admin to input the student's LRN to search.
2	Button	Search	Allows admin to click in order to search the LRN they input.
3	Button	Add/Update Student Data	Directs to the add/edit student page.
4	Table Column	Student's Name	Shows the student's name.
5	Table Column	LRN	Shows the student's LRN.
6	Table Column	Senior High School Name	Shows the student's senior high school name.

7	Table Column	Action	Shows the action that the admin can do.
8	Button	Delete	Allows admin to delete a student data.

Figure 3.22 shows the add and edit student page of the admin interface. This page allows admin to add and update a certain data of the students.

**Figure 3.22 Admin Add and Edit Students Page**

Table 3.23 contains further information on the UI components shown on the admin's add and edit student page.

Table 3.23 Admin add and edit student page UI Components:

No.	UI Component	Name	Description
1	Text Field	Student's Name	Allows admin to input the student's full name.

2	Text Field	Student's LRN	Allows admin to input the student's LRN.
3	Text Field	High School / Senior High School Name	Allows admin to input the student's senior high school or high school name.
4	Button	Add	Allows admin click to add the new student data.
5	Select and Option	Student Name	Allows admin to select a certain student to display all data.
6	Text Field	Student Name	Displays the student's name in order to update.
7	Text Field	Student's LRN	Displays the student's LRN in order to update.
8	Text Field	High School / Senior High School Name	Displays the student's high school or senior high school name in order to update.
9	Button	Update	Allows admin to click to update the student data.

Figure 3.23 shows the record page of the admin interface. This page contains the list of student's records who took the test.

The screenshot shows a web-based application interface for managing student records. On the left is a dark sidebar with the DORSU-SCPS logo at the top and a navigation menu below it, including Dashboard, Users, Students, Records, Questionnaire, Feedback, and Logout. The main content area has a title "List of Records". At the top of this area is a search bar labeled "Search by Fullname" (1) and a green "Search" button (2). Below the search bar is a table with the following columns: Student's Name (3), C1 Result (4), C2 Result (5), C3 Result (6), C4 Result (7), Course Result (8), Date Tested (9), and Action (10). Two rows of data are visible:

Student's Name	C1 Result	C2 Result	C3 Result	C4 Result	Course Result	Date Tested	Action
Hosna B. Godoy	1	1	1	1	Bachelor of Industrial Technology Management (BITM)	2023-06-24 18:23:52	<span>Delete</span>
Hosna B. Godoy	5	3	4	4	Bachelor of Industrial Technology Management (BITM)	2023-06-24 22:52:10	<span>Delete</span>

Below the table, there is a small number "11" in a circle.

**Figure 3.23 Admin Record Page**

Table 3.24 contains further information on the UI components shown on the admin's record page.

Table 3.24 Admin record page UI Components:

No.	UI Component	Name	Description
1	Text Field	Student's Name	Allows admin to input the student's full name to search.
2	Button	Search	Allows admin to click to search for a record.
3	Table Column	Student's Name	Shows the names of the students who took the test.
4	Table Column	Category 1	Shows the overall rating of the category or factor 1 from the questionnaire.
5	Table Column	Category 2	Shows the overall rating of the

			category or factor 2 from the questionnaire.
6	Table Column	Category 3	Shows the overall rating of the category or factor 3 from the questionnaire.
7	Table Column	Category 4	Shows the overall rating of the category or factor 3 from the questionnaire.
8	Table Column	Course Result	Shows the course results of the students who took the test.
9	Table Column	Date Tested	Shows the date that the students took the test.
10	Table Column	Action	Shows the action that the admin can do.
11	Button	Delete	Allows admin to click in order to delete a certain record.

Figure 3.24 shows the questionnaire page of the admin interface. This page contains the list of the questions that the students will answer.

The screenshot shows a web application interface for managing a questionnaire. On the left is a dark sidebar with the DORSU-SCPS logo at the top and a navigation menu below it, including Dashboard, Users, Students, Records, Questionnaire, Feedback, and Logout. The main content area has a title "List of Questions" and a search bar with "Search by Factor" and a "Search" button. A green "Edit Question" button is located above a table. The table has columns for "No.", "Factor", and "Question". Six numbered circles (1 through 6) are overlaid on the interface to point to specific UI elements: 1 points to the search input field; 2 points to the search button; 3 points to the edit question button; 4 points to the "No." column header; 5 points to the "Factor" column header; and 6 points to the "Question" column header.

No.	Factor	Question
Question 1.1	Decision-Making and Interest	I consider my desire of doing things
Question 1.2	Decision-Making and Interest	I look my ability such as knowledge and skills
Question 1.3	Decision-Making and Interest	I choose a course based on what I feel about it
Question 1.4	Decision-Making and Interest	I decide based on my preferences for instance, family background
Question 1.5	Decision-Making and Interest	I prefer things to do what I like the most
Question 1.6	Decision-Making and Interest	I expect my potential in looking for a job
Question 1.7	Decision-Making and Interest	I am focused based on my interest
Question 1.8	Decision-Making and Interest	It is my passion that helps me to pursue the course or career to take
Question 1.9	Decision-Making and Interest	I rely on my abilities
Question 1.10	Decision-Making and Interest	I depend based on self testing
Question 2.1	Peer Influence	My peers inspire me to choose what I like to take
Question 2.2	Peer Influence	My peers encourage me to do things to achieve my goals
Question 2.3	Peer Influence	My peers' advice to learn more about what I like to choose to do
Question 2.4	Peer Influence	My peers' informal talk leads me of what I should plan to choose
Question 2.5	Peer Influence	I prefer to my peer group in selecting a course
Question 3.1	Consideration about the Institution	I consider on a distance of travel from the house to school and home
Question 3.2	Consideration about the Institution	I believe the stories of my acquaintances about the school
Question 3.3	Consideration about the Institution	I learn the affordable tuition of the university in college institution
Question 3.4	Consideration about the Institution	I rely on a scholarship grants
Question 4.1	Future Job Opportunities	I find the course I choose convenient in looking for a job in the future
Question 4.2	Future Job Opportunities	I can expect for the good salary
Question 4.3	Future Job Opportunities	I prefer for the stability status for the job
Question 4.4	Future Job Opportunities	I favor the tenureship of the job
Question 4.5	Future Job Opportunities	I expect the availability of the job that suits me

**Figure 3.24 Admin Questionnaire Page**

Table 3.25 contains further information on the UI components shown on the admin's questionnaire page.

Table 3.25 Admin questionnaire page UI Components:

No.	UI Component	Name	Description
1	Text Field	Factor	Allows admin to input the factor to search.
2	Button	Search	Allows admin to click to search for a question.
3	Button	Edit Question	Directs to the edit question page.
4	Table Column	No.	Shows the question numbers.

5	Table Column	Factor	Shows the factors of each questions.
6	Table Column	Question	Shows the questions.

Figure 3.25 shows the edit question page of the admin interface. This page allows admin to edit a question of the test questionnaire.

The screenshot shows a dark-themed administrative interface. On the left is a sidebar with a logo and navigation links: Dashboard, Users, Students, Records, Questionnaire, Feedback, and Logout. The main area has a light background and is titled "UPDATE QUESTIONNAIRE". It contains a form with the following elements:

- A dropdown menu labeled "Select Question Number" with the value "Question 1.1".
- A field labeled "Question #:" with the value "Question 1.1".
- A field labeled "Factor:" with the value "Decision-Making and Interest".
- A text input field labeled "Question:" containing the text "I consider my desire of doing things".
- A green button labeled "Update Question".

**Figure 3.25 Admin Edit Question Page**

Table 3.26 contains further information on the UI components shown on the admin's edit question page.

Table 3.26 Admin edit question page UI Components:

No.	UI Component	Name	Description
1	Select and Option	Question No.	Allows admin to select a certain question by its question no.

2	Text Field	Question	Allows admin to edit the question.
3	Button	Update Question	Directs to the questionnaire page to show the edited question.

Figure 3.26 shows the feedback page of the admin interface. This page contains the list of the feedbacks that the students have made.

The screenshot displays the 'List of Feedbacks' section of the admin interface. On the left, there is a vertical sidebar with a logo at the top and a list of navigation items: Dashboard, Users, Students, Records, Questionnaire, Feedback, and Logout. The main area has a title 'List of Feedbacks' with a search bar labeled 'Search by Username' and a green 'Search' button. Below this is a table with the following data:

Student's Name	Student's Username	Feedback/Message	Action
Hosna Godoy	hosnagodoy29	Its good	<span style="color: red;">Delete</span>
Hosna Godoy	hosnagodoy29	This is good!!!	<span style="color: red;">Delete</span>
Hosna Godoy	hosnagodoy29	This website is very helpful.	<span style="color: red;">Delete</span>

**Figure 3.26 Admin Feedback Page**

Table 3.27 contains further information on the UI components shown on the admin's feedback page.

Table 3.27 Admin feedback page UI Components:

No.	UI Component	Name	Description
1	Text Field	Student's Username	Allows admin to enter a student's

			username to search.
2	Button	Search	Allows admin to click in order to search.
3	Table Column	Student's Name	Shows the names of the students who writes feedback.
4	Table Column	Student's Username	Shows the usernames of the student who writes feedback.
5	Table Column	Feedback	Shows the feedbacks of the students about the system.
6	Table Column	Action	Shows the action that the admin can do.
7	Button	Delete	Allows admin to delete a certain feedback.

## CHAPTER IV

### RESULTS AND DISCUSSIONS

This section of the paper highlighted the completion of every objective that led to the successful development of the web-based system.

#### 4.1 Creation of the Predictive Model

Table 4.1 Coefficients of the Model

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t-value	p-value
	B	Std. Error			
Age (A)	0.112	0.049	0.931	2.295	0.023
Gender (G)	0.214	0.169	0.120	1.266	0.207
Marital Status (MS)	0.343	1.057	0.126	0.325	0.746
Math (M)	0.026	0.038	0.815	0.678	0.499
Science (S)	0.013	0.035	0.407	0.370	0.712
English (E)	-0.035	0.036	-1.099	-0.975	0.331
Decision-Making and Interest (DMI)	0.070	0.195	0.098	0.358	0.721
Peer Influence (PI)	-0.180	0.149	-0.226	-1.208	0.228
Consideration about the Institution (CI)	-0.038	0.198	-0.58	-0.191	0.849
Future Job Opportunities (FJP)	-0.127	0.208	-0.199	-0.608	0.544
Model Summary: R = 0.960, R square = 0.840, F value = 99.641, p = 0.000					

Shown in Table 4.1 is the coefficient of the model. This result showed the list of variables that significantly predict the student's course. The variables are age (A), gender (G), marital status (MS), math (M), science (S), English (E), decision-making and interest

(DMI), peer influence (PI), consideration about the institution (CI), and future job opportunities (FJP). With these variables, the model is now:

$$\text{Couse} = 0.112A + 0.214G + 0.343MS + 0.026M + 0.013S + 0.035E + 0.070DMI - \\ 0.180PI - 0.038CI - 0.127FJP$$

The model for socio-demographic data suggested that upon the input of age, there will be an increase of 0.112. Upon the input of gender in which the male is equivalent to 1, and the female is equivalent to 2, there will be an increase of 0.214. Lastly, upon the input of marital status in which the single is equivalent to 1 and married is equivalent to 2, there will be an increase of 0.343.

The model for the high school grades suggested that upon the input of the math grade, there will be an increase of 0.026. Upon the input of the science grade, there will be an increase of 0.013. Lastly, upon the input of the English grade, there will be an increase of 0.035.

The model for the factors from the Questionnaire suggested that for every rating increase of the decision-making and interest, there will be an increase of 0.070. For every rating increase of the peer influence, there will be a decrease of 0.180. For every rating increase of the consideration about the institution, there will be a decrease of 0.038. There will be a decrease of 0.127 for every rating increase of future job opportunities.

By adding these 3 groups of variables, the model predicted a possible course for the student. If the total calculation is equal to 1, then they are most likely to BSCE, 2 is equal to BSIT, 3 is equal to BITM, and 4 is equal to BSMATH.

The model summary stated that the correlation coefficient, denoted by R, has a value of 0. 960, in which a correlation of R = 0.9 suggests a strong, positive association (Wayne W. LaMorte, 2021). Meanwhile, the model's R-square score is 0.840, which indicates that its variable generates 84% of the variance in the predicted course.

## 4.2 Design and Development of the System

### 4.2.1 Provide Test Questionnaire for the student to answer

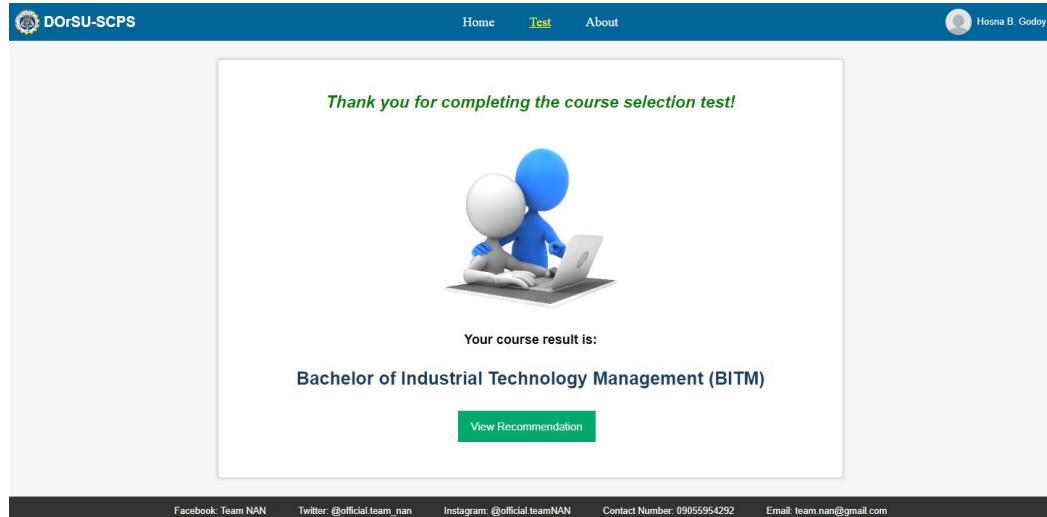
The screenshot shows a web-based questionnaire titled "COURSE SELECTION TEST QUESTIONNAIRE". At the top, there's a navigation bar with links for "Home", "Test" (which is highlighted in yellow), and "About". On the right side of the header, there's a user profile picture and the name "Hosna B. Godoy". The main content area has a dark blue header bar with the title. Below it, a section titled "Decision-Making and Interest:" contains five questions, each with a dropdown menu for selecting a response from 1 to 5. The questions are:

- I consider my desire of doing things.
- I look my ability such as knowledge and skills.
- I choose a course based on what I feel about it.
- I decide based on my preferences for instance, family background.
- I prefer things to do what I like the most.

**Figure 4.1 Student Course Selection Test Questionnaire Page**

The Questionnaire is shown in Figure 4.1 and may be accessed in the user interface of the answer test page. It allows the user to take the test, and the system will provide results based on this test questionnaire.

#### 4.2.2 Displays the recommended course for the student



**Figure 4.2 Student Result Page**

The predicted course, shown in 4.2, can be found in the user interface of the result page. From the figure above, the web-based application calculated the user's predicted course and projected it immediately, along with its interpretation, after the user completed the test.

#### 4.2.3 Provide Suggestions based on the given result which comes from the questionnaire



**Figure 4.3 Student Recommendation Page**

The suggestions or recommendations based on the produced course result are shown in Figure 4.3. Following the completion of the test, the web-based program displays a recommendation directly below the user's predicted course, which comes from the Questionnaire.

#### 4.3 Implementation Plan

In completing the final objective, the proponents produced an implementation plan (seen in Table 4.2) for deploying the DOrSU Student Course Prediction System.

**Table 4.2 Implementation Plan of DOrSU-SCPS**

STRATEGY	ACTIVITIES	PERSONS INVOLVED	DURATION
<b>Approval from the selected user</b>	Letter for the selected users.	Proponents, Users	1 day
<b>URL dissemination</b>	Dissemination the link of the website.	Proponents, Users	1 hour

<b>Information Dissemination</b>	Private Messaging and Meeting along with the users.	Proponents, Users	3 days
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In order to execute the web-based application, the proponents will obtain approval from the selected user via a formal letter, which will take them one day to distribute. Following the approval from the selected users, URL distribution will occur via various messaging apps. It will take those 1 hour to distribute the URL to the specified persons. This will allow them to access the web-based application. Following the distribution of the URL, information about the web-based application will be disseminated by private message and a three-day meeting with users. Concerning the individuals involved, all of these tactics solely include the proponents and users.

#### **4.4 Testing/Implementation Results**

The user testing phase included 20 responders from Davao Oriental State University's incoming first-year students. Following testing, they evaluated the web-based system using the approved survey and a Five-Point Rating Scale. The summary of the conducted survey (of 20 respondents) in terms of the question provided is shown in Table 4.3 below.

Table 4.3 Evaluation Result of DOrSU-SCPS

<b>Indicators</b>	<b>Respondents</b>	<b>Weighted Mean</b>	<b>Descriptive Equivalent</b>	<b>Descriptive Level</b>
Functional Suitability	20	4.33	Strongly Agree	Very High
Performance Efficiency	20	4.35	Strongly Agree	Very High
Compatibility	20	4.43	Strongly Agree	Very High
Usability	20	4.37	Strongly Agree	Very High

Reliability	20	4.48	Strongly Agree	Very High
Security	20	4.38	Strongly Agree	Very High
Maintainability	20	4.45	Strongly Agree	Very High
Portability	20	4.38	Strongly Agree	Very High

The first indicator, functional suitability, had a score of 4.33 on average. According to the findings, respondents highly believe that the "Web-based Student Course Prediction System of DorSU" is functional. The second indicator, performance efficiency, received an average of 4.35. According to the findings, respondents believe that the "Web-based Student Course Prediction System" is beneficial. The third indicator has a mean value of 4.43, indicating strong compatibility. This indicates that the "Web-based Student Course Prediction System of DorSU" is well-integrated. Usability, the fourth indicator, received an average score of 4.37. According to the findings, respondents believe that a "Web-based Student Course Prediction System of DorSU" is usable. The fifth indicator, reliability, received an average score of 4.48. According to the findings, respondents believe that the "Web-based Student Course Prediction System of DorSU" is credible. The sixth indicator, security, received an average of 4.38. According to the findings, respondents highly believe that a "Web-based Student Course Prediction System of DorSU" is secure. The average score for the seventh indicator, maintainability, was 4.45. According to the findings, respondents highly believe that the "Web-based Student Course Prediction System of DorSU" is sustainable. The final indicator, portability, had an average score of 4.38. According to the findings, respondents strongly believe that the "Web-based Student Course Prediction System of DorSU" is portable.

## **CHAPTER V**

### **SUMMARY, CONCLUSION, AND RECOMMENDATION**

#### **5.1 Summary**

The first objective of this study, which is creating the predictive model, was completed. There are three different types of indicators or variables that were made, the socio-demographic data (age, gender, and marital status), the student's high school grades (math, science, and English), and the factors from the Questionnaire (Decision-making and Interest, Peer Influence, Consideration about the Institution, and the Future Job Opportunities). These three types of indicators significantly predicted the course of the student. The model is now:

$$\text{Couse} = 0.112A + 0.214G + 0.343MS + 0.026M + 0.013S + 0.035E + 0.070DMI - \\ 0.180PI - 0.038CI - 0.127FJP$$

With an R-square of 0.840, 84% of the model's indicators or variables explain 84% of the variance in the student's anticipated course. 16% of the course variance was not captured in this study.

Meanwhile, the second objective of this study was completed when the web-based system was capable of providing test questionnaires for the students to answer. Upon providing a standardized questionnaire, the researchers surveyed the current students in Davao Oriental State University from each course that the system will only predict. With this survey, the system could predict courses with the help of the predictive model.

The third objective of this study was accomplished as the web-based system could provide recommended courses upon taking the test by the Questionnaire. With the help of the predictive model that was accomplished first, the DOrSU-SCPS are now capable to

display predicted courses for the student who took the test with its recommendation or suggestions.

The fourth and last objective of this study was accomplished as the web-based system could provide recommendations and suggestions based on the predicted course, which comes from the provided questionnaire. These recommendations were based on the rating of each factor from the Questionnaire.

## 5.2 Conclusion

The researchers had accomplished the development of the Web-based Student Course Prediction System of DOrSU by successfully completing the system's objectives. Upon having a survey from the selected current enrolled students of Davao Oriental State University, the predictive model was created by 3 different indicators or variables; the socio-demographic data, the high school grades (Mathematics, Science, and English), and the factors from the standardized Questionnaire (Decision-making and Interest, Peer Influence, Consideration about the Institution, and the Future Job Opportunities). With this predictive model, the system can provide a course result for the students who take the test. By having four different factors from the standardized Questionnaire, the system can also provide recommendations based on each factor's rating.

The accomplishment of each objective of this study has made the web-based system functional and helpful for the incoming first-year students of Davao Oriental State University. By answering the provided test questionnaire, entering their high school grades, and socio-demographic data, the system can predict the students' possible course. This web-based system is exclusively made for the incoming first-year students of DOrSU.

### **5.3 Recommendation**

Although the DOrSU Student Course Prediction System performed and functioned effectively, the web-based system is yet to be at its full potential. As a result, the proponents strongly advised the following:

- Improve the predictive model by adding variables that could be significant; in which for the socio-demographic data variables, add the family's income, address, and other data that can be used for prediction.
- Improve and enhance the Graphical User Interface (GUI) for both user (student) and admin interface.
- Add more recommendations for each overall rating of the factors from the Questionnaire.
- Upgrade to a premium web hosting to increase site security, performance, and traffic handling capacity.

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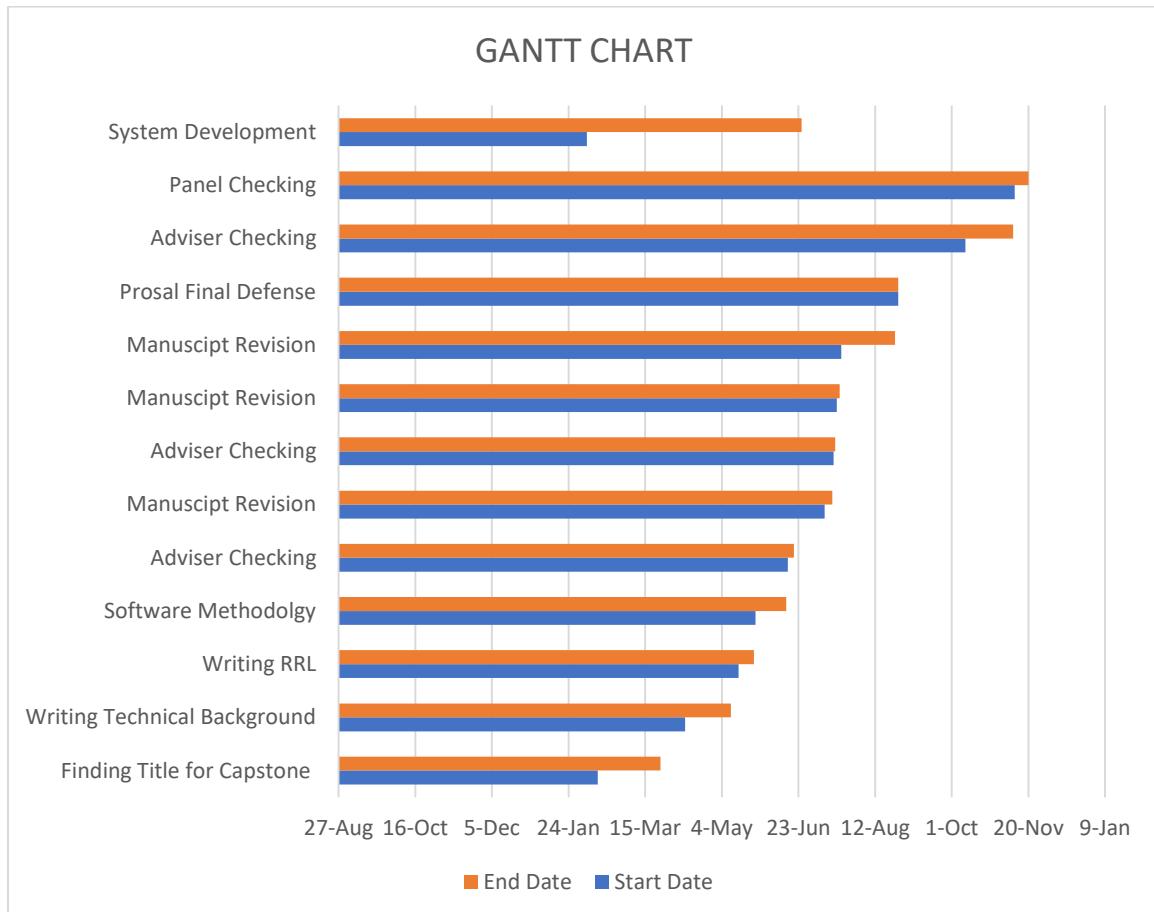
# **Appendices**

# **Appendix A**

# **Gantt Chart**

## Appendix A

### Gantt Chart



## **Appendix B**

## **Standardized Questionnaire**

## Appendix B

### Standardized Questionnaire

**FACTORS INFLUENCING ON STUDENTS' CHOSEN COURSES OF GRADE 12**  
**STUDENTS JAGOBIAO NATIONAL HIGH SCHOOL SENIOR – SENIOR HIGH**  
**SCHOOL DEPARTMENT**

Direction: Please answer the following items with honesty. The information that will be gathered by the researchers will be serve as confidential.

<b>Decision-Making and Interest</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
1. I consider my desire of doing things					
2. I look my ability such as knowledge and skills.					
3. I choose a course based on what I feel about it.					
4. I decide based on my preferences for instance, family background.					
5. I prefer things to do what I like the most.					
6. I expect my potential in looking for a job.					
7. I am focused based on my interest.					
8. It is my passion that helps me to pursue the course or career to take.					
9. I rely on my abilities.					
10. I depend based on self-testing.					

<b>Peer Influence</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
1. My peers inspire me to choose what I like to take.					
2. My peers encourage me to do things to achieve my goals.					
3. My peers' advice to learn more about what I like to choose to do.					
4. My peers' informal talk leads me of what I should plan to choose.					
5. I prefer to my peer group in selecting a course.					

<b>Considerations about the Institution</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
1. I consider on a distance of travel from the house to school and home.					
2. I believe the stories of my acquaintances about the school.					
3. I learn the affordable tuition of the university in college institution.					
4. I rely on a scholarship grants.					

<b>Future Job Opportunities</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
1. I find the course I choose convenient in looking for a job in the future.					
2. I can expect for the good salary.					
3. I prefer for the stability status for the job.					
4. I favor the tenureship of the job.					
5. I expect the availability of the job that suits me.					

# **Appendix C**

# **Advisory Agreement**

**ADVISORY AGREEMENT**

## **Appendix D**

## **Certificates**

**ENGLISH CRITIC**

**STATISTICIAN**

## **Appendix E**

# **User Testing/Evaluation Sheet (Blank)**

## **USER TESTING LETTER**

Capstone Project and Research Title: "**Web-based Student Course Prediction System of DOrSU"**

Dear Students,

We would like to express our sincere gratitude for your participation in the user testing of the "Web-based Student Course Prediction System of DOrSU." Your feedback and evaluation of the system are immensely valuable to us as we strive to enhance its functionality and user experience.

Please carefully review the system and use the provided evaluation sheet to rate each aspect on a scale of 1 to 5, where 1 represents "Strongly Disagree" and 5 represents "Strongly Agree." Additionally, please provide any additional comments or suggestions for improvement in the designated section.

Your feedback is highly appreciated, and it will assist us in identifying areas that require enhancement and optimizing the system's performance. If you encounter any difficulties or have questions during the evaluation process, please feel free to reach out to us for assistance.

We look forward to receiving your feedback and working towards making the "Web-based Student Course Prediction System of DOrSU" even better.

Best regards,

The Researchers

Doreen Geline M. Diampon

Hosna B. Godoy

Ryan S. Siaboc

Name (Optional): \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_

Address: \_\_\_\_\_

Instructions: Please evaluate the following aspects of the "Web-based Student Course Prediction System of DOrSU" by assigning a rating from 1 to 5 for each criterion. Feel free to provide additional comments or suggestions in the space provided.

1	Strongly Disagree	The aspect being evaluated falls significantly short of expectations, is highly ineffective, or has major flaws that severely hinder its usability or performance.
2	Disagree	The aspect being evaluated has some shortcomings or issues that negatively impact its effectiveness, usability, or performance, but it is still somewhat usable or functional.
3	Neutral	The aspect being evaluated neither impresses nor disappoints. It is average in terms of effectiveness, usability, or performance, and does not significantly stand out in any way.
4	Agree	The aspect being evaluated meets expectations and performs well. It is effective, usable, and demonstrates satisfactory performance, but there may be minor areas for improvement.
5	Strongly Agree	The aspect being evaluated exceeds expectations and excels in terms of effectiveness, usability, or performance. It is highly efficient, user-friendly, and performs exceptionally well.

FUNCTIONAL SUITABILITY	1	2	3	4	5
The system accurately predicts the most suitable course for the student.					
The course recommendations provided by the system align with the student's interests and preferences.					
The system takes into account the gender, age, and marital status of the student for course prediction.					
The system appropriately considers high school grades (mathematics, science, English) in predicting courses.					

PERFORMANCE EFFICIENCY	1	2	3	4	5
The system loads quickly and efficiently.					

The system responds promptly to user actions and queries.					
---	--	--	--	--	--

<b>COMPATIBILITY</b>	1	2	3	4	5
The system functions well across different web browsers.					
The system is compatible with various devices and screen sizes.					

<b>USABILITY</b>	1	2	3	4	5
The system has a user-friendly interface.					
Navigation through different sections of the system is smooth and intuitive.					
The layout and design of the system are visually appealing.					

<b>RELIABILITY</b>	1	2	3	4	5
The system consistently provides accurate course predictions.					
The system operates without unexpected crashes or errors.					

<b>SECURITY</b>	1	2	3	4	5
The system ensures the privacy and confidentiality of user data.					
The system has appropriate security measures in place to protect against unauthorized access.					
The system handles user data in compliance with relevant data protection regulations.					

<b>MAINTAINABILITY</b>	1	2	3	4	5
Users can easily modify, such as updating text or images.					
Users can easily manage their accounts, including updating personal information and preferences.					

<b>PORATABILITY</b>	1	2	3	4	5
The system can be easily deployed on different web servers.					
The system can be accessed from various locations and networks.					

<b>COMMENTS/SUGGESTIONS</b>

# **Appendix F**

# **Evaluation Result**

<b>FUNCTIONAL SUITABILITY</b>	<b>Mean</b>	<b>Descriptive Equivalent</b>	<b>Descriptive Level</b>
The system accurately predicts the most suitable course for the student.	4.15	Agree	High
The course recommendations provided by the system align with the student's interests and preferences.	4.15	Agree	High
The system takes into account the gender, age, and marital status of the student for course prediction.	4.45	Strongly Agree	Very High
The system appropriately considers high school grades (mathematics, science, English) in predicting courses.	4.55	Strongly Agree	Very High
<b>Overall</b>	<b>4.33</b>	<b>Strongly Agree</b>	<b>Very High</b>

<b>PERFORMANCE EFFICIENCY</b>	<b>Mean</b>	<b>Descriptive Equivalent</b>	<b>Descriptive Level</b>
The system loads quickly and efficiently.	4.35	Strongly Agree	Very High
The system responds promptly to user actions and queries.	4.35	Strongly Agree	Very High
<b>Overall</b>	<b>4.35</b>	<b>Strongly Agree</b>	<b>Very High</b>

<b>COMPATIBILITY</b>	<b>Mean</b>	<b>Descriptive Equivalent</b>	<b>Descriptive Level</b>
The system functions well across different web browsers.	4.15	Agree	High
The system is compatible with various devices and screen sizes.	4.70	Strongly Agree	Very High
<b>Overall</b>	<b>4.43</b>	<b>Strongly Agree</b>	<b>Very High</b>

<b>USABILITY</b>	<b>Mean</b>	<b>Descriptive Equivalent</b>	<b>Descriptive Level</b>
The system has a user-friendly interface.	4.35	Strongly Agree	Very High
Navigation through different sections of the system is smooth and intuitive.	4.10	Agree	High
The layout and design of the system are visually appealing.	4.65	Strongly Agree	Very High
<b>Overall</b>	<b>4.37</b>	<b>Strongly Agree</b>	<b>Very High</b>

<b>RELIABILITY</b>	<b>Mean</b>	<b>Descriptive Equivalent</b>	<b>Descriptive Level</b>
The system consistently provides accurate course predictions.	4.30	Strongly Agree	Very High
The system operates without unexpected crashes or errors.	4.65	Strongly Agree	Very High
<b>Overall</b>	<b>4.48</b>	<b>Strongly Agree</b>	<b>Very High</b>

<b>SECURITY</b>	<b>Mean</b>	<b>Descriptive Equivalent</b>	<b>Descriptive Level</b>
The system ensures the privacy and confidentiality of user data.	4.40	Strongly Agree	Very High
The system has appropriate security measures in place to protect against unauthorized access.	4.30	Strongly Agree	Very High
The system handles user data in compliance with relevant data protection regulations.	4.45	Strongly Agree	Very High
<b>Overall</b>	<b>4.38</b>	<b>Strongly Agree</b>	<b>Very High</b>

<b>MAINTAINABILITY</b>	<b>Mean</b>	<b>Descriptive Equivalent</b>	<b>Descriptive Level</b>
Users can easily modify, such as updating text or images.	4.45	Strongly Agree	Very High
Users can easily manage their accounts, including updating personal information and preferences.	4.45	Strongly Agree	Very High
<b>Overall</b>	<b>4.45</b>	<b>Strongly Agree</b>	<b>Very High</b>

<b>PORTABILITY</b>	<b>Mean</b>	<b>Descriptive Equivalent</b>	<b>Descriptive Level</b>
The system can be easily deployed on different web servers.	4.30	Strongly Agree	Very High
The system can be accessed from various locations and networks.	4.45	Strongly Agree	Very High
<b>Overall</b>	<b>4.38</b>	<b>Strongly Agree</b>	<b>Very High</b>

# **Appendix G**

# **User Manual**

## **Appendix G**

### **User Manual**

#### **Developers:**

Doreen Geline M. Diampon, Hosna B. Godoy, & Ryan S. Siaboc

#### **Website Student's View**

These are following steps in accessing the DOrSU Student Course Prediction System:

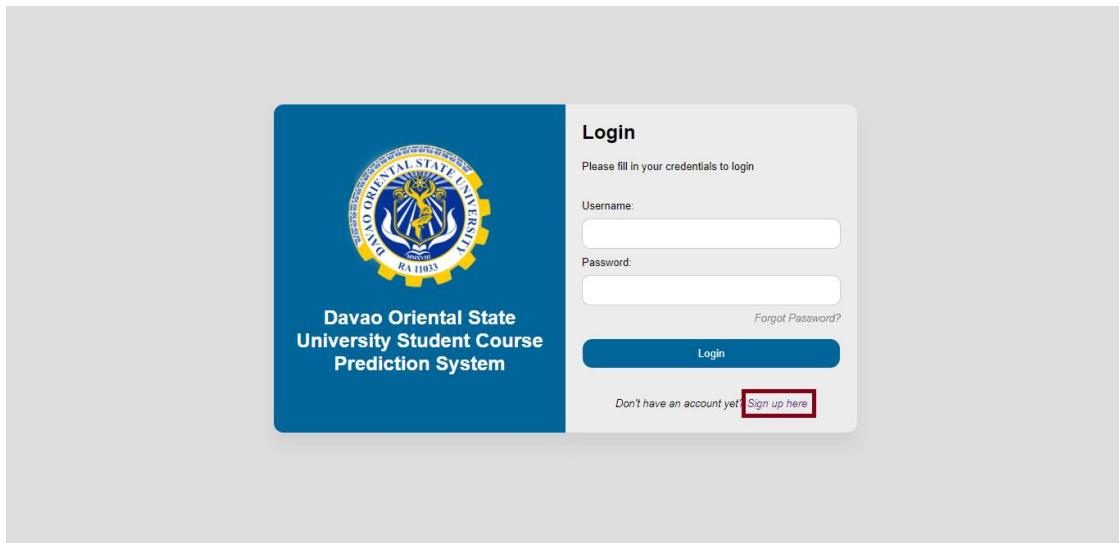
**Step 1:** Open any browser in your PC, laptop, or mobile phone. Make sure you have a stable internet connection to access the website.

**Step 2:** Type the link and click enter.

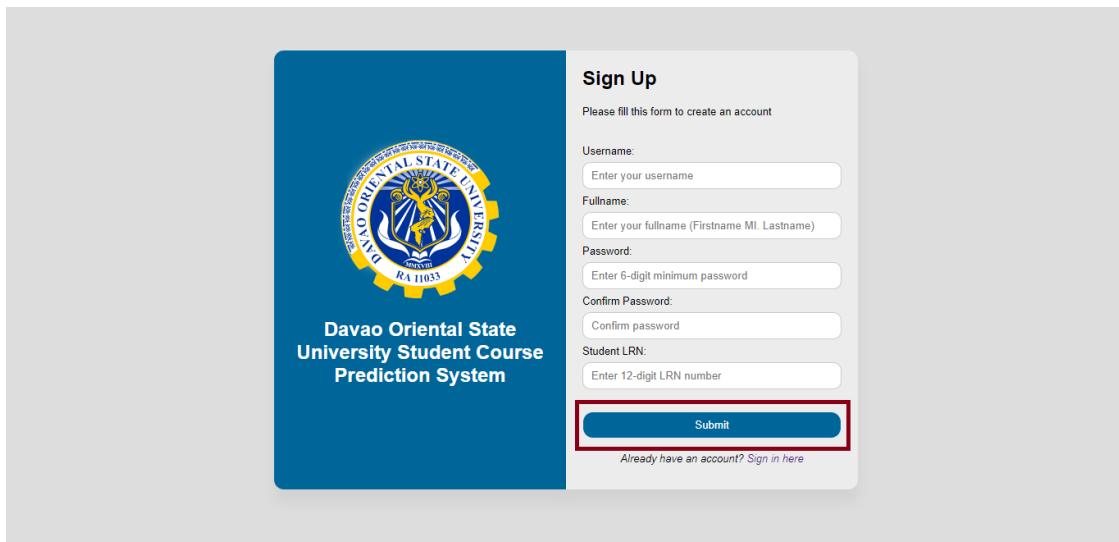
**Step 3:** After a few loading, the browser will display the login page of DOrSU – SCPS student's interface view.

**How to create an account in the system:**

Step 1: After launching the website, click the “Sign up here” from the Login page.

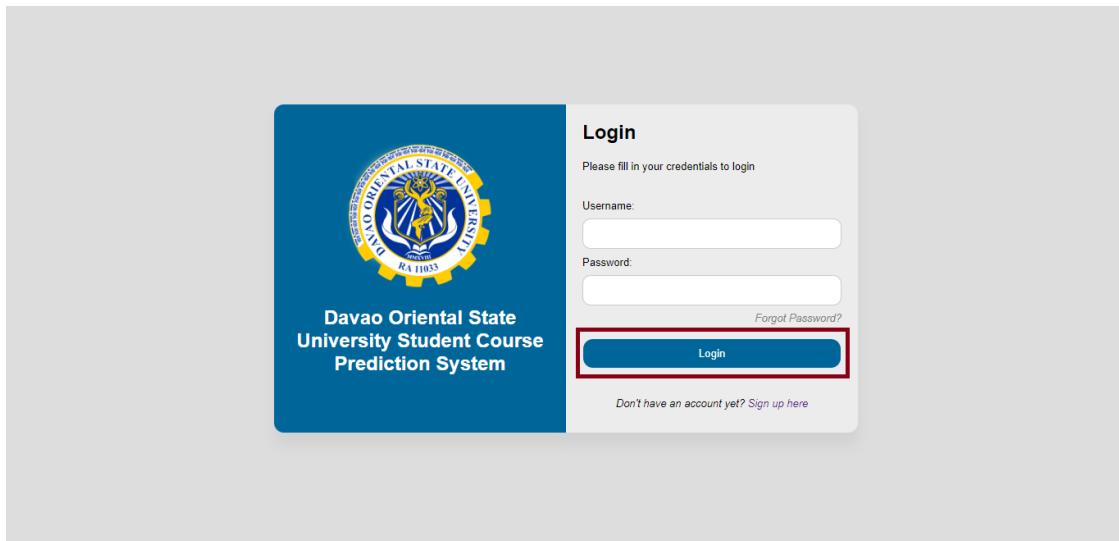


Step 2: Filled-up the form, then tap the “Submit” button.



## How to login in the system:

Step 1: After launching the website, filled-up the form, then click the “Login” button.



Step 2: After clicking the “Login” button, the home page will appear.

**Welcome to DOrSU-SCPS**

**Maximize Your Potential with DOrSU-SCPS Course Recommendations**

Davao Oriental State University - Student Course Prediction System, short as DOrSU-SCPS is a web-based system that will predict the possible course of the students by answering the provided test questionnaire, entering their high school or senior high school grades, and their State University Aptitude and Scholarship Test (SUAST) result. The courses that this system will predict are the ones that are available in Davao Oriental State University (DOrSU). This serves as a guide, especially for the undecided incoming college students, on choosing the course that fits them.

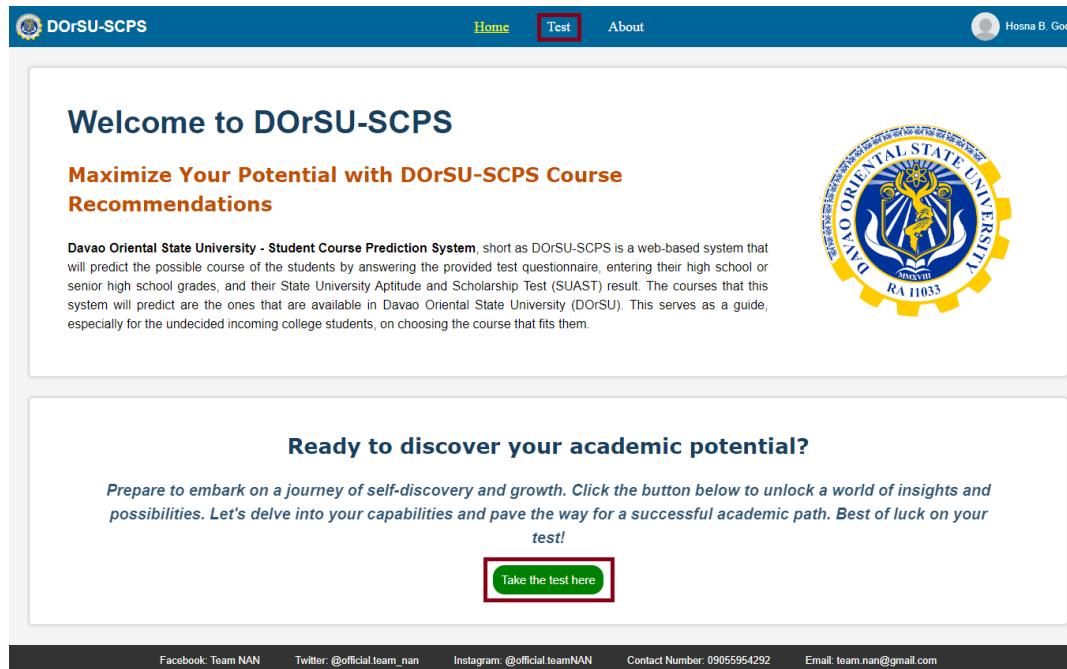
**Ready to discover your academic potential?**

Prepare to embark on a journey of self-discovery and growth. Click the button below to unlock a world of insights and possibilities. Let's delve into your capabilities and pave the way for a successful academic path. Best of luck on your test!

[Take the test here](#)

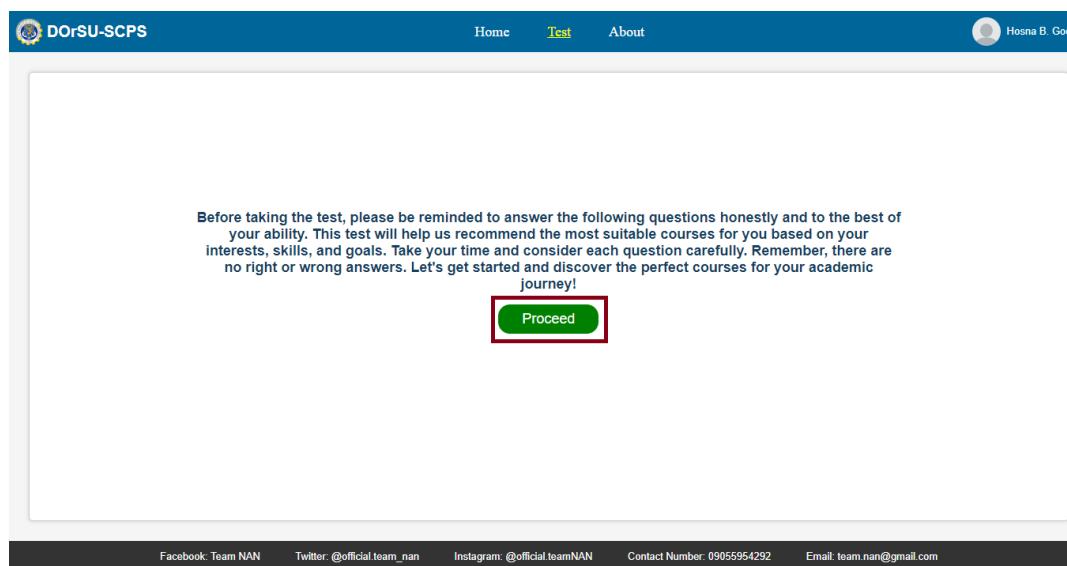
## How to take a test:

Step 1: Click the “Test” from the menu, or click the “Take the test here” button from the home page.



The screenshot shows the DOrSU-SCPS website. At the top, there is a navigation bar with links for Home, Test (which is highlighted with a red border), and About. On the right side of the header, there is a user profile placeholder and the name "Hosna B. God". The main content area features a large blue banner with the text "Welcome to DOrSU-SCPS" and "Maximize Your Potential with DOrSU-SCPS Course Recommendations". Below this, there is a detailed description of the system and its purpose. To the right of the text is the Davao Oriental State University logo. At the bottom of the main content area, there is a section titled "Ready to discover your academic potential?" with a green button labeled "Take the test here". At the very bottom of the page, there is a footer bar with social media links for Facebook, Twitter, and Instagram, along with contact information: Contact Number: 09055954292 and Email: team.nan@gmail.com.

Step 2: Click the “Proceed” button.



The screenshot shows the DOrSU-SCPS website after clicking the "Test" button. The navigation bar remains the same. The main content area now displays a message: "Before taking the test, please be reminded to answer the following questions honestly and to the best of your ability. This test will help us recommend the most suitable courses for you based on your interests, skills, and goals. Take your time and consider each question carefully. Remember, there are no right or wrong answers. Let's get started and discover the perfect courses for your academic journey!" Below this message is a green button labeled "Proceed". At the bottom of the page, there is a footer bar with social media links for Facebook, Twitter, and Instagram, along with contact information: Contact Number: 09055954292 and Email: team.nan@gmail.com.

Step 3: If the edit profile page appears instead of the test questionnaire page, fill up the needed personal and academic data, then click the “Save Changes” button.

**DOrSU-SCPS**

Home Test About

Hosna B. Godoy

Note: You are required to fill up the following personal and academic data in order to provide predictive result.

### Update Profile:

**Personal Data:**

**Profile Picture:**  
 No file chosen

**Username:**  
hosnagodoy29

**Fullname:**  
Hosna B. Godoy

**Email:**  
Ex: johndoe@gmail.com

**Gender:**  
Type 'Male' or 'Female'

**Age:**  
Enter your age

**Marital Status:**  
Enter your marital status

**Contact:**  
Ex: 09123456789

**Address:**  
Purok/Barangay/Municipality/Province

**Password:**  
Enter your current password, otherwise enter a new one

**Academic Data:**

**Mathematics:**  
Enter your grade in mathematics during high school

**Science:**  
Enter your grade in science during high school

**English:**  
Enter your grade in english during high school

**Save Changes**

Facebook: Team NAN Twitter: @official\_team\_nan Instagram: @official.teamNAN Contact Number: 09055954292 Email: team.nan@gmail.com

Step 3: Click the “Test” menu again, and click the “Proceed” button.

Before taking the test, please be reminded to answer the following questions honestly and to the best of your ability. This test will help us recommend the most suitable courses for you based on your interests, skills, and goals. Take your time and consider each question carefully. Remember, there are no right or wrong answers. Let's get started and discover the perfect courses for your academic journey!

**Proceed**

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Step 4: After clicking the “Proceed” button, the test questionnaire page will appear. Answer the following questions by rating it from 1 to 5, then click the “Submit” button.

**COURSE SELECTION TEST QUESTIONNAIRE**

**Decision-Making and Interest:**

I consider my desire of doing things.  
1 - Strongly Disagree ▾

I look my ability such as knowledge and skills.  
1 - Strongly Disagree ▾

I choose a course based on what I feel about it.  
1 - Strongly Disagree ▾

I decide based on my preferences for instance, family background.

I can expect for the good salary.

I prefer for the stability status for the job.

I favor the tenureship of the job.

I expect the availability of the job that suits me.

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Step 5: After answering all of the questions, the result page will appear. Click the “View Recommendation” button to see the recommendations based on the results from the questionnaire.

DOrSU-SCPS   Home   Test   About   Hosna B. Godde

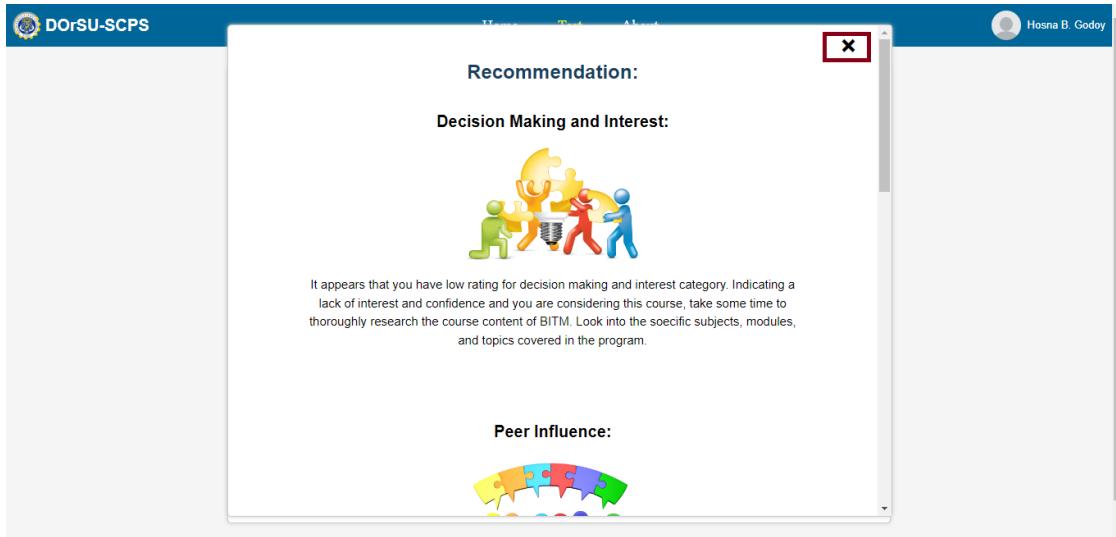
*Thank you for completing the course selection test!*



Your course result is:  
**Bachelor of Industrial Technology Management (BITM)**

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Step 6: After clicking the “View Recommendation” button, the recommendation section will appear. Click the ‘close’ icon to close the recommendation section.



## How to view result history:

Step 1: Click the profile from the upper right corner. Then, click the “View Profile”.

Welcome to DOrSU-SCPS

**Maximize Your Potential with DOrSU-SCPS Course Recommendations**

Davao Oriental State University - Student Course Prediction System, short as DOrSU-SCPS is a web-based system that will predict the possible course of the students by answering the provided test questionnaire, entering their high school or senior high school grades, and their State University Aptitude and Scholarship Test (SUAST) result. The courses that this system will predict are the ones that are available in Davao Oriental State University (DOlSU). This serves as a guide, especially for the undecided incoming college students, on choosing the course that fits them.

**Ready to discover your academic potential?**

Prepare to embark on a journey of self-discovery and growth. Click the button below to unlock a world of insights and possibilities. Let's delve into your capabilities and pave the way for a successful academic path. Best of luck on

Step 2: After clicking the “View Profile”, the profile page will appear. Scroll down to see the result history. Click the “Delete” button if you want to delete a certain result.

Date	Result Course	Category 1	Category 2	Category 3	Category 4	Action
2023-07-09 19:35:32	Bachelor of Industrial Technology Management (BITM)	It appears that you have low rating for decision making and interest category. Indicating a lack of interest and confidence and you are considering this course, take some time to thoroughly research the course content of BITM. Look into the specific subjects, modules, and topics covered in the program.	It appears that you have low rating for peer influence category. Indicating a lack of peer influence and you are considering this course, take some time to reflect on your own personal motivation and interest in pursuing a career in this course. Remind yourself of your goals and aspirations, and let your own passion drive your decision rather than relying solely on peer influence.	It appears that you have low rating for consideration about the institution category. Indicating a low level of consideration about the institution and you are considering this course, it is important to conduct thorough research on the institution offering the BITM program. Connect with current students enrolled in this program as they can provide insights into their experiences.	It appears that you have low rating for future job opportunities category. Indicating a low perception of future job opportunities and you are considering this course, conduct thorough research on the career paths available to graduates of the BITM program. Explore industries and job roles where industrial technology management professionals are in demand.	<b>Delete</b>

## How to logout from the website:

Step 1: Click the profile from the upper right corner. Then, click “Logout”.

The screenshot shows the DOrSU-SCPS website. At the top right, there is a user profile icon with the name "Hosna B. Godoy". A dropdown menu is open next to it, containing three options: "View Profile", "Edit Profile", and a red-bordered "Logout" button. The main content area features a large blue banner with the text "Welcome to DOrSU-SCPS" and "Maximize Your Potential with DOrSU-SCPS Course Recommendations". Below this, a paragraph describes the system's purpose: "Davao Oriental State University - Student Course Prediction System, short as DOrSU-SCPS is a web-based system that will predict the possible course of the students by answering the provided test questionnaire, entering their high school or senior high school grades, and their State University Aptitude and Scholarship Test (SUAST) result. The courses that this system will predict are the ones that are available in Davao Oriental State University (DOOrSU). This serves as a guide, especially for the undecided incoming college students, on choosing the course that fits them." To the right of the banner is the Davao Oriental State University logo. In the center of the page, there is a call-to-action section with the heading "Ready to discover your academic potential?" and a descriptive text: "Prepare to embark on a journey of self-discovery and growth. Click the button below to unlock a world of insights and possibilities. Let's delve into your capabilities and pave the way for a successful academic path. Best of luck on".

Step 2: After clicking the “Logout” menu, the user will signed out from the website, and the login page will appear.

The screenshot shows the login page of the DOrSU-SCPS website. On the left, there is a dark blue sidebar featuring the university's logo at the top and the text "Davao Oriental State University Student Course Prediction System" in white. On the right, there is a light gray login form. The form has a header "Login" and a sub-instruction "Please fill in your credentials to login". It contains two input fields: "Username:" and "Password:", both with placeholder text. Below the password field is a "Forgot Password?" link. At the bottom of the form is a blue "Login" button. Underneath the button, there is a link "Don't have an account yet? Sign up here".

# **Appendix H**

## **Grammarly Report**



# Web-based Student Course Prediction System

by DORSU BSIT

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## General metrics

43,394	6,185	491	24 min 44 sec	47 min 34 sec
characters	words	sentences	reading time	speaking time

---

## Score



96

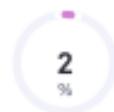
## Writing Issues

148	33	115
Issues left	Critical	Advanced

This text scores better than 96%  
of all texts checked by Grammarly

---

## Plagiarism



2  
%

7

sources

2% of your text matches 7 sources on the web  
or in archives of academic publications

---

## Writing Issues

### 17 Delivery

- 2 Incomplete sentences
- 7 Inappropriate colloquialisms
- 1 Tone suggestions
- 7 Potentially sensitive language

### 56 Correctness

- 5 Incorrect citation format
- 5 Text inconsistencies
- 4 Incorrect noun number
- 4 Misspelled words
- 3 Misplaced words or phrases
- 1 Misuse of semicolons, quotation marks, etc.
- 10 Wrong or missing prepositions
- 9 Determiner use (a/an/the/this, etc.)
- 2 Faulty tense sequence
- 1 Punctuation in compound/complex sentences
- 9 Improper formatting
- 1 Incorrect verb forms
- 1 Conjunction use
- 1 Unknown words

### 69 Clarity

- 3 Outdated language
- 48 Wordy sentences
- 12 Unclear sentences



Report: Web-based Student Course Prediction System

1	Ineffective or missing emphasis	
4	Intricate text	
1	Hard-to-read text	
<b>6</b>		<b>Engagement</b>
6	Word choice	

**Unique Words****19%**

Measures vocabulary diversity by calculating the percentage of words used only once in your document

unique words

**Rare Words****40%**

Measures depth of vocabulary by identifying words that are not among the 5,000 most common English words.

rare words

**Word Length****5.3**

Measures average word length

characters per word

**Sentence Length****12.6**

Measures average sentence length

words per sentence

# **Appendix I**

## **Communication Letter**





# **Curriculum Vitae**



**DIAMPON DOREEN GELINE M.**

Purok Nasa, Barangay Limot, Tarragona, Davao Oriental

**Cell Phone #:** 09060392188

**Email Address:** [edalmesin@gmail.com](mailto:edalmesin@gmail.com)

#### *PERSONAL INFORMATION*

---

**Date of birth:** November 28, 2001

**Age:** 21

**Mother:** Delebeth M. Diampon

**Father:** Eugenio M. Diampon

**Religion:** Catholic **Civil Status:** Single

**Place of Birth:** Mati City Davao Oriental

**Gender:** Female

#### *EDUCATIONAL ATTAINMENT*

---

**School:** Davao Oriental State University

**Year:** Undergraduate

**Degree:** Bachelor of Science Information Technology

**Address:** Guang-guang, Dahican, Mati City Davao Oriental

**School Year:** 2022-2023

#### **Secondary Education:**

**School:** Matiao National High School

**Address:** Matiao Archie heights City of Mati Davao Oriental

**Elementary School:**

School: Limot Elementary School

Address: Limot, Tarragona Davao Oriental

I hereby certify that the information is true and correct.

Doreen Geline M. Diampon



**GODOY, HOSNA B.**

Purok Paghiusa, Brgy. Bobon, City of Mati, Davao Oriental

**Cell Phone #:** 09055954292

**Email Address:** [godoysosna29@gmail.com](mailto:godoysosna29@gmail.com)

#### **PERSONAL INFORMATION**

---

**Date of Birth:** January 29, 2001

**Age:** 22

**Mother:** Mahlyn B. Godoy

**Father:** Judito N. Godoy

**Religion:** ISLAM

**Civil Status:** Single

**Place of Birth:** City of Mati, Davao Oriental

**Gender:** Female

#### **EDUCATIONAL ATTAINMENT**

---

**School:** Davao Oriental State University

**Year:** Undergraduate

**Degree:** Bachelor of Science in Information Technology

**Address:** Guang-guang, Dahican, City of Mati, Davao Oriental

**School Year:** 2022-2023

**Secondary Education:**

**School:** Davao Oriental State College of Science and Technology - SHS

**Address:** Guang-guang, Dahican, City of Mati, Davao Oriental

**School Year:** 2018-2019

**Elementary Education:**

**School:** Bobon Elementary School

**Address:** Brgy. Bobon, City of Mati, Davao Oriental

**School Year:** 2012-2013

**EMPLOYMENT HISTORY**

---

**Immersion:** Human Resources Office – Davao Oriental State College of Science and Technology

February – March 2019

I hereby certify that the information is true and correct.

Hosna B. Godoy



**SIABOC, RYAN S.**

Purok 9, Tagdudo, Maputi, Banaybanay, Davao Oriental

**Cell Phone #:** 0965428084

**Email Address:** [rsiaboc77@gmail.com](mailto:rsiaboc77@gmail.com)

#### **PERSONAL INFORMATION**

---

**Date of Birth:** May 15, 2000

**Age:** 23

**Mother:** Norleah Suaran

**Father:** Ernesto Siaboc

**Religion:** ISLAM

**Civil Status:** Single

**Place of Birth:** Tagdudo, Maputi, Banaybanay, Davao Oriental

**Gender:** Male

#### **EDUCATIONAL ATTAINMENT**

---

**School:** Davao Oriental State University

**Year:** Undergraduate

**Degree:** Bachelor of Science in Information Technology

**Address:** Guang-guang, Dahican, City of Mati, Davao Oriental

**School Year:** 2022-2023

**Secondary Education:**

**School:** Pantukan National High School

**Address:** Bonifacio St. King king, Pantukan, Davao Oriental

**School Year:** 2018-2019

**Elementary Education:**

**School:** Dinagsaan Elementary School

**Address:** Dinagsaan Banaybanay Davao Oriental

**School Year:** 2012-2013

**EMPLOYMENT HISTORY**

---

**Immersion:** Municipal Agriculture Office, Pantukan, Davao De Oro

February – March 2019

I hereby certify that the information is true and correct.

Ryan Siaboc