

ABSTRACT

Development of NSTP System for the Technological University of the Philippines is a study that focuses on creating a web-based and mobile application for the NSTP Department. Users can access all features, including NSTP, enrollment for 1st and 2nd sem of NSTP, automatic computation of grades, the printing of certificates, viewing of alumni, searching of all enrolled NSTP students, uploading and downloading of course materials, setting up of school years, creating announcements, assigning of the platoon for ROTC, assigning of section for CWTS, adding of training days, updating of attendance, editing of the profile, and uploading of health certificate, As for the mobile app it includes the following features: adding/ deleting/ updating of staff account, taking of attendance via mobile app QR code scanning and viewing of all scanned students. Upon deployment, the researchers conducted tests to ensure that the web application's functionality were up to par to industry standards. The evaluation on the performance of the web application is based on its functionality, reliability, usability and efficiency. The evaluation resulted with an overall mean of 4.67 with a descriptive rating of "Outstanding". Based on the findings and evaluation results, this study can help optimize the Technological University of the Philippines - Cavite Campus' NSTP Department overall workflow.

Chapter 1

INTRODUCTION

Background of the study

The evolution of Technology nowadays increasingly has a higher impact on users worldwide. Computer Technology is a basic necessity in modern everyday life. It has made most daily activities more accessible, faster, and more accurate. It is also used for communicating or even from the other sectors that use computers with internet connectivity. People can access different websites anytime, like Facebook, that most of us or even children can access. It serves as a tool for communication across the globe. It simply makes the world smaller. Websites are intended to provide rich information and quality service. It acts as a connecting line between diverse individuals across the globe. It is mixed in many ways depending on the website's content as an internet tool.

Having a computerized system in an organization makes the tasks easy because it will help to access data in a shorter period, unlike the manual form that can duplicate errors in the part of the concerns. There is an urgent need for it since the number of members is rising, and the manual process of managing student records and schedule of events is no longer being practiced. This study aims to provide the organization and member's convenience and quality management of data that would replace the manual transaction of the registration.

The researchers encountered many problems inside the organization in a few short years.

Number one is the need for systematic processes to correctly handle the

student's data. Some causes of this is the old method of encoding data using Microsoft Excel and other Microsoft apps. The second problem is the Print form method of enrollment which could be better because there is a large population of students taking NSTP. The technique leads the working place of the NSTP to a messy environment because there are a bunch of papers containing data from the students, which will be encoded manually by the designated officers of the Unit. It can also be lost at all times, and if this ever happens, there is no other backup to restore. The next problem is the Slow making of certificates. Making certificates is done manually or one by one by typing each student's name on the provided template. Additionally, they came up with an idea to develop an application or website that would cover and solve all problems.

This project aims to change the traditionally manual process of the NSTP Organization to lessen the time and effort they use on every work they have. And also it can help the students to reduce their effort on registration and locating their information like grades, Platoons/Sections, and other Related files of their field.

Objectives of the Study

The overall goal of this project is to develop a web-based system for the Technological University of the Philippines - Cavite Campus NSTP that can keep all the student's personal information, make transactions with the organization for all NSTP students, and replace the outdated technique of handling documents inside the department.

The following are the specific objectives of this project:

1. Design a web-based system that has the following features:

- 1.1. Documentation of enrolled students in NSTP program (for SY 2022-2023 1st semester, and sampling from previous semesters);
 - 1.2. Viewing of grades by the enrolled students ;
 - 1.3. Uploading teaching materials by the teacher-in-charge;
 - 1.4. Checking of attendance via QR code scanning; and
 - 1.5. Sending of request for a certificate (subject for approval by NSTP personnel, attachment of dry seal, and affixing of signatures)
2. Enroll students to two components such as ROTC and CWTS based on their medical condition
 - 2.1. Students with medical conditions that hinders them from undergoing the physical aspects of the training will need to send a health certificates that details their medical history to be assigned to an appropriate platoon
3. Provide a platform that will fulfill an alumni or transferee's requests for certain documents
 - 3.1. Inquire about a certificate and serial number
 - 3.2. Allow for a transferee to credit their NSTP component when transferring to another school using their NSTP Serial Number
 - 3.3. This data privacy notice only applies to the Technological University of the Philippines NSTP system and explains the collection and use of information. The information we have collected shall be kept private and confidential and shall only be used for legal purposes as mandated by the Data Privacy Act and other relevant laws. Only authorized individuals will have access to this information.

D. Scope and Limitations

The traditional method of transactions served as the basis for this study's notion in the NSTP Department. This study focuses on the innovation of the conventional method of making transactions like the handwritten filling of students on the enrollment form, manual

encoding of students' data on Microsoft Excel and other Microsoft platforms, manual typing of students' names on provided certificate template during certificate issuing, handwritten student attendance on a sheet of paper and also the manual sectioning or sorting of students. The researchers sought to increase the traditional way of all transactions in the NSTP Department. This is to reduce the time of every student who manually fills out all forms needed and the NSTP staff working inside the organization. This study was intended to provide a more systematically and precise system that can give good service to the students and staff of the organization.

For the development and implementation of this study, university students can now enroll online, see their section or platoons online, and request documents online without any interruptions. The faculty and staff can work efficiently on this system. They can communicate with the students online and quickly access all the data and information of the students. Admins and coordinators can also take students' attendance by using this application that can see all student lists and take attendance by simply checking the checkbox inside the said Web Application or by using its companion mobile application's attendance tracking feature by scanning a student's QR code to verify their attendance.

The study was only limited to the school premises. The beneficiary of this study is the NSTP Department of the Technological University of the Philippines and the students of the said university who take the NSTP unit yearly. The students are required to submit a copy of their Certificate of Registration (COR) upon registration to the NSTP system as part of the validation process.

E. Significance of the Study

The study expects that this will be useful and can give a contribution to some parties, as follow:

For the ROTC officer and CWTS facilitator, they can use this Web App to reach out to students on many things, such as announcements about ROTC / CWTS meetings, uploading files of their lessons, and tracking their records such as attendance time of when the students enter and exit the premises.

Students can quickly know when and where the meeting is, so they don't have to worry about missing it. When it comes to attendance, thanks to this application, attendance is faster and easier by simply clicking the checkbox in the application.

For TUPC alumni, If they return or want to become a reservist in ROTC, they will still be able to see the necessary information regarding their NSTP records, such as their grades, course, and other data during their stay on the school campus.

Chapter 2

CONCEPTUAL FRAMEWORK

This chapter includes a review of relevant literature and studies that the researchers found the importance of using web applications to manage students' data, mobile view for students without a personal computer, and online certificate generator. It also provides the research's conceptual model and the required information for the materials or software used in developing the prototype. Lastly, the definition of terms to fully comprehend the research.

Review of Related Literature and Studies

Web Application

A web application (or web app) is software that runs on the internet browser instead of software programs that run locally and natively on the device's operating system (OS).

Web applications are delivered via the World Wide Web to users who have an active network connection.

According to Indeed Editorial Team (2020), A client-server system is a web application. program. It denotes the existence of both a client-side and a server-side. The "customer" is referred to as the program that the user uses to run the application .It is a component of the client-server environment in which multiple computers share information. In the case of a database, for example, the client is the program through which the user enters data. The server is the program that stores the data. They helped the NSTP system to provide the students with a useful application that makes their registration in the NSTP course, generating of certificates, and the record of their attendance so that the NSTP coordinator can easily record their attendance, including the time they are in and out of the field.

Mobile Application

A software program that is created to execute on a mobile device is called a mobile application., specifically for the use of an instructor or a student. Mobile applications

frequently contrast with web applications that operate in web browsers rather than directly on the mobile device and desktop programs created to run on desktop PCs.

NSTP system has a companion mobile application for instructors to track attendance using a student's QR code with a merit/demerit system for a certain training day.

Online Student Enrollment

Multiple notification methods are also included in the online enrollment system, including email and SMS. Because the business rules are stored in XML, a wider variety of devices, such as Personal Device Assistants (PDA), can access the system interface (Then, 2006). The user's device, whether a PC/laptop or one with a smaller screen, like a PDA, is detected by the interface. In short, the back-end and front-end engines of the enrolling system collaborate to produce a top-notch user experience.

This research conducts the student enrollment process from the online. Students can enroll in their topics before the start of their semesters using the NSTP system. This research allows students from outlying areas to register over the internet rather than visiting the university and also includes business regulations.

Certificate Generator

Computer software is frequently used. Several companies use computer science-based programs to carry out their daily tasks more effectively.

knowledge. There are numerous universities that are able to use certificate generation systems. To make the work easier, it is planned to automate the distribution of students' digitally verifiable mark sheets. This system generates participant certificates in a portable document format and verifies the participant information from the Access database (Bharti Chikankar, Sidhant Jaiswal, 2020).

NSTP System can generate a certificate automatically. Unlike the old way, which involved manually creating certificates and typing the student's name into the credentials. However, in this research, it used an automatic certificate generator. We can quickly generate student certificates faster than the previous way, and also, the department staff will lessen the time and effort used on creating certificates.

Mobile attendance system using QR codes Technology

Using QR code technology, Talip and Zulkifli (2018) developed the Attendance System. Due to its flexibility and quick reading compared to conventional Universal Product Code (UPC) barcodes, their study concentrated on QR code technology. Utilizing QR code technology helps speed up and automate the process of taking student attendance employing mobile technologies for the attendance process for students. Their research revealed that the usage of mobile technology has an impact on the teaching and learning process. It also helps the institution to strengthen its academic management system, which can help to reduce student fraud and cheating. Furthermore, the use of QR codes in mobile attendance systems has made taking students' attendance much easier and faster. Their

study has successfully produced a mobile attendance system that has a good influence on academics.

Dynamic HyperText Markup Language (DHTML)

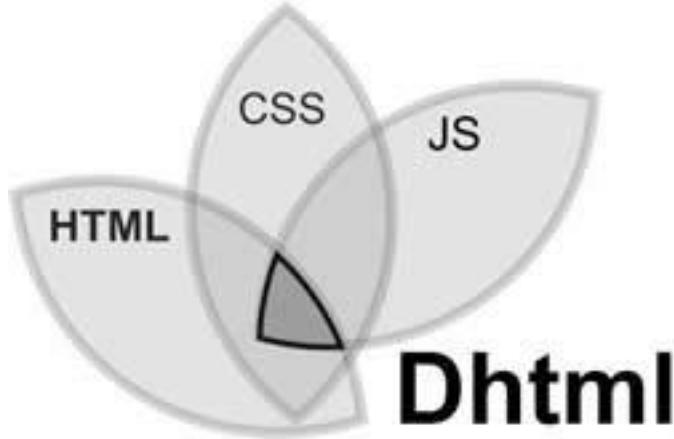


Figure 1. DHTML

<https://tinyurl.com/5a4m67xa>

According to a website for educators, DHTML stands for Dynamic HTML and should not be confused with HTML. Netscape Navigator and Internet Explorer versions greater than 4.0 are examples of browsers that support dynamic HTML. DHTML is based on HTML and uses javascript, CSS, and DOM (Document Object Model, which is used to access individual documents) on document elements to help create dynamic content. It is built with HTML, CSS, JS, and DOM. DHTML employs a Dynamic object model to make changes to settings, properties, and methods. It also utilizes scripting and is linked to previous computing trends.

Html

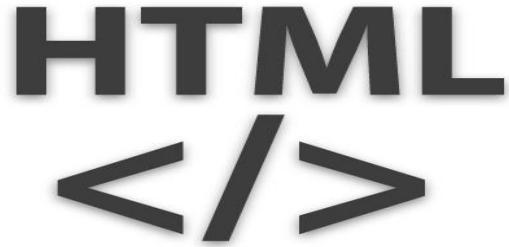


Figure 2. HTML

Source: <https://tinyurl.com/h4df6y39>

According to Hayes (2020), HyperText Markup Language (HTML) is a collection of markup symbols or codes embedded in a file designed for Internet display. The markup tells web browsers how to render text and images on a page. He also mentioned HyperText Markup Language, a computer language used to build websites. Like any other language, the language has code words and syntax, is relatively simple to understand, and, as time passes, becomes more potent in terms of what it allows someone to create. Under the guise of the World Wide Web Consortium, HTML is evolving to meet the Internet's demands and requirements.

The NSTP system website pages are made by researchers using HTML, or Hypertext Markup Language. The researchers use HTML to generate text titles and headings, organize illustrations on a site page, connect to different pages within the site and connect to multiple locations.

CSS



Figure 3. CSS

Source: <https://1000logos.net/css-logo/>

CSS, "Cascading Style Sheet," is used to format how Web pages are laid out. They can use them to specify text styles, table sizes, and other Web page elements that were previously only identified in the HTML of the page. CSS enables Web designers to create a unified look across multiple website pages. Rather than defining the style of each table and block of text within a page's HTML, commonly used techniques should be described only once in a CSS document. After it is defined in the cascading style sheet, the set can be used by any page that links to the CSS file. CSS also makes it simple to change the styles of multiple pages at the same time.

CSS saves time by regulating how HTML elements display on screens or in other media. Researchers used it to control the layout of multiple web pages simultaneously. CSS is required for this study because it defines table cell padding around images and other objects and the table's border style, thickness, and color. **JavaScript**



Figure 4. JS

Source: <https://1000logos.net/javascript-logo/>

According to Merida (2021), JavaScript is a dynamic programming language used for a variety of tasks, including the production of games, online applications, and other things. It enables the addition of dynamic website features that are otherwise impossible to add using only HTML and CSS. Several browsers include JavaScript as a scripting language for performing active tasks on the web. To name a few, JavaScript's benefits are that anytime a drop-down menu is clickable, additional content is added to a page, or dynamically altering website element colors.

Python Web Framework

According to Habib (2016), numerous Python frameworks make it much easier to create web applications. These frameworks group together all of the modules and packages you need to easily construct apps without having to deal with convoluted Sockets and protocols. On the server, modern Web frameworks are employed, and some are beginning

to use them on the client as well, including code that enables them to run the client (for example, Skulpt or Trinket). Full-stack and non-full-stack Python frameworks are commonly categorized. Developers can build apps with a database interface from the ground up with the help of full-stack frameworks. Frameworks that don't cover the entire development lifecycle cope with anything less.

Django



Figure 5. Django

Source: <https://tinyurl.com/mvjk42t>

Django is a web framework written by Python with a high level of abstraction that makes it simple to develop secure and maintainable websites quickly. Django, which seasoned programmers built, frees you up from having to reinvent the wheel by managing a lot of the complexity involved with web programming.

Django, a high-level, open-source Python web framework facilitates quick web development design and development. For this investigation, the researcher employed Django as a Python web platform. This aids researchers in avoiding common security errors. Thanks to the user authentication mechanism of this framework, which provides a

secure technique for controlling user accounts and passwords, a web application may go from conception to launch in a couple of hours.

XAMPP



Figure 6. Xampp

Source: <https://tinyurl.com/s42nhrcj>

Cross-Platform, Apache, MySQL, PHP, and Perl are all abbreviated as XAMPP. According to Apachefriends, it is a set of open-source web solutions that includes Apache distribution for numerous servers, command-line programs, and modules like PHP, Perl, MariaDB, and Apache server.

a system that offers an appropriate setting for testing and confirming the functionality of the NSTP system, Before publishing a website to the main server, a local host or server can test its website and clients using desktop and laptop devices with the aid of XAMPP.

Database Software Program

A database is an electronic repository for information or data that has been logically arranged and is kept on a computer system. Typically, a database is managed by a database management system (DBMS). A database system, commonly shortened to the database, is the term used to refer to the data, the DBMS, and the related applications as a whole.

A software program for storing the data is gathered in this study. Every query in the NSTP system was recorded here, including students' registration data, attendance (when they were in and out of the field), and the records of all NSTP students, including alums.



Google Apps Script

Figure 7. Google Apps Script

Source: <https://g-workplace.com/services/apps-script>

Google Apps Script

The functionality of Google Applications like Google Sheets, Docs, Forms, and Drive can be extended using Google App Script, a scripting framework. can employ it to

add new features to these apps, automate activities, and develop customized functionalities. It enables writing JavaScript scripts and supports cloud-based script execution. Google Sheets, Docs, and Forms add-ons can also be made using it, as well as web apps. Connecting to external APIs and services is also possible.

The researcher connected their mobile application to Google Sheet using Google App Script so that the information from scanned QR Codes, including the data of the QR Code and the date and time, would be kept there.



Figure 8. MIT App Inventor

Source: shorturl.at/gMQU0

MIT App Inventor

A visual, blocks-based programming tool for building Android mobile apps is called MIT App Inventor. It was created by the Massachusetts Institute of Technology (MIT) and is meant to be used by non-programmers to design mobile apps, primarily by students and teachers. Instead of writing code, users may build and develop their own apps with App Inventor by dragging and dropping graphic blocks that reflect the app's

functionality. Users may access the camera and accelerometer on the smartphone using App Inventor, which also has a built-in emulator for testing programs on a computer. It additionally offers a simple method for app sharing.

In order to operate the web application, which is primarily used to scan the students' qr codes and record their attendance, the researcher used this to construct the mobile application. Additionally, it can record the time that students take their attendance as well as who takes it and any comments regarding whether or not the scanned students are on time or late.

Conceptual Model of the Study

The conceptual model for this study featured a design thinking process that offered a problem-based solution-based approach. A design thinking model was used to solve complex problems that arise in our environment. Figure 8 shows the stages of design thought.

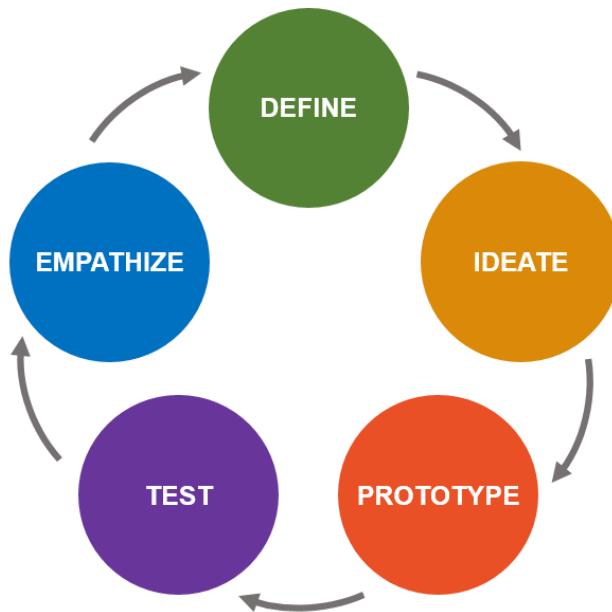


Figure 9. Design Thinking Model

Source: <https://tinyurl.com/4ymwdhxp>

To conduct research, the researchers devised a problem in the empathize stage. They spent time observing the NSTP on how the management in the NSTP of TUPC registers students, conducts each student's attendance, and how the NSTP coordinator organizes student certification. Taking the student's attendance took a lot of time due to the excessive number of students. As a result, too much time was consumed and wasted in the process of just getting their attendance. Based on their observations, students confirmed their attendance by writing their names and sections on paper.

The define stage came next, which addressed the initial solution to be implemented based on the problem's cause and effect. Additionally, they wanted to propose a solution that took students' attendance using a Web Application to save time and eliminate the traditional method, which required students to write their names and sections on a piece of paper.

Using an automated certificate generator generates a certificate faster than the old method. As a result of this process, unexpected errors such as unreadable writings of the student's name, course, and other human errors may occur. As a result, many students must wait months, if not years, to obtain a copy of their certificate. This research can provide:

- A more secure process between the NSTP department and students in terms of taking attendance.
- Generating certificates.
- Obtaining the necessary data from each student.

The ideate stage was the third stage in the design thinking process. This study decided to consider the availability of NSTP departments (Rotc officers) to assist students

in taking attendance, with the expectation that this solution would reduce the time students spent on the task. They created a workable solution: a Web-based NSTP system to narrow it down. The study's goal was to maximize productivity while minimizing waste. The prototype developed by the researchers was low-cost but produced excellent results.

The design thinking model's prototype stage consisted of how researchers created the prototype. They happened to gather materials or components for this study. The PC serves as the prototype's brain. Because all of the functions were connected in this component, the cellphone was used as a mobile view for browsing the Web App and taking students' attendance. Researchers intended to create a web application for creating the NSTP system and a mobile view capable of saving the data needed by the NSTP system for the project's software requirement.

The prototype was tested in the final stage, which was the test stage. The Researchers conducted a series of tests after creating the Web-based NSTP system software to see if there was an error or a problem. Researchers examined the software application's functionality, including student registration, certificate generation, and attendance accuracy. Troubleshooting procedures will be used to modify the prototype if issues or errors arise. A series of tests were repeated until no errors were found. The prototype was judged on its functionality, reliability, usability, and efficiency.

Operational Definition of Terms

To help you understand the project study, the terminology listed below have operational definitions.

Web Application -Web apps, in contrast to software programs that run locally and natively on the operating system of the device, are applications that are accessed by means of a web browser. Web apps may be accessed by people with active networks thanks to the World Wide Web.

Certificate Generator is a fixed layout where the user manages to make a certificate multiple times; a user only needs to customize the information that will be included in the certificate.

DHTML - Some browser vendors refer to the mix of HTML, style sheets, and client-side scripting that enables the development of interactive and animated documents as dynamic HTML, or DHTML.

HTML - For documents intended to be viewed in a web browser, HTML, or HyperText Markup Language, is the accepted markup language. JavaScript and other scripting languages, as well as technologies like Cascading Style Sheets, can be useful. **CSS** -CSS is a language used to describe the appearance of a style sheet of markup language-written documents such as HTML. CSS, like HTML and JavaScript, is essential to the Internet.

JS - JavaScript is a dynamic programming language for computers. It is lightweight and is most commonly used as a component of web pages, where implementations enable client-side scripts to interact with the user and create dynamic pages. It is an object-oriented programming language.

Web Framework - It is a software framework created to make website creation and the web development process more straightforward. It offers an environment for scripting communication processes, has templating capabilities that let you present information within a browser, and has several application programming interfaces (APIs) that let you access underlying data resources. The majority of frameworks also give web designers the resources they need to create content management systems (CMS) for organizing digital content on websites and the Internet.

Django - Django is a free, open-source, Python-based model-template-views architectural pattern used in this web framework. The Django Software Foundation is a nonprofit It is maintained by an independent non-profit organization with headquarters in the US.

XAMPP -The Apache HTTP Server, MariaDB, and PHP and Perl script interpreters are all included in the cross-platform web server package known as Xampp, which was developed by Apache Friends.

Database- A database is a logically organized collection of structured data in a computer system. A database management system usually manages a database (DBMS). **Google Apps Script** - A scripting framework. can employ it to add new features to these apps, automate activities, and develop customized functionalities. It enables writing JavaScript scripts and supports cloud-based script execution. Google Sheets, Docs, and Forms add-ons can also be made using it, as well as web apps. Connecting to external APIs and services is also possible.

MIT App Inventor - A visual, blocks-based programming tool for building Android mobile apps is called MIT App Inventor. It was created by the Massachusetts Institute of

Technology (MIT) and is meant to be used by non-programmers to design mobile apps, primarily by students and teachers. Instead of writing code, users may build and develop their own apps with App Inventor by dragging and dropping graphic blocks that reflect the app's functionality.

Chapter 3

METHODOLOGY

The block diagram, the flowchart relating to the study's methodology, and the wireframe of the proposed project design were all included in this chapter. Additionally, this demonstrated the for the development of this project, several figures of components. 's prototype's Additionally, there were protocols for operation, testing, and assessment.

Project Design

The NSTP System was developed to assist students, administrators, and NSTP staff/facilitators save time on NSTP tasks. Python Django has been used for the project website application's back end. On the other hand, the researchers used HTML, CSS, Javascript, and Bootstrap as the front end. The project included many features such as registration of students so that NSTP facilitators can determine whether or not the students are physically fit for applying to their desired Platoons or components, Viewing of course materials and announcements so that students could see if there are announcements, and assignments from their instructors, Grade computations to see their grades for the semester, and modification of profile information in case something changes someday.

The admin side was designed to do their work to become digitized, which will help to make the job easier. The admin Web application is provided with many features, such

as accepting student's applications for the Platoons or components, Student profile reviews to see if they're physically fit to enroll in their desired platoon or component, Making general and section announcements, setting up enrollment period as well as the setting up of registration period for the student, Assigning sections or platoons, Grading System for students to know their current standing, Certifications, Alumni search for those who are already graduated in NSTP so that they can also see their basic information regarding the time they spent in NSTP, Sending messages through system email for notifying review them about NSTP matters.

Furthermore, for attendance, the researcher used MIT App inventor for the mobile application to take the students' attendance. The primary role of the NSTP mobile application is to take the students' attendance and store it in a CSV file that the NSTP Web Application will need to record the attendance. Regarding the security of the mobile application, the researcher also made a signup for the staff that the admin user only can access.



Figure 10. Web Application

Figure 10 shows the interface of the proposed system (Web application). It was applicable to any computer device and mobile phone with an internet connection. The researchers used computers as the primary medium to implement the proposed system, and mobile was the secondary. The system requires the users to register to have full access to the system. Meanwhile, if the one who will use is not registered yet, they will be able to use the system also with the limited feature like searching their names if they have a record to the NSTP, and they can also send direct email through the email field provided

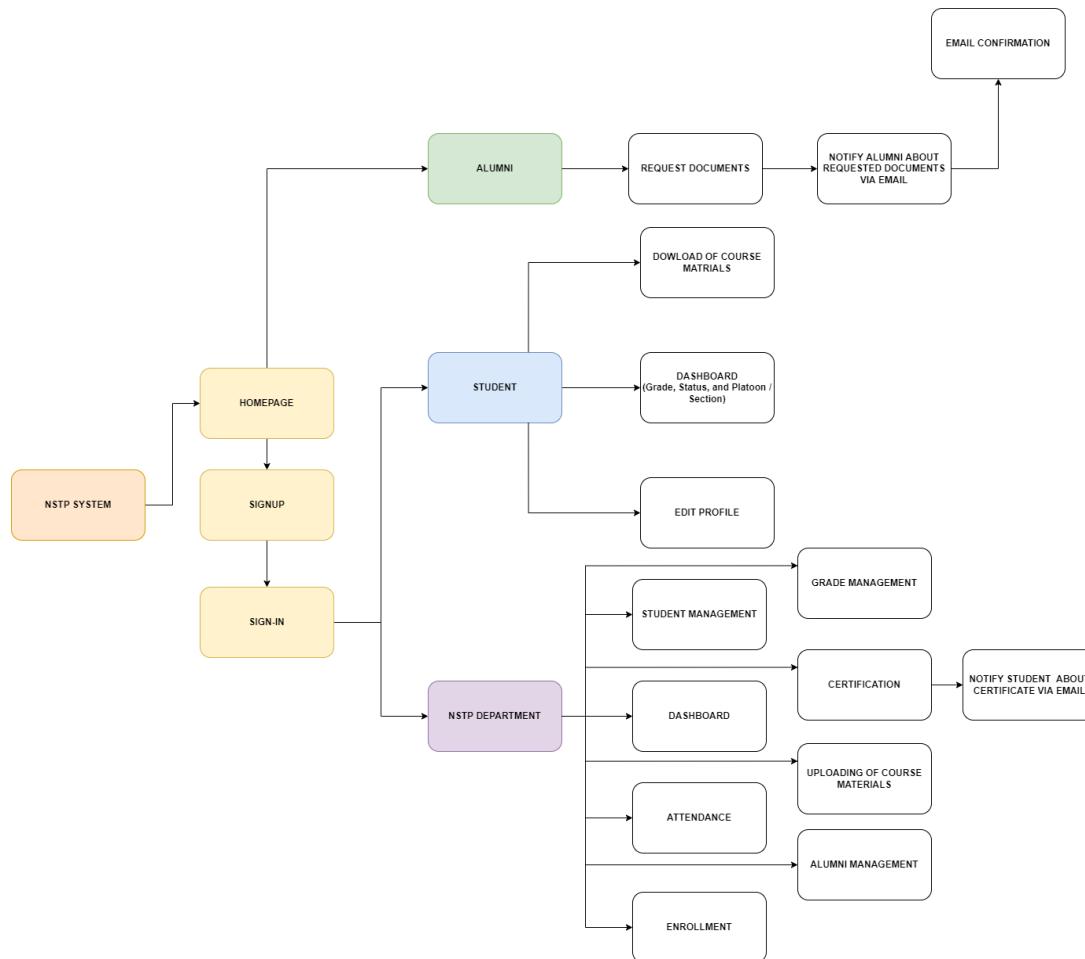


Figure 11. Block Diagram for Proposed System

Figure 11 shows the block diagram of the proposed system. A block diagram represents a system's main components or functions through blocks connected by lines that reveal the connections between them. They play a significant role in the design of hardware, electronics, software, and process flow diagrams in engineering. The starting part of the diagram was the NSTP System, where all the process happens. First, the users will register to create their accounts and then continue to log in. After logging in, they will be able to access the system features. After completing their statement, the staff administrator is responsible for reviewing the student's profile, and they have the power to accept/decline the student's application based on their information. Also, in addition to the registration part, it is required to upload the photocopy of the Certificate of registration (COR) to be used as a medium to be recognized as an active enrollee of the said school year. The proposed system also has a part where the staff or admin can upload the lecture files, which the students can also download. The system also has a function of generating certificates that the students have requested, and in addition, is the email notification that serves as the medium of connection between students and staff of the NSTP Department.

Lvl 0 DFD of NSTP System

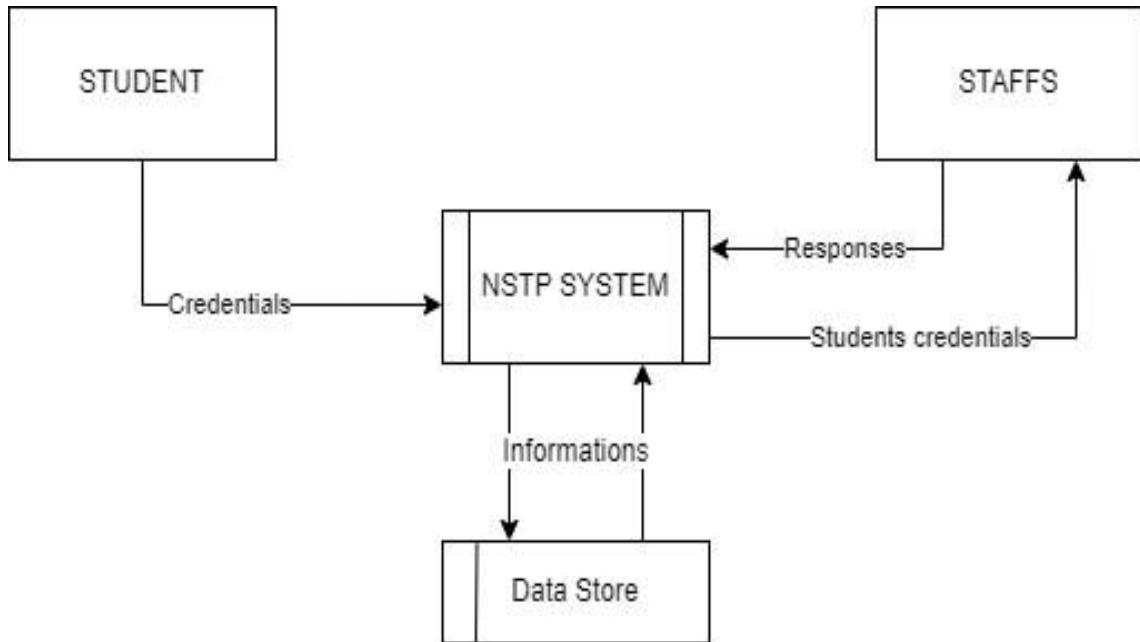


Figure 12: Data Flow Diagram of NSTP System

Figure 12 shows the Data flow diagram of the proposed system. The students of Technological University of the Philippines-Cavite will be the users of the proposed system. The first step was the registration of the students and it will serve as their enrollment. Once the student enrollment was approved by the admin, the status of enrollment will be “APPROVED” and it will be displayed at the student’s dashboard. The user is able to login and access the NSTP System Student’s User Interface (UI). When they come to the system they will be able to do usual things like view and download files, edit their information, monitor their enrollment status and also they can request documents using the provided page inside the system. All of the students’ actions inside their respective accounts also have a corresponding action from the staff or instructors who use the admin

part of the system. Before the students get enrolled their information was reviewed by the staff like the photocopy of their Certificate of registration (COR) which is highly required to complete the enrollment process. The next was the Uploading of files which is also done by the Staff of the department as well as the confirmation of the document requested by the students and. Lastly is the email notifications from the NSTP Department for the students who request documents and for those who have an issue or any related problems regarding their Informations.

Project Development

The preliminary stage of developing the NSTP system started with the idea of innovating the old and traditional enrollment system of both components of NSTP, which are ROTC and CWTS, at the Technological University of the Philippines Cavite Campus. One of the most visible changes in the development of the system is the appearance of the system's User Interface (UI). The researchers do consider the importance of using the appropriate color for the system's User Interface (UI), the researchers also contemplate the design that they're applying to the system, such as borders, backgrounds, images, sizes, and fonts for it to look professional.

The researchers also managed to add some features to the system, they managed to include a search page located at the landing page, where the school alumni can search their basic personal information, such as their name and the year they graduated, but if they wanted to have access to their complete student information they can reach out the admins via email, send email option is available on the search page too. The researchers also managed to use the web application to compute the students' grades based on their

attendance, activities, exercises, midterm examination, final examination, and merits and demerits.

The researchers also enhanced the appearance of the mobile application, added some authentication features for the security of the application, and added login for the user for exclusivity.

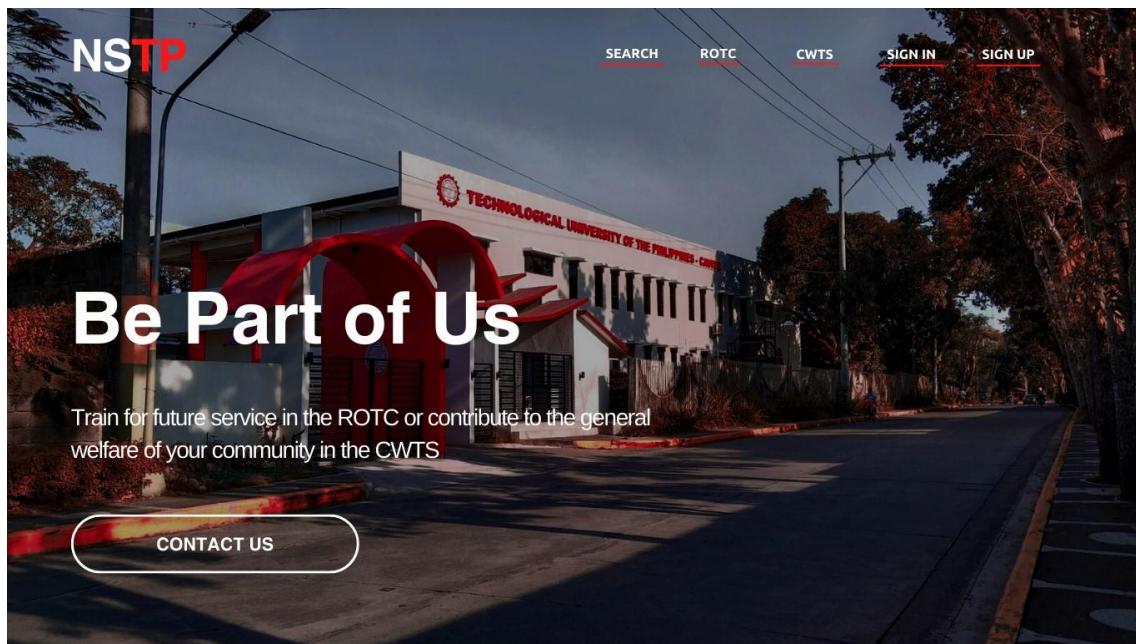


Figure 13. Landing Page (WireFrame Design)

Figure 13 shows the WireFrame design of the landing page where users can search past graduates to see their basic information, ROTC to see the ROTC descriptions, and CWTS to see what it is all about. Sign in page allows users to sign in to their accounts so they can proceed to the student's dashboard, and finally, sign up page to create an account for them to sign in and assign to their designated platoons or components.

Enter Keywords

Sort By

Name

Ascending

Descending

3 Search results found.

Name	Course	Student's ID	NSTP FIELD
Dela Cruz Juan	BET-COET	TUPC-18-0204	CWTS
Dela Cruz Magpantay	BET-MT	TUPC-18-0221	ROTC
Dela Cruz Cardo	BS-IE	TUPC-18-0172	ROTC

Figure 14. Alumni Search (WireFrame Design)

Figure 14 shows the WireFrame design of Alumni Search. Even if they do not have an account, all users may browse this part and view basic information about graduates. If they have any concerns regarding their records that are not visible on this page, they can contact the admin by sending an email.

The dashboard features a sidebar with icons for Home, School Year, Students, Staff, Classes, Announcements, and Logout. The main area has four summary boxes: Active Students (50), Pending Enrollees (10), School Year (2022-2023), and Total Course (8). Below is an 'Announcements List' table:

Subject	Target Audience	Date Posted	Content	Edit
Announcement 1	Bravo	Sept 14, 2022, 5:58pm	There will be no class...	<input checked="" type="checkbox"/> Update <input type="button" value="Delete"/>
Announcement 2	Alpha	Jan 14, 2022, 5:58pm	We will start at...	<input checked="" type="checkbox"/> Update <input type="button" value="Delete"/>
Enrollment	Charlie	Dec 15, 2022, 5:58pm	Tomorrow there...	<input checked="" type="checkbox"/> Update <input type="button" value="Delete"/>
Suspension	Foxrot	Sept 14, 2022, 5:58pm	Due to the...	<input checked="" type="checkbox"/> Update <input type="button" value="Delete"/>
Announcement	Lima	Sept 13, 2022, 5:58pm	Good day!....	<input checked="" type="checkbox"/> Update <input type="button" value="Delete"/>
Reminders	Kilo	Nov 14, 2022, 5:58pm	Meeting at 6...	<input checked="" type="checkbox"/> Update <input type="button" value="Delete"/>
Meeting	Delta	Feb 14, 2022, 5:58pm	Meeting at 8...	<input checked="" type="checkbox"/> Update <input type="button" value="Delete"/>
Announcement	Alpha	Aug 14, 2022, 5:58pm	Wear your...	<input checked="" type="checkbox"/> Update <input type="button" value="Delete"/>
Announcement	Juliet	Apr 14, 2022, 5:58pm	Be prepared for...	<input checked="" type="checkbox"/> Update <input type="button" value="Delete"/>
Announcement	Alpha	May 14, 2022, 5:58pm	Exam is on...	<input checked="" type="checkbox"/> Update <input type="button" value="Delete"/>

Show 10 Entries

Figure 15. DashBoard (WireFrame Design)

DashBoard's WireFrame design is seen in Figure 15. The administrator can submit announcements in this section, amend announcements, and delete announcements when necessary. The dashboard also displays the overall number of courses, the number of awaiting students, and the number of active students.

The sidebar includes icons for Home, School Year, Students, Staff, Classes, Announcements, and Logout. The main area shows the 'Manage School Years' section with a table:

SCHOOL YEARS	STATUS	HISTORY	ACTIONS
2000-2001	CLOSED	<input type="button" value="Open History"/>	<input type="button" value="Delete"/>
2001-2002	OPEN	<input type="button" value="Open History"/>	<input type="button" value="Delete"/>
2002-2003	OPEN	<input type="button" value="Open History"/>	<input type="button" value="Delete"/>
2003-2004	OPEN	<input type="button" value="Open History"/>	<input type="button" value="Delete"/>
2006-2007	CLOSED	<input type="button" value="Open History"/>	<input type="button" value="Delete"/>
2007-2008	CLOSED	<input type="button" value="Open History"/>	<input type="button" value="Delete"/>
2019-2020	OPEN	<input type="button" value="Open History"/>	<input type="button" value="Delete"/>
2020-2021	CLOSED	<input type="button" value="Open History"/>	<input type="button" value="Delete"/>
2021-2022	OPEN	<input type="button" value="Open History"/>	<input type="button" value="Delete"/>

Showing 1 to 10 entries

Figure 16. School Year page (WireFrame Design)

Figure 16 shows the WireFrame design of Manage School Years. In this area, the administrator can activate the form and allow students to participate in the school year NSTP registration. And also may add a school year if the current school year is concluded.

The wireframe shows a sidebar with various icons: a person, a house, a calendar, a grid, a person, a document, a graduation cap, a list, and a power button. The main header is 'ENROLLED STUDENTS'. Below it, tabs include 'School Year' (selected), 'Officially Enrolled' (highlighted in green with a checkmark), 'Pending Enrollees' (with a question mark icon), and 'Rejected' (with a question mark icon). A sub-header reads 'List of Officially Enrolled Students' and 'S.Y. 2031-2032'. It includes filters for 'Show' (set to 5), 'Entries', and a 'Search' bar. A table lists 5 entries:

ID #	Full Name	Email	Course	Field	Field Section	Options	Save
1	Renshi Angelo Sena	renshi@email.com	BET-COET-4A	ROTC	ALPHA	<input type="button" value="ENROLLED"/>	<input type="button" value="✓ Update"/>
2	John Crichton	john@email.com	BET-COET-4A	ROTC	ALPHA	<input type="button" value="ENROLLED"/>	<input type="button" value="✓ Update"/>
3	Daniel Jackson	daniel@email.com	BET-COET-4A	ROTC	ALPHA	<input type="button" value="ENROLLED"/>	<input type="button" value="✓ Update"/>
4	James Holden	james@email.com	BET-COET-4A	ROTC	ALPHA	<input type="button" value="ENROLLED"/>	<input type="button" value="✓ Update"/>
5	Ryland Grace	ryland@email.com	BET-COET-4A	ROTC	ALPHA	<input type="button" value="ENROLLED"/>	<input type="button" value="✓ Update"/>

Showing 5 of 5 entries

Figure 17. Officially Enrolled page (WireFrame Design)

Figure 17 shows the WireFrame design of the List of Officially Enrolled. The administrator may easily view all of the students enrolled in the current school year in this area. The administrator can also edit the status of the students, which can be Enrolled, Pending, or Rejected, depending on the situation.

PENDING ENROLLEES

School Year	Officially Enrolled	Pending Enrollees	Rejected		
Pending Enrollees. SY:					
Show 10 Entries	Search: <input type="text"/>				
ID Number	Full Name	Email	Course	NSTP Field	Action
18-0606	Manji logs	Manji@gsfe.tupcavite.edu.ph	BET-COET-4A	ROTC	View Profile ✓Approve ✗Decline
18-1276	Rapsy Dodots	Rapsy@gsfe.tupcavite.edu.ph	BET-COET-4A	ROTC	View Profile ✓Approve ✗Decline
18-0807	Charlie Maliban	Charlie@gsfe.tupcavite.edu.ph	BET-COET-4A	CWTS	View Profile ✓Approve ✗Decline
18-0032	Manuel Leomhar	Manuel@gsfe.tupcavite.edu.ph	BET-COET-4A	ROTC	View Profile ✓Approve ✗Decline
18-0321	Jhousua Laride	Jhousua@gsfe.tupcavite.edu.ph	BET-COET-4A	ROTC	View Profile ✓Approve ✗Decline
18-0341	Cristian Rapal	Cristian@gsfe.tupcavite.edu.ph	BET-COET-4A	ROTC	View Profile ✓Approve ✗Decline
18-2301	Cristopher Ala	Cristopher@gsfe.tupcavite.edu.ph	BET-COET-4A	CWTS	View Profile ✓Approve ✗Decline
18-2345	Renshi Robot	Renshi@gsfe.tupcavite.edu.ph	BET-COET-4A	ROTC	View Profile ✓Approve ✗Decline
18-1235	Juliet DelaCruz	Juliet@gsfe.tupcavite.edu.ph	BET-COET-4A	CWTS	View Profile ✓Approve ✗Decline
18-3634	Noelle Fishcl	Noelle@gsfe.tupcavite.edu.ph	BET-COET-4A	ROTC	View Profile ✓Approve ✗Decline

Showing 1 of 5 entries

First Previous Next Last

Figure 18. Pending Enrollees page (WireFrame Design)

Figure 18, shows the WireFrame design of List of Pending Enrollees, In this section like in figure 17 it also shows the list of students but the main difference in this section it only show all pending enrollees, In addition the admin may view the students profile directly that can seen their health status and other information.

The wireframe design of the certification page includes the following components:

- Left Sidebar:** Contains icons for Home, File, Grid, User, Print, and Refresh.
- Top Bar:** Displays the word "CERTIFICATION" and a red seal icon.
- Form Area:**
 - Select Field you want to Modify:** A dropdown menu set to "ROTC".
 - Set All Details to display on Certificates (ROTC):**
 - School Year:** 2022-2023
 - Commandant:** Dong Manuel
 - Registrar:** Avor Narag
 - Given Date:** Month: [] Day: [] Year: []
 - SAVE** button.
- Preview Area:** Shows a sample certificate for "CADET DELA CRUZ JUAN" from the "236TH NAVAL RESERVE OFFICER TRAINING CORPS UNIT" at the "Technological University of the Philippines - Cagayan de Oro" dated October 10, 2022.
- Table:** A table titled "List of All School Years for Certifications" showing two entries:

School Year	Status	Date Generated	Generate
2022-2023	<input checked="" type="checkbox"/> DONE	Oct. 10, 2022	GENERATE
2023-2024	<input checked="" type="checkbox"/> DONE	Sept. 28, 2023	GENERATE

Figure 19. The certification page (WireFrame Design)

Figure 19, shows the WireFrame design of Certifications. The personalized certificate is displayed on this page, all students who passed will be certificated, and this certificate will be created along with their names.



Figure 20. Landing Page (WireFrame Design)

Figure 18 shows the Landing page of the System. This is the way for administration and students to access their Account by logging in.

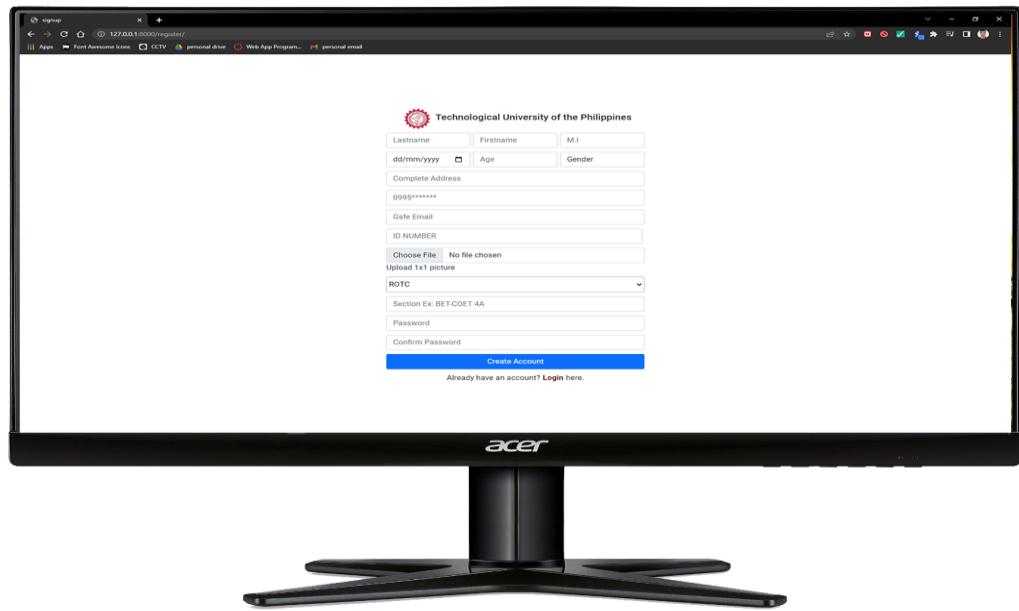


Figure 21. User Sign Up Page (WireFrame Design)

Figure 21 shows the registration page of the system. This is the page where the students will input their information and all required data to create their account as well as to register. Once the student is registered they will be able to login and access their account on this Proposed system.

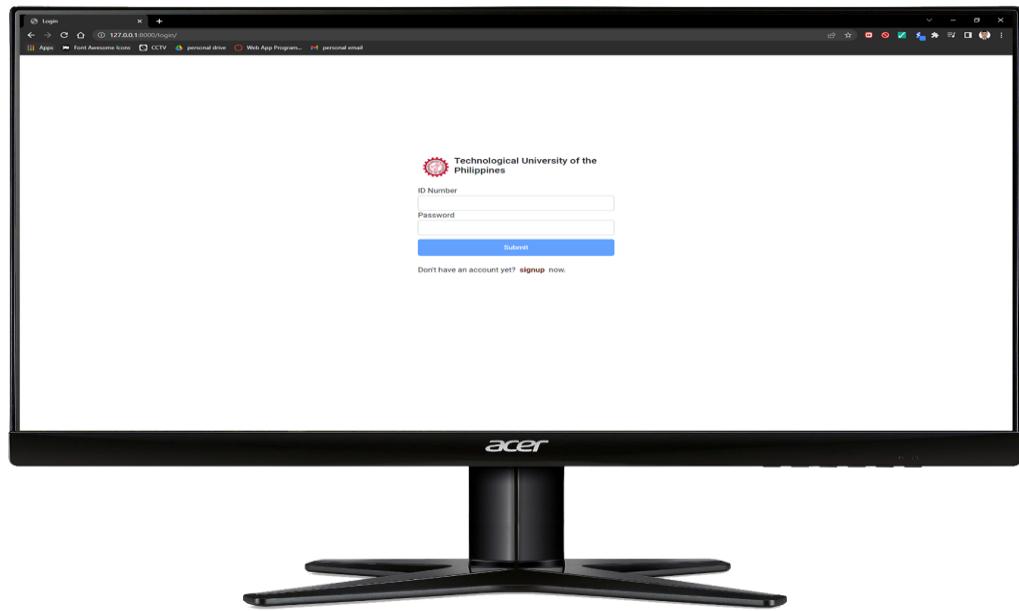


Figure 22. User Login Page (WireFrame Design)

Figure 22 shows the Login page of the system. All the users can do is to input their username and password. If their username and password is true they can access the system else if not, there is an error message that will prompt them to re-type again their username and password.

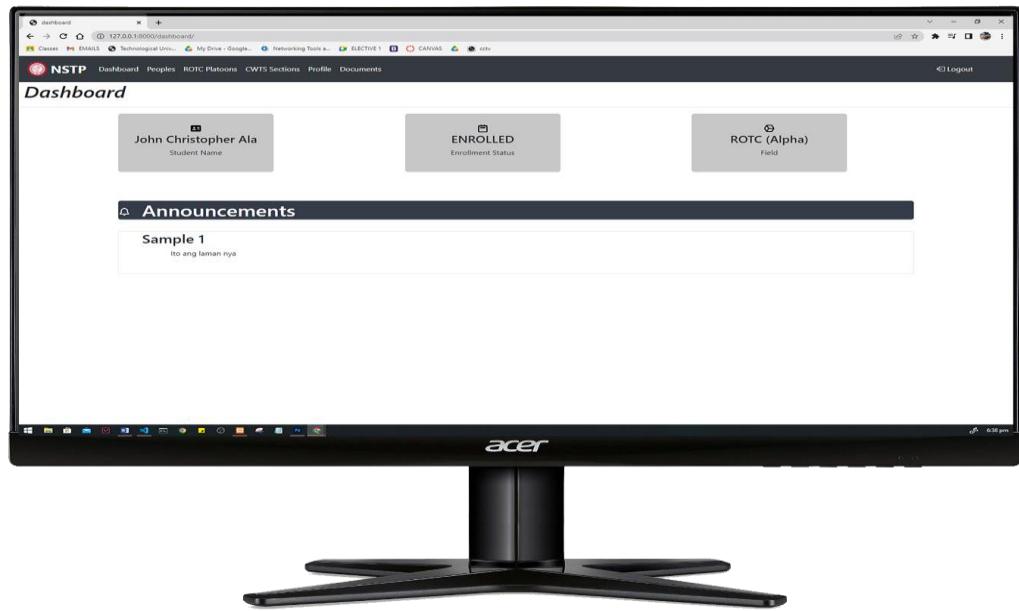


Figure 23. Student Dashboard (WireFrame Design)

Figure 23 shows the student dashboard. This is the page where they can see their relevant information like their name, Enrollment status, section or platoon and also the general announcements.

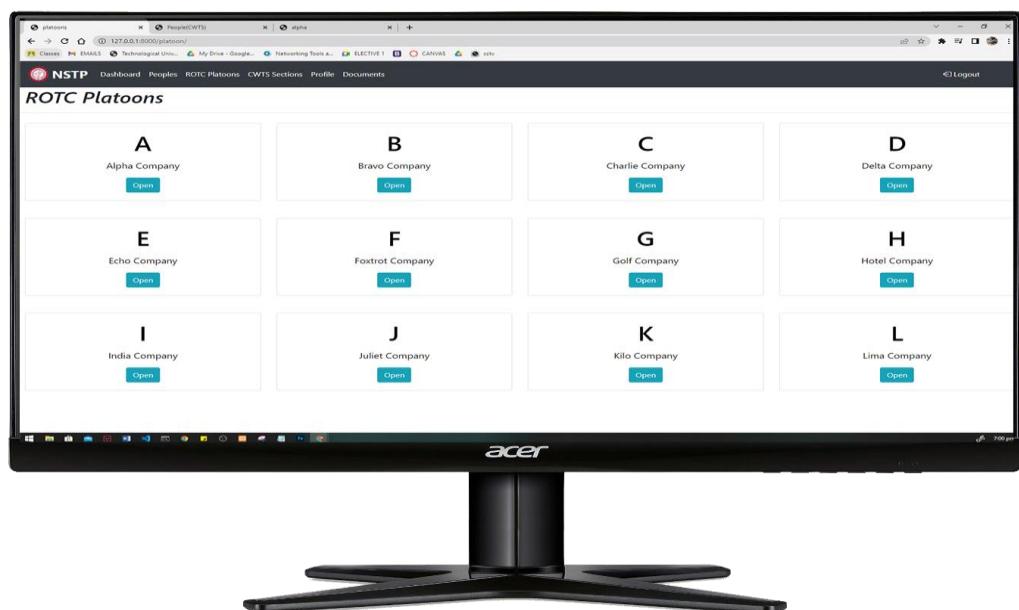


Figure 24. ROTC Platoons (WireFrame Design)

Figure 22 shows the Cards of rotc platoons. This is where all files of the lectures have been uploaded after the training day. The Students can download the file for their personal purpose like for review or for sharing to others.

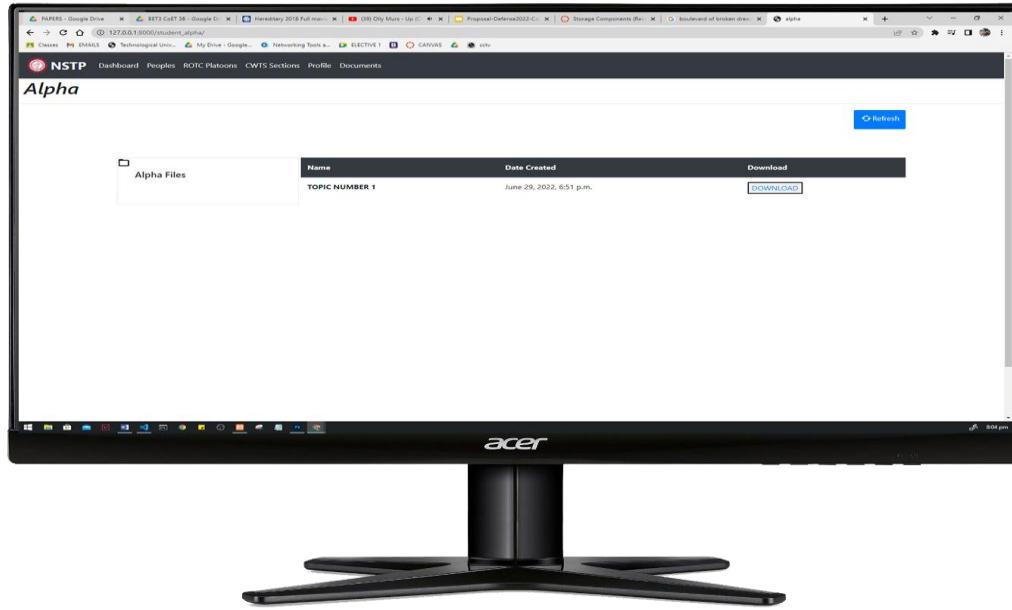


Figure 25. Platoon Files (WireFrame Design)

Figure 25 shows the Interface inside the Platoons. Inside the platoons there are no other contents but just the files. And those files are uploaded by the instructors who manage the designated platoon or sections.

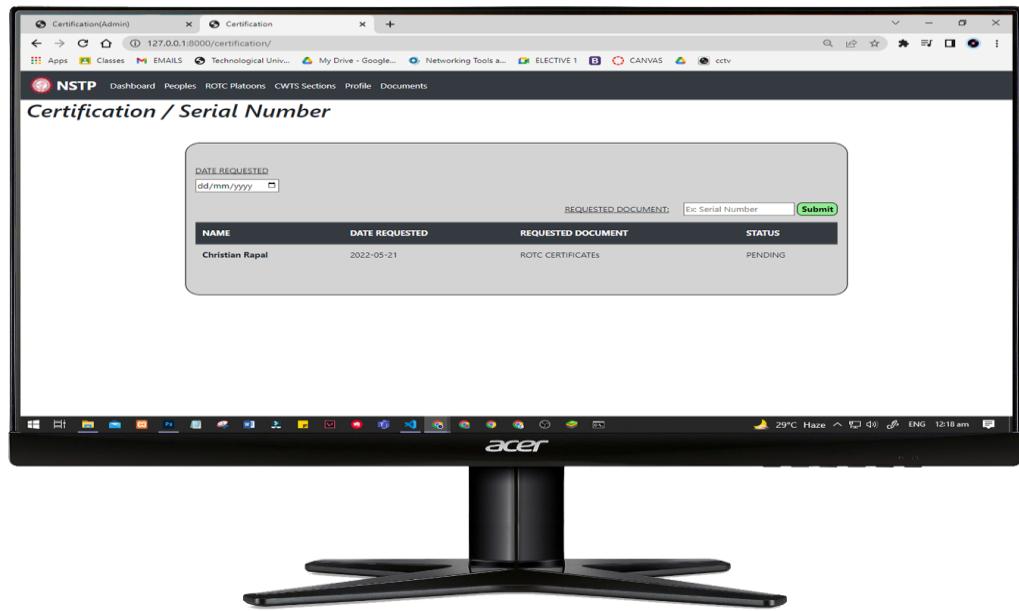


Figure 26. Student Request Page (WireFrame Design)

Figure 26 is the draft User Interface(UI) of the proposed system for Requesting of documents. This is where the student will type their Documents needed like Certificate or other papers including serial number, but serial number as of now will be claimed to Fort Bonifacio Taguig., So the possibility of requesting it will be fast but this will be claim to the headquarters of the Philippine Navy Taguig.

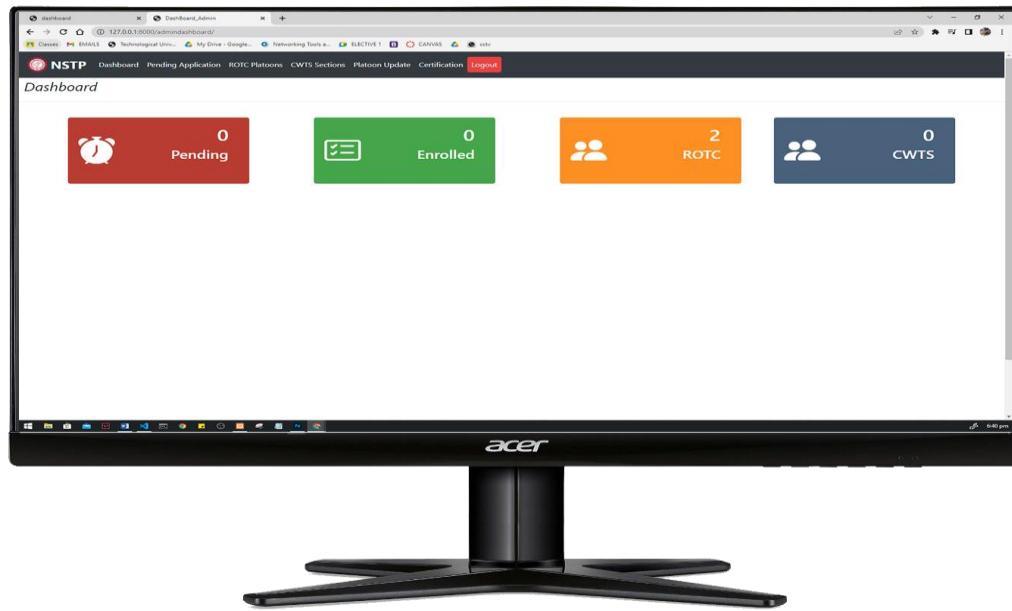


Figure 27. Admin Dashboard (WireFrame Design)

Figure 27 shows the admin dashboard of the system. This is where the admin will see the count of all students who are taking NSTP. Also the admin or staff will see the count of students inside the platoons and sections of the NSTP.

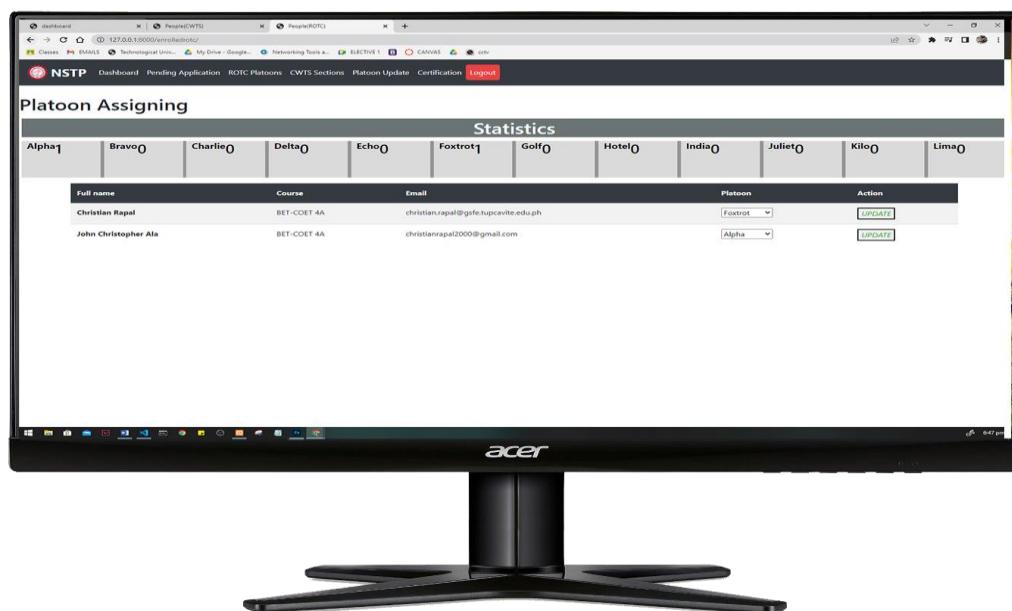


Figure 28; Admin - platoon Assigning (WireFrame Design)

Figure 28 shows the User Interface (UI) of admin assigning platoons to enrolled Students. Once the students are assigned, the update will automatically appear on their dashboard.

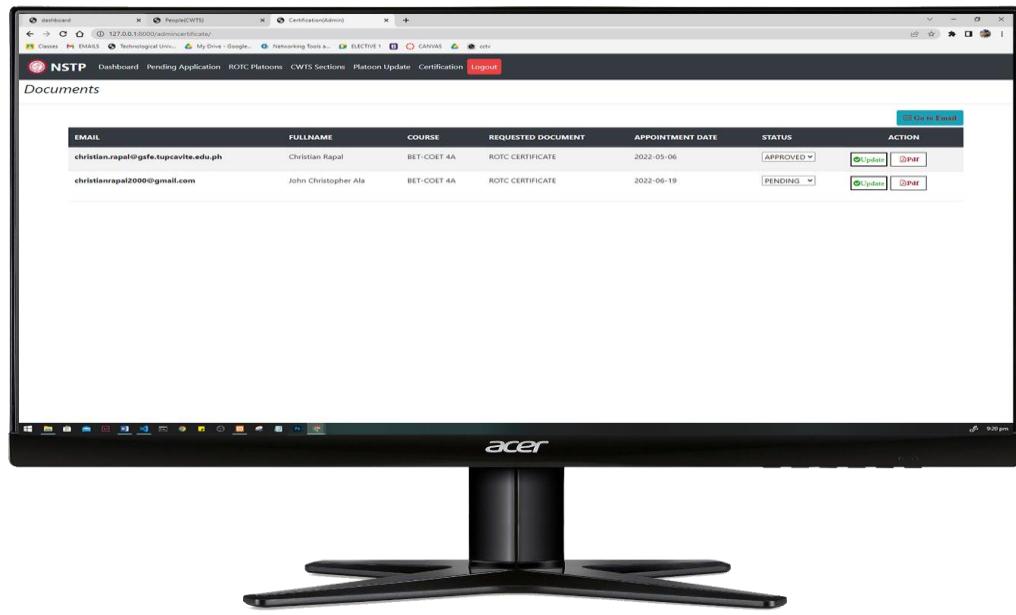


Figure 29. Admin-Certification (WireFrame Design)

Figure 29 shows the User Interface (UI) of the admin certification part. This is where the requested certificate of students will be generated. This is the one click generation of certificate that makes it more convenient to staff who will use the system.

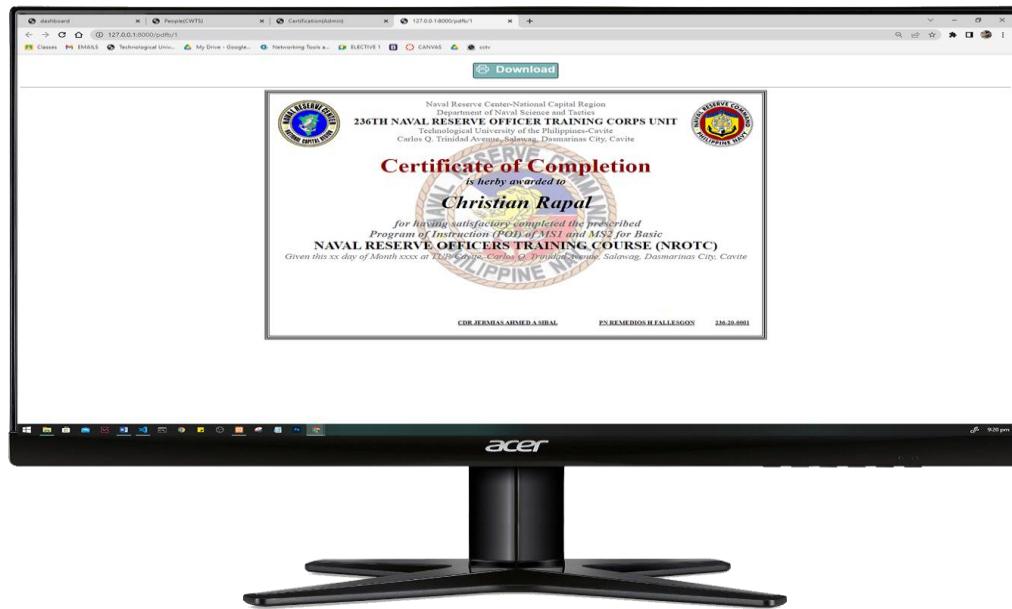


Figure 30. Certificate Generated (WireFrame Design)

Figure 30 shows the User Interface (UI) of the admin certification part. This is where the requested certificate of students will be generated. This is the one click generation of certificate that makes it more convenient to staff who will use the system.

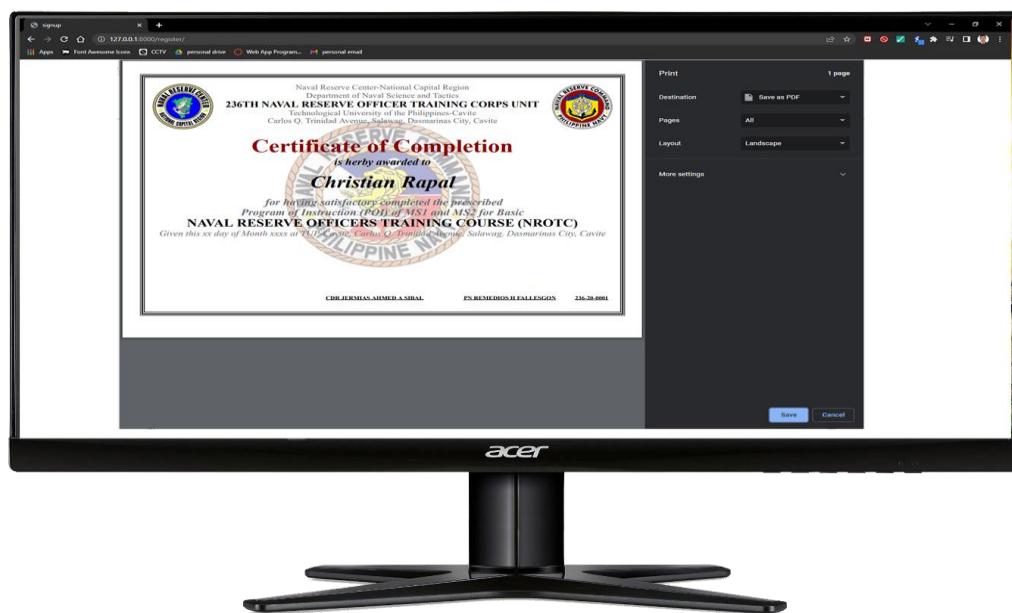


Figure 31. Certificate Saving / Printing (WireFrame Design)

Figure 31 shows the Interface of saving or printing of the certificate generated by the system.

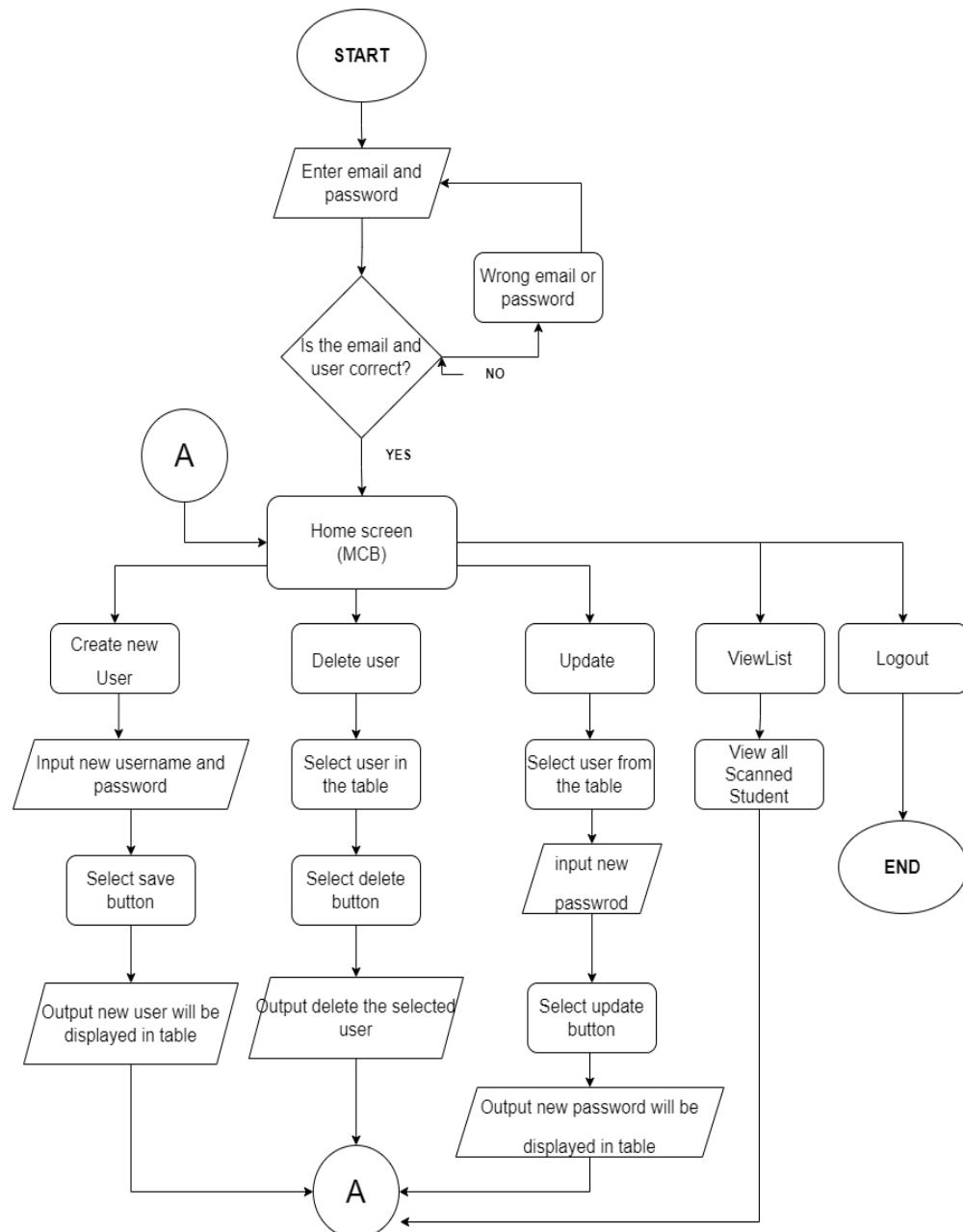


Figure 32. Admin Flowchart (Mobile App)

Figure 32 depicts the administrator flowchart, where the admin may choose to create, update, or delete a user (staff) account if needed.

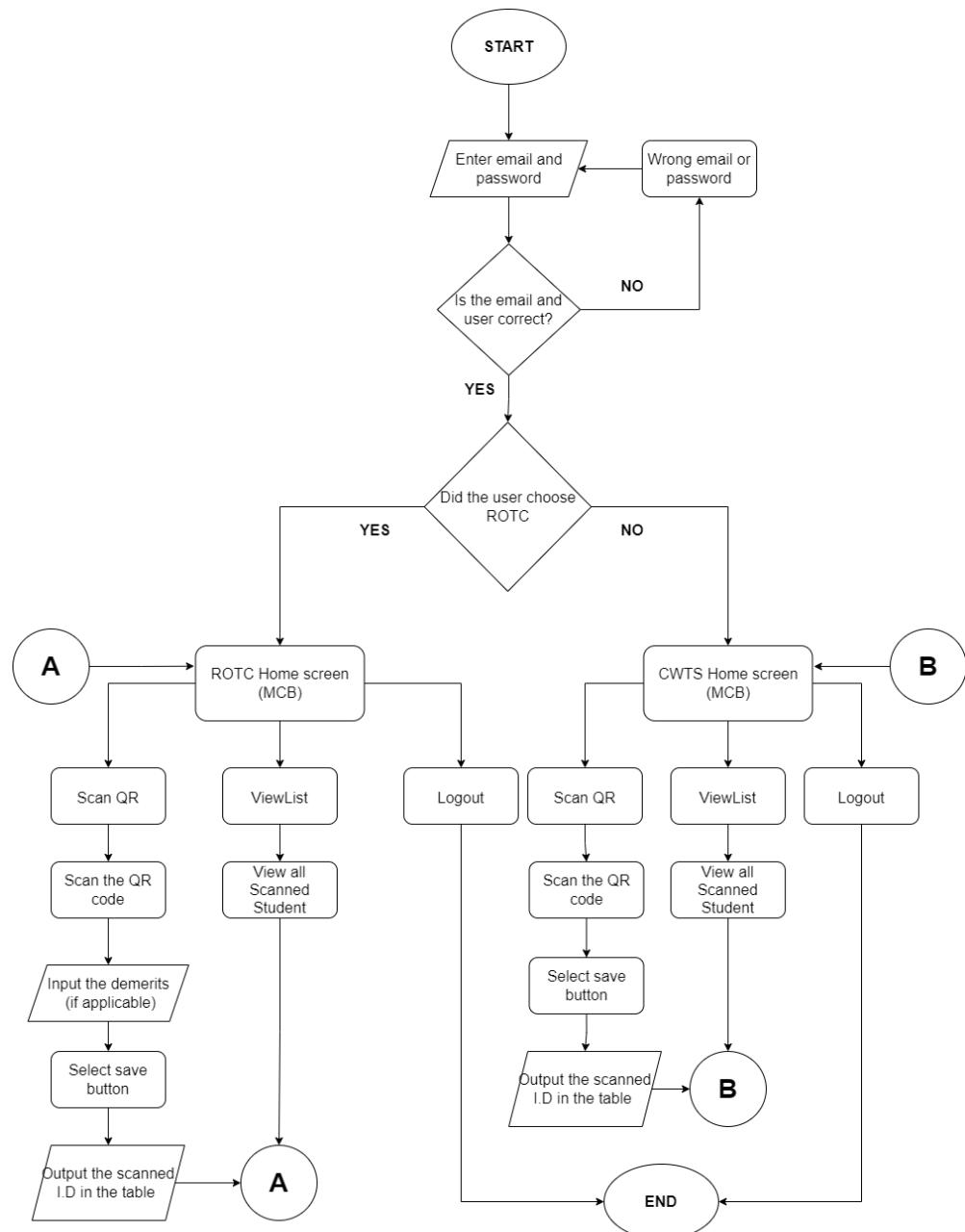


Figure 33. Staff Flowchart (Mobile App)

Figure 33 depicts the staff flowchart, where the staff will scan the QR code of the student for attendance, and input demerits for ROTC if applicable.

This section illustrates the concept and development of this project. The NSTP system included software for both web and mobile applications.

For Web Application:

1. Create a database using MySQL.
2. Design the Web Application UI using HTML, CSS, JS, and Bootstrap.
3. Program the NSTP system using python programming as a programming language and Django as a Python framework to create the web app using Python.

For Mobile Application:

1. Create a database using Firebase.
2. Create a Google Apps script to link the mobile app and Google Sheet.
3. Create a CSV file to store scanned students' QR codes.
4. Program the Mobile app using MIT App Inventor.

Operation and Testing Procedure

The following operating method must be followed for the NSTP System to run correctly.

The project's operation procedure serves as a guide for students, administrators, and staff members. The steps to be followed when operating the project for the admin are shown in Table 1; the operation method for students is shown in Table 2, the operation procedure for the admin's mobile app for NSTP attendance is shown in Table 3. The operation procedure for the staff's mobile app for NSTP attendance is shown in Table 4.

Table 1

Operation Procedures for Admin

Modules	Operation Procedure	Expected Output
Admin sign-up	1. Open the signup page 2. Enter the Username and Password 3. Click the 'Signup' button	- Successfully created an account.
Admin sign-in	1. Open the sign-in page 2. Enter the Username and Password 3. Click the 'Signin' button	- Admin Dashboard page.
Setting of school year	1. Click the 'Enrollment' drop-down 2. Click the School year 3. Enter the School year 4. Click the 'Add school year' button	- Show Successfulpop-up message - School year will be displayed on the table.

Creating announcements	<ol style="list-style-type: none"> 1. Click the 'Add announcements' button 2. Select a target audience 2. Enter the Subject and content 3. Click the 'Post' button 	- New announcements will be displayed.
Student's approval	<ol style="list-style-type: none"> 1. Click the Pending enrollees 'moreinfo' button 2. View the student's profile 3. Click the 'Approve' button 	<ul style="list-style-type: none"> - Students will be moved to the officially enrolled list. - Student status will become 'Enrolled'
Rejecting	<ol style="list-style-type: none"> 1. Click the Pending enrollees 'more info' button 3. View the student's profile 2. Click the 'Reject' button 	- Students will be moved to the rejected list.
Add of Platoon/Section	<ol style="list-style-type: none"> 1. Click the 'Add new section' button 2. Select a Component 3. Enter the name of the platoon/section 	- The new platoon/section will be added.

Adding of training days	<ol style="list-style-type: none"> 1. Click the ‘Attendance’ drop-down menu 2. Select a component 3. Click the ‘Add training day’ button 4. Enter the date and training daynumber 5. Click the ‘Create’ button 	<ul style="list-style-type: none"> - The new training day will be added.
-------------------------	---	---

Attendance Update	<ol style="list-style-type: none"> 1. Click the ‘Attendance’ drop-down menu 2. Select a component 3. Choose a CSV file generated by themobile app NSTP Attendance 4. Click the ‘Load CSV file’ button 5. Click the ‘Update Record’ button 	<ul style="list-style-type: none"> - There will be an update to the attendance record. - The grade for attendance will be calculated automatically. - The attendance Piechart will be updated both in admin and student
Adding of Activities	<ol style="list-style-type: none"> 1. Click the ‘Manage grades’ drop-down menu 2. Select a component 3. Click the Activities 4. Click the ‘Add Activity’ button 5. Enter the Activity name, Activity number, and total items. 6. Click the ‘Create’ button 	<ul style="list-style-type: none"> - Activities will be added - The activity total score will be calculated, and the percentage will be displayed.

Uploading of course materials	<ol style="list-style-type: none"> 1. Click the ‘Course materials’ drop-down menu 2. Select a component 3. Choose a section where you want to upload 4. Select a file and enter a note 5. Click the ‘Upload’ button 	<ul style="list-style-type: none"> - The course material will be displayed in admin and student UI together with the file name and date when it was posted.
Adding of Midterm Exam	<ol style="list-style-type: none"> 1. Click the ‘Manage grades’ drop-down menu 2. Select a component 3. Click the Midterm 4. Click the ‘Add Midterm’ button 5. Enter the Semester, date, and total items. 6. Click the ‘Create’ button 	<ul style="list-style-type: none"> - Midterm will be added. - The Midterm exam total score will be calculated, and the percentage will be displayed.

Adding of Final Exam	<ol style="list-style-type: none"> 1. Click the ‘Manage grades’ drop-down menu 2. Select a component 3. Click the Finals 4. Click the ‘Add Finas’ button 5. Enter the Semester, date, and total items. 6. Click the ‘Create’ button. 	<p>- Finals will be added The Final exam total score will be calculated, and the percentage will be displayed.</p>
----------------------	--	--

Grades management	<ol style="list-style-type: none"> 1. Click the ‘Manage grades’ drop-down menu 2. Select a component 3. Enter all the scores of Activities, Midterm, and finals 	<p>- The Total grade will be displayed automatically</p>
Certification	<ol style="list-style-type: none"> 1. Click the ‘Certification’ button 2. Select a Component 3. Setup the certificate information such as The school year, commandants’ name, registrar, and the given date 4. Click the ‘Save changes’ button 5. Select a specific school year 6. Click the ‘Generate’ button 	<p>- Every student in the selected academic year will have a Certificate</p> <p>- The selected certificate will have its status changed to done, and the date when it was generated will be displayed.</p>

Adding of alumni	<ol style="list-style-type: none"> 1. Click the ‘Alumni’ drop-down menu 2. Select a component 3. Select a school year 4. Click the ‘Add Alumni’ button 5. Select a Student 6. Click the ‘Add’ button. 	The selected student will be displayed on the alumni table
------------------	---	--

Table 2

Operation method for students

Modules	Operation Procedure	Expected Output
Student sign-up	<ol style="list-style-type: none"> 1. Open the signup page 2. Enter the Username andPassword 3. Click the ‘Signup’ button 	- Successfully created an account
Student sign-in	<ol style="list-style-type: none"> 1. Open the sign-in page 2. Enter the Username andPassword 3. Click the ‘Signin’ button 	- Student Dashboard
Edit profile	<ol style="list-style-type: none"> 1. Click the Profile menu 2. Enter all the Editableinformation such as the address, age, civil status, contact number, and so on 3. Click the ‘Update’ button 	- All information will be displayed on the student's profile

Uploading of health certificate	<ol style="list-style-type: none"> 1. Click the Profile menu 2. Enter the health status 3. Select a File ('pdf', 'Docx','jpg', 'jpeg', 'png') 4. Click the 'Upload' button 	<ul style="list-style-type: none"> - The file uploaded can be viewed by the admin - The student can preview the uploaded file
Downloading of Course material	<ol style="list-style-type: none"> 1. Click the File menu 2. Choose a course material 	<ul style="list-style-type: none"> - The selected file will be downloaded

Table 3

Operation procedure for admin mobile app NSTP attendance

Modules	Operation Procedure	Expected Output
Admin login	<ol style="list-style-type: none"> 1. Click the 'As Admin' button 2. Enter the username and password 3. Click the sign-in button 	<ul style="list-style-type: none"> - The home screen will be displayed
Adding of staff	<ol style="list-style-type: none"> 1. Enter the username of the staff in the text box 2. Enter the password in the password in the text box 3. Click the 'SAVE' button 	<ul style="list-style-type: none"> - The new staff will show in the listview table - The newly added staff may log in
Updating of password	<ol style="list-style-type: none"> 1. Select a staff in the listview table 2. Enter a new password in the password text box 3. Select the Update button 	<ul style="list-style-type: none"> - The old password will be updated - It will be displayed in the list view table

Deletion of staff	<ol style="list-style-type: none"> 1. Select a staff in the listviewtable 2. Select the Delete button 	<ul style="list-style-type: none"> - The staff will cease to exist from the table as well as in the firebase database
-------------------	---	--

Table 4

Operation procedure for staff mobile app NSTP attendance

Modules	Operation Procedure	Expected Output
Staff login	<ol style="list-style-type: none"> 1. Click the 'As Staff' button 2. Enter the username andpassword 3. Click the sign-in button 	<ul style="list-style-type: none"> - The home screen will be displayed
Students attendance	<ol style="list-style-type: none"> 1. Click on the 'SCAN' button 2. Scan the QR code of thestudent. 	<ul style="list-style-type: none"> - The scanned student QR code will be saved in a CSV file - The Student's informationwill be shown in listview
Demerits	<ol style="list-style-type: none"> 1. Click the 'SCAN' button 2. Scan the QR code of thestudent 3. Enter the demerits of thestudent obtained 	<ul style="list-style-type: none"> - The demerits will be savedin the CSV file - The demerits will bedisplayed in the listview

Evaluation Procedure

Ten (10) respondents were taken into account, along with administrators, alumni, and students. These respondents used the system the most frequently. The administration

is in charge of student sectioning and approval. After receiving admin clearance, students can access their dashboards. From there, they can view their dashboard, edit the profile information and download the course materials. the alumni search. The alumni search is open to all users, especially the alumni.

1. The researchers provided an overview of the features, protocols, and principles of the idea to a total of thirty (30) responders and displayed the functionality of the prototype.
2. Under the direction of the researchers, the responders manage the website to thoroughly examine the performance of the prototype.
3. The consents on the form had been explained by the researcher. The ISO/IEC 25010 Software Product Quality Criteria Evaluation Form was distributed to the responders.
4. The researchers provided instructions for grading the prototype of the ISO/IEC 25010 Software Product Quality Form using a Likert scale. The mean of the scores for each criterion was used to calculate the average rating for each form's criteria.

Scale Range and its Qualitative Interpretation

The mean of the data collected from the prototype's ISO/IEC 25010 Software Product Quality Form be calculated: The Descriptive Interpretation of the Mean with the Highest Acceptable numerical rating of 4.51-5.0, which is the highest descriptive rating, Very Acceptable is 3.51-4.0, and the average descriptive rating which is 2.51-3.0 for Acceptable, 1.51-2.0 which is Fairly Acceptable, and for the lowest descriptive rating

0.51-1.0 which is Not Acceptable that be used as the guide for rating.

Table 5

Likert Scale

Numerical Rating	Descriptive Rating
5.0	Excellent/Highly Acceptable
4.0	Very Good/Very Acceptable
3.0	Good/Acceptable
2.0	Fair/Fairly Acceptable
1.0	Poor/Not Acceptable

The evaluation's findings were gathered, calculated, and examined. The outcomes were evaluated using to ascertain the prototype's level of performance using Table 2 scale.

Table 6

Descriptive Interpretation of the Medium

Numerical Scale	Statistical Limit	Verbal Interpretation
5	4.51 - 5.00	Excellent/Highly Acceptable
4	3.51 - 4.50	Very Good/Very Acceptable
3	2.51 - 3.50	Good/Acceptable

2	1.51 - 2.50	Fair/Fairly Acceptable
1	1.00 - 1.50	Poor/Not Acceptable

Table 2 shows the descriptive interpretation of the mean, which can be used to analyze the results of each computed mean. If the rating was between 4.51 and 5.0, the project was deemed Highly Acceptable. If the rating was between 3.51 and 4.0, the project was deemed Very Acceptable." If the rating was between 2.51 and 3.0, the project was deemed Acceptable. If the score was If the rating was between 1.51 and 2.0, it meant the project was Fairly Acceptable. If it was between 0.51 and 1.0, it meant the project was Not Acceptable.

Chapter 4

RESULTS AND DISCUSSION

This chapter contained the Project Description, Project Capabilities and Limitations and Project Test Results.

Project Description

The NSTP System the researchers made for the Technological University of the Philippines – Cavite Campus is a web application that was used to improve the workflow of the CWTS and ROTC program's end users, specifically its program instructors, the students currently taking or the alumni of the ROTC or CWTS programs.

The web application also had a complementary mobile application to enhance the administrator and staff's experiences. In the mobile application, the administrator and staff are required to sign in for them to be provided access to the functions limited to their respective roles. The administrator is capable of viewing the attendance list, the searching, adding, updating, and deleting of users. Meanwhile the staff, or the program instructors are also capable of viewing the attendance list, with the added feature of being able to scan a student's ID to verify their attendance, giving them demerits at their discretion.

Project Structure

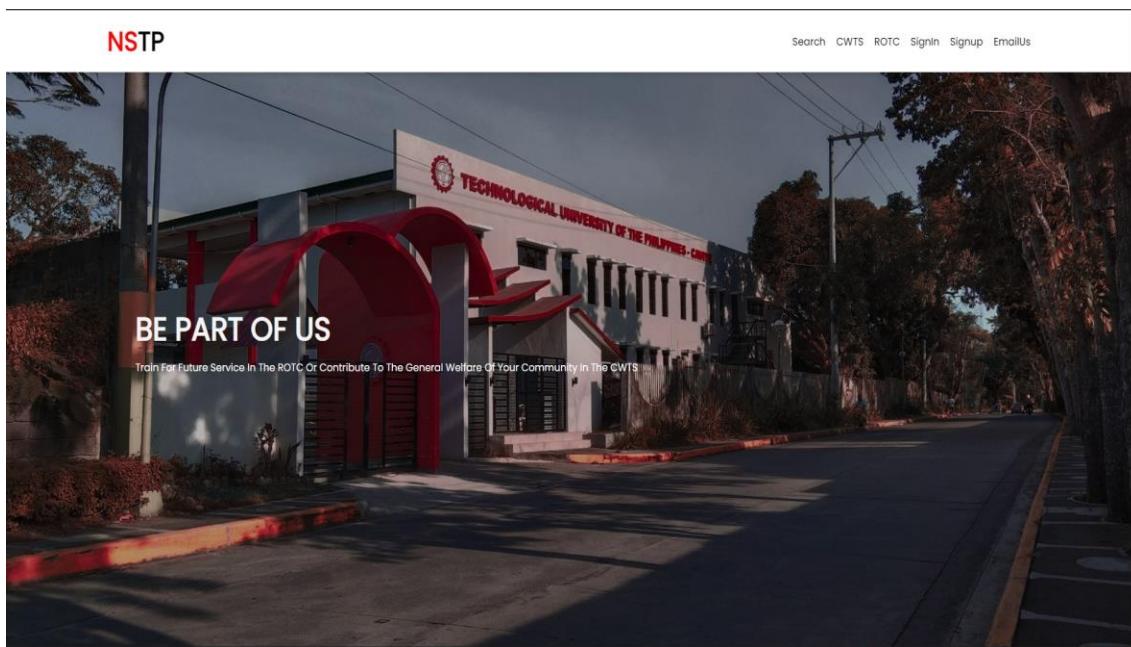


Figure 34. Landing Page

Figure 32 is the landing page of the NSTP Web Application. Here students can see Search, CWTS, ROTC, Sign In, Sign up, and Email us. This is the first thing a

student will see when entering the Web Application.

The screenshot shows the 'ALUMNI NAME SEARCH' page of the NSTP website. At the top, there is a navigation bar with links for HOME, ABOUT, ROTC, CIVTS, ALUMNI (which is highlighted in orange), SIGN UP, SIGN IN, and CONTACT US. Below the navigation bar is a search form titled 'Enter Name' with fields for 'First name' and 'Last name', and a 'Search' button. A message indicates '1 result(s) found'. A table displays one result with columns for Firstname, Lastname, NSTP Companion, and School Year. The data in the table is: Firstname - Renzhi Angelo, Lastname - Sena, NSTP Companion - ROTC, School Year - 2021-2022. At the bottom of the page, there is a note stating: 'Note: The Alumni Informations are limited only. NSTP System will not give the Full Information About Specific person Please Contact the NSTP Office or message us [here](#)'. The footer contains copyright information: '© 2022 SENTINELS. NSTP System' and social media icons for Facebook, Twitter, Google+, LinkedIn, and YouTube.

Figure 35. Alumni Search

Figure 35 is the Alumni Search of the NSTP Web App. in this page, all students in the past will be displayed, and they can see their basic information, such as the name of the graduates, the year they graduated, and what NSTP components they had taken.

Civic Welfare Training Service (CWTS)

Reserve Officers Training Corps (CWTS) - designed to provide military training to tertiary level students in order to motivate, train, organize and mobilize them for national defense preparedness.

CWTS TUP-Cavite

Civic Welfare Training Service (CWTS) is a term used to describe activities that contribute to the general welfare of the community, the betterment of community life, or the enhancement of community facilities, particularly those aimed at enhancing the public's health, education, environment, entrepreneurship, safety, recreation, and morale, as well as other social welfare services.

- » Aerobic
- » Cardio
- » Abdomen
- » Special Trainer
- » Round the clock



Figure 36. CWTS Page

Figure 36 is the CWTS Page of the NSTP Web App. On this page, students will see two NTSP components. one for ROTC and the other for CWTS. These components contain additional details about ROTC and especially CWTS.

Reserve Officers Training Corps (ROTC)

Reserve Officers Training Corps (ROTC) - designed to provide military training to tertiary level students in order to motivate, train, organize and mobilize them for national defense preparedness.



236th NROTCU TUP-Cavite

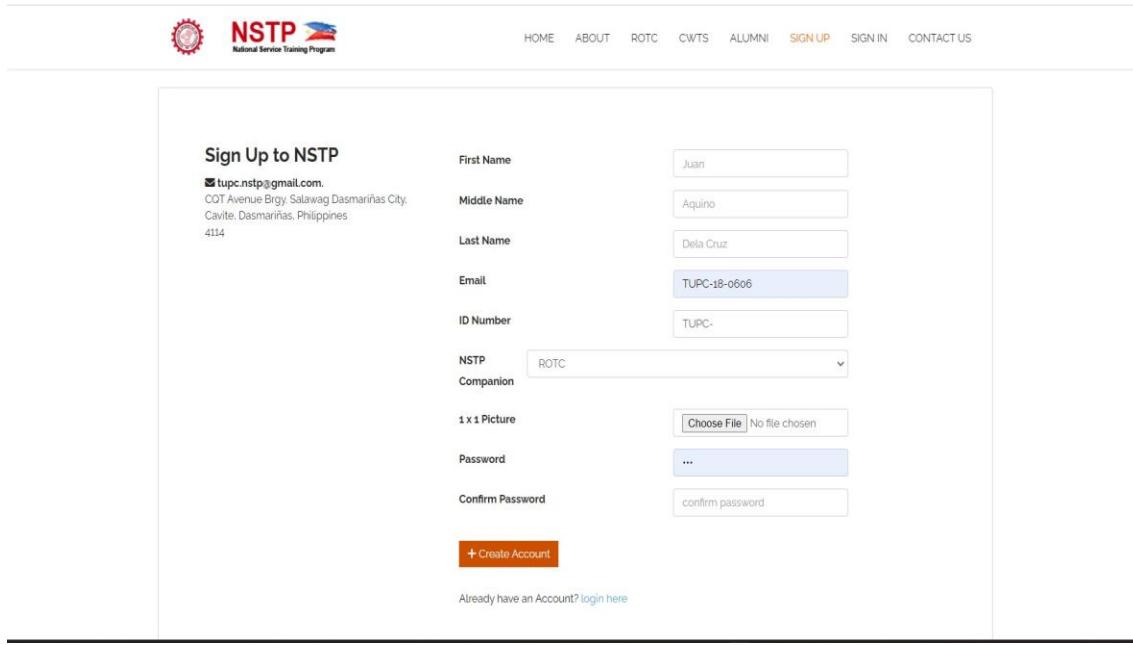
Lorum ipsum dolor sit amet, consectetur adipiscing elit. Praesent eget risus vitae massa semper aliquam quis mattis quam. Morbi vitae tortor tempus, placerat leo et, suscipit lectus. Phasellus ut euismod massa, eu eleifend ipsum.

Lorum ipsum dolor sit amet, consectetur adipiscing elit. Praesent eget risus vitae massa semper aliquam quis mattis quam adipiscing elit. Praesent eget risus vitae massa.

- » Aerobic
- » Cardio
- » Abdomen
- » Special Trainer
- » Round the clock

Figure 37. ROTC Page

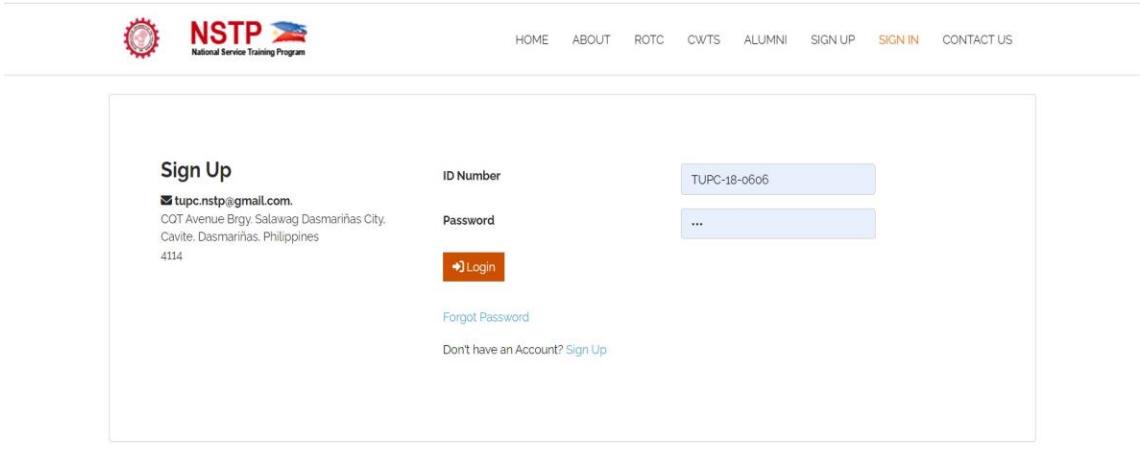
Figure 37 is the ROTC Page of the NSTP Web App. On this page, students can find additional details about ROTC. It covers what ROTC is, what ROTC is for, how ROTC started, and more.



The screenshot shows the ROTC page of the NSTP Web App. At the top, there is a header with the NSTP logo (a circular emblem with a figure) and the text "NSTP National Service Training Program". Below the header, a navigation menu includes links for HOME, ABOUT, ROTC, CWTS, ALUMNI, SIGN UP (which is highlighted in orange), SIGN IN, and CONTACT US. The main content area is titled "Sign Up to NSTP". It contains several form fields: First Name (Juan), Middle Name (Aquino), Last Name (Dela Cruz), Email (TUPC-18-0606), ID Number (TUPC-), and a dropdown menu for "NTP Companion" which is set to "ROTC". There is also a "1 x 1 Picture" field with a placeholder "Choose File No file chosen", a "Password" field with three dots, and a "Confirm Password" field with "confirm password". At the bottom of the form is an orange "Create Account" button. Below the form, a small note says "Already have an Account? [login here](#)".

Figure 38. Sign Up Page

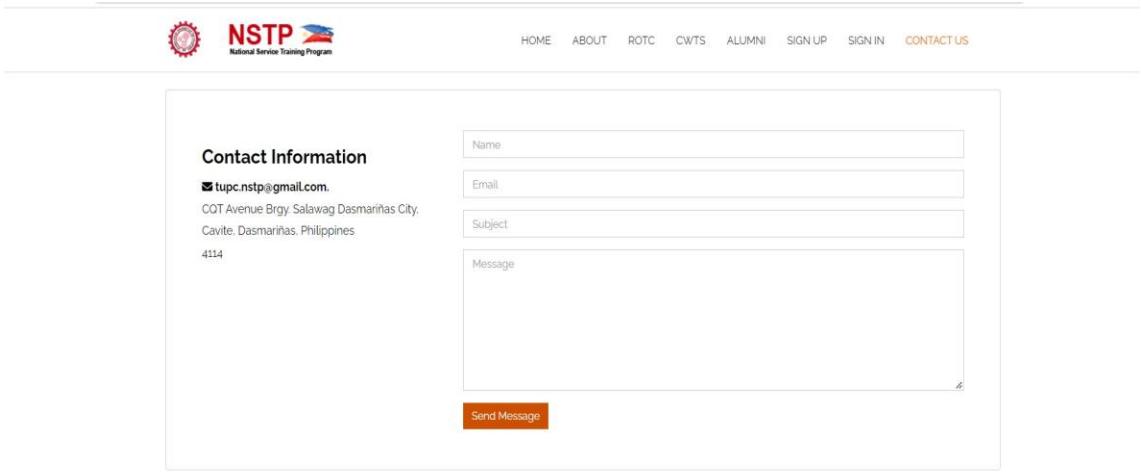
Figure 38 shows the NSTP Web App's Sign Up Page. Students will need to fill out this form on this page in order to enroll in NSTP. They must fill out forms and provide information such as their full name, section/course, ID number, passwords, Home Address, cellphone numbers and health-related information such as health certificates.



The screenshot shows the 'Sign Up' page of the NSTP system. At the top, there is a logo for 'NSTP National Service Training Program'. Below the logo, a navigation bar includes links for HOME, ABOUT, ROTC, CWTS, ALUMNI, SIGN UP, SIGN IN, and CONTACT US. The main content area has a light gray background and features a 'Sign Up' heading. It includes fields for 'ID Number' (containing 'TUPC-18-0606') and 'Password' (containing '...'). Below these fields is an orange 'Login' button with a key icon. Underneath the password field, there is a 'Forgot Password?' link and a 'Don't have an Account? [Sign Up](#)' link.

Figure 39. Sign In Page

Figure 39 shows the NSTP System sign-in page, where students must input their login information, including their GSFE email and password, to access the student's dashboard.



The screenshot shows a contact form on the NSTP website. At the top, there is a logo for 'NSTP National Service Training Program'. Below the logo, a navigation bar includes links for HOME, ABOUT, ROTC, CWTS, ALUMNI, SIGN UP, SIGN IN, and CONTACT US. The main content area has a light gray background and features a 'Contact Information' heading. It includes fields for 'Name', 'Email', 'Subject', and a large 'Message' area. At the bottom of the message area is an orange 'Send Message' button.

Figure 40. Contact Us Page

Figure 40 is the Contact Us of the NSTP Web App. In this part, students, alumni, or anyone outside the school can email if they have any concerns about NSTP such as certificates. Just type their name, email, subject and message and then click send message to send the message to the NSTP admin or staff.

The screenshot shows the NSTP System Dashboard. On the left, there's a sidebar with a logo and navigation links for General (Dashboard, Enrollment, Manage Students, Attendance), Extra (Manage Grades, Certification, Course Materials, Alumni), and a bottom section with a yellow button. The main area has four colored boxes at the top: Active Students (0), Pending Enrollees (0), School Year (2023-2024), and All Sections (8). Below these are two tables: 'Announcements List' and 'Feedback'.

Announcements List:

Subject	Target Audience	Date Posted	Content	Action
Announcement 1	ALPHA	Dec. 6, 2022, 11:16 p.m.	sample data	<button>Update</button> <button>Delete</button>
CHRISTIAN RAPAL	ALL	Dec. 6, 2022, 10:59 p.m.	sfsfs	<button>Update</button> <button>Delete</button>

Feedback:

Sender	Email	Date Sent	Subject	Message	Action	Send Response
Christian Rapal	christianrapal2000@gmail.com	Oct. 11, 2022	Service	I would like to claim my certificate. I graduated on June 1999	<button>Done</button>	<button>Send Response</button>

Figure 41. Dashboard

Figure 41 is the Dashboard of the NSTP Web App. in this part, the number of active students in NSTP, the number of pending enrollees, the school year, and the total number of sections can be seen. The announcement list can also be seen below. On the right side is the add new announcement button. The announcement list includes the subject, target audience, date when the information was posted, and the statement's content. Feedback can also be found below. Here you can see those who messaged NSTP. What is their name,

email they used, date when they sent the email, what was the subject of the email sent, and finally, messages or questions they want to know and be answered.

The Admin can also send their response and action to the sender.

The screenshot shows the NSTP System Dashboard with two main modal windows open:

- ANNOUNCEMENT**: A modal window titled "Create Custom and General Announcements". It includes fields for "Target Audience" (set to "ALL"), "Subject", "Content", and a "POST" button. Below the form is a table listing existing announcements:

Subject	Target Audience	Date Sent	Message	Action
Announcement 1	ALPHA	Dec. 8, 2022, 116 p.m.	sample data	<button>Update</button> <button>Delete</button>
CHRISTIAN RAPAL	ALL	Dec. 8, 2022, 10:59 p.m.	sfsf	<button>Update</button> <button>Delete</button>

- Feedback**: A modal window titled "Feedback". It lists a single feedback entry:

Sender	Email	Date Sent	Subject	Message	Action	Send Response
Christian Rapal	christianrapal2000@gmail.com	Oct. 11, 2022	Service	I would like to claim my certificate. I graduated on june 1999.	<button>Done</button>	<button>Send Response</button>

Figure 42. Announcement Page

Figure 42 is the Announcement of the NSTP Web App. In this part, the admin can create an Announcement. He can also change the target audience. It's either all or specific sections only. After that, he will put the subject and content below, then click post to post the announcement.

The screenshot displays the 'MANAGE SCHOOL YEAR' section of the NSTP system. On the left, a sidebar menu includes categories like ADMIN, STUDENT, and EXTRA. The 'School Year' option under ADMIN is selected. The main area shows the 'Setting up of Academic Year' form with fields for Start Year (2022) and End Year (2023), and a 'Create' button. Below it is the 'School Year List' table with one row: 'Registration Status' (Open), 'School Year' (2022-2023), and an 'Action' column with a 'Delete' button. To the right is the 'Modify Academic Year' form with dropdowns for 'School Year', 'Registration Status', and 'Term', and a 'Update' button.

Figure 43. School Year Management Page

Figure 43, School year management is about keeping track of students' academic years. In addition to adding new academic years, administrators can modify the status of the existing academic year by either closing it or opening it.

The screenshot shows the 'ENROLLED STUDENTS' section. The sidebar menu includes General, Enrollment, Manage Students, and Attendance. The main area displays a table titled 'School Year List 2023-2024' with columns for ID NUMBER, FULL NAME, EMAIL, FIRST TERM, SECOND TERM, COURSE, FIELD, and FIELD SECTION. A green bar at the top of the table header indicates 'Officially Enrolled'. The table shows 'No data available in table'. Navigation buttons at the bottom include First, Previous, Next, and Last.

Figure 44. Officially Enrolled Page

The instructors are able to view the list of students officially enrolled as shown in Figure 44. In the page, a table containing ten columns, eight of the ten displaying information regarding the current school year's officially enrolled students' ID number, full name, email, first and second term, course, field and field section informations, with the remaining two columns for actions regarding that specific row namely options and save. The user is also able to customize how many entries they are able to view at a time.

The screenshot shows a web-based application interface for managing student enrollment. On the left, there is a sidebar with a user profile icon and a navigation menu. The main content area is titled "PENDING ENROLLEES". It features a table with the following columns: School Year, Officially Enrolled, Pending Enrollees (which is the active tab), and Rejected. Below the table, there is a search bar and a message indicating "Showing 0 to 0 of 0 entries". The table header includes columns for ID Number, Full name, Email, FIRST TERM, SECOND TERM, Course, NSTP Field, View Profile, and Action. The "Pending Enrollees" tab is highlighted in black, while the others are greyed out. The "View Profile" and "Action" columns contain small icons for further interaction.

Figure 45. Pending Enrollees Page

In Figure 45, the instructors are able to view the updated list of current pending enrollees. The instructors are able to view a pending enrollee's ID number, full name, email, first term, second term, course and NSTP field, here they are given the ability to preview the enrollee's profile or other actions available to them.

The screenshot shows the 'REJECTED' section of a student management system. The main content area displays a table with columns for ID NUMBER, FULL NAME, EMAIL, COURSE, FIELD, VIEW PROFILE, SEND EMAIL, and Action. A search bar is located at the top right of the table. The table currently shows 'No data available in table'. The left sidebar contains a navigation menu with categories like General, Enrollment, Manage Students, Attendance, Extra, Manage Grades, Certification, Course Materials, and Alumni. The 'Rejected' tab is highlighted in red. A watermark of the Technological University of the Philippines logo is overlaid on the page.

Figure 46. Rejected Students Page

Figure 46 shows the rejected students. Its table consists of the rejected student's ID number, full name, email, course and field. They are also able to make actions, preview the rejected student's profile or send them an email. The admin can also search the name of the rejected students.

Enrolled Students

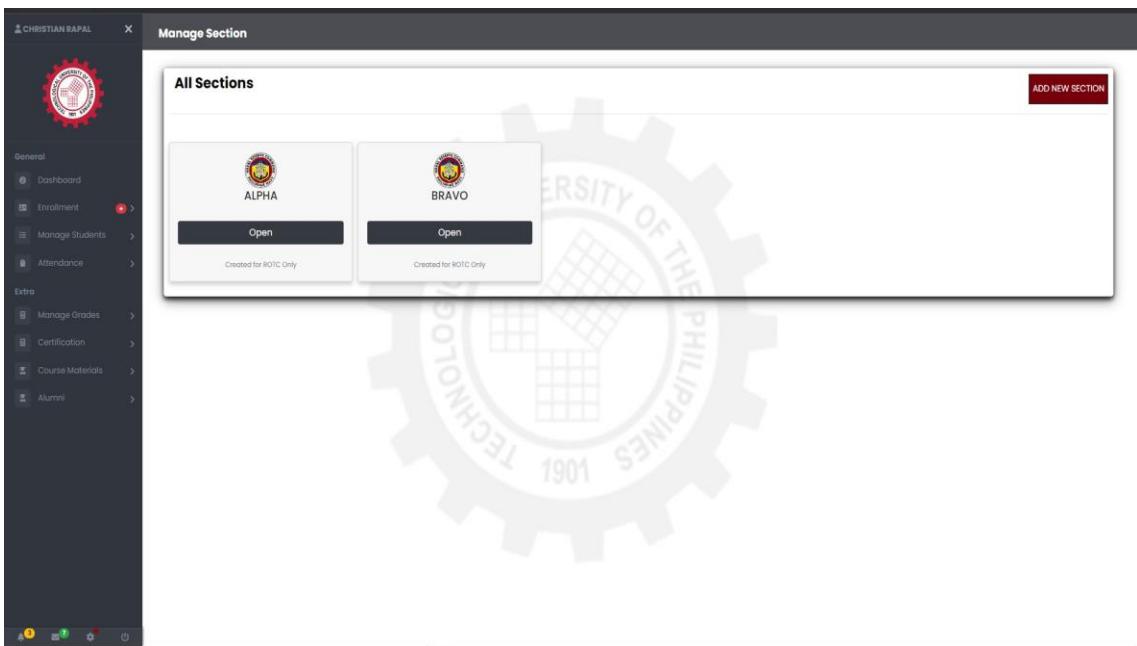
Select Student/s for SECTION A

<input type="checkbox"/>	ID NUMBER	FULL NAME	COURSE	MEDICAL CONDITIONS	MEDICAL PROOF	NOTES
<input type="checkbox"/>	TUPC-18-0905	JHOUSUA CAMARILLO JUMLAIN	BET-COET 4A	Asthma	Medical Proof	hahagfdg

[Add to SECTION A](#)

Figure 47. Students Medical Conditions

Figure 47 shows how the administrator can access the information once the students submit their health certificates, allowing them to be assigned to the specific platoons or components to which they will belong. In this page, you can see the student's I.D Number, the student's full name, course, medical conditions, and medical proof of his illness and note what the admin's opinion will be on the student's medical history.



Figures 48-49. Manage Section for CWTS and ROTC

Figure 48-49 shows the Manage Section page, where all sections and platoons are presented. Depending on the number of students, the admin may manually add more units if the current section has already reached its maximum number.

The screenshot shows a software interface titled "Manage Section > BRAVO". On the left is a sidebar with a user profile picture and a red gear icon, followed by a navigation menu with options like General, Enrollment, Manage Students, Attendance, Extra, and Alumni. The main content area is titled "Officially Enrolled Students" and shows a table with one entry:

ID NUMBER	FULL NAME	COURSE	MEDICAL CONDITIONS	MEDICAL PROOF	NOTES	ACTIONS
TUPC-18-0168	POGI CACHOLA RAPAL	BET-COET 4A	Asthma	Medical Proof	nahimatay last training day	<button>Edit</button>

Below the table, it says "Showing 1 to 1 of 1 entries". There are "Previous" and "Next" buttons. A search bar is at the top right, and a green "Add Student" button is also present.

Figure 50. Inside the Platoon/Section Page

Figure 50 shows all the students inside the platoon or section, where the administrator can control the students' platoon and relocate them to fit according to their health status. The admin can also add students to this page.

The screenshot shows a detailed view of a student's profile titled "Manage Section > TUPC-18-0168". The sidebar is identical to the previous screenshot. The main content area is divided into several sections:

- Attendance Record:** Shows a pie chart with 75.00% current score, 3 Present Days, and 1 Absent Days.
- Grade:** Shows First Sem Grade (82.90), Second Sem Grade (2nd Sem grade), and a third field labeled "2nd Sem grade".
- Student Information:** Displays the student's name (CHRISTIAN RAPAL RAPAL), email (christian.rapal@gsfe.tupcavite.edu.ph), ID number (TUPC-18-0168), address (Dasmariñas Cavite), gender (Male), age (22), birthday (12/14/2022), course (BET-COET 4A), contact (09959966668), civil status (Single), nationality (Filipino), and family information (Father: Roberto rapal, Profession: Farmer).
- NSTP Companion:** Shows ROTC selected in the dropdown.
- Status:** Shows ENROLLED selected in the dropdown.
- Note:** Contains the note "edellondhydu".
- Update:** A green "Update" button at the bottom right.

Figure 51. Student Profile Page

Figure 51 Students' profile preview. The administrator is able to see the data pertaining to students, some of which can be changed by the students themselves, including their addresses and phone number. Even the NSTP companion, what NSTP Program they took, the platoon to which they are assigned, their status, and the note for the reminders or guidelines of the staff or admin of the NSTP Program to the students.

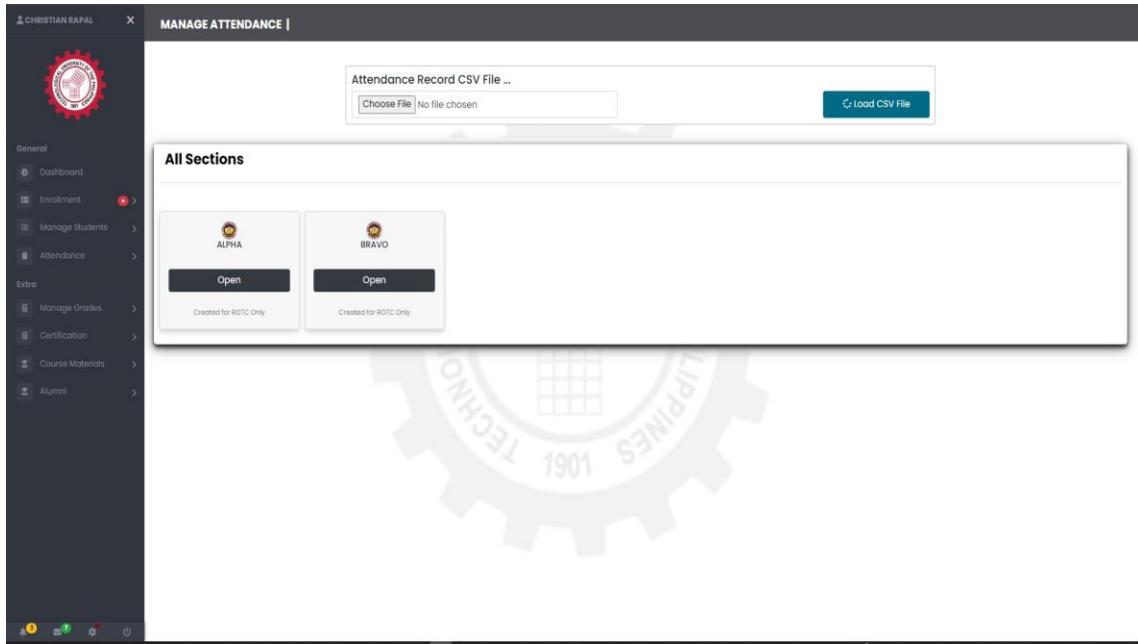


Figure 52. Manage Attendance Page

In Figure 52, Manage Attendance is shown. The student's name, date, and time must be included in a CSV file that the admin uploads. The mentioned CSV file was obtained through the mobile application used by the staff to scan the students' QR codes for attendance.

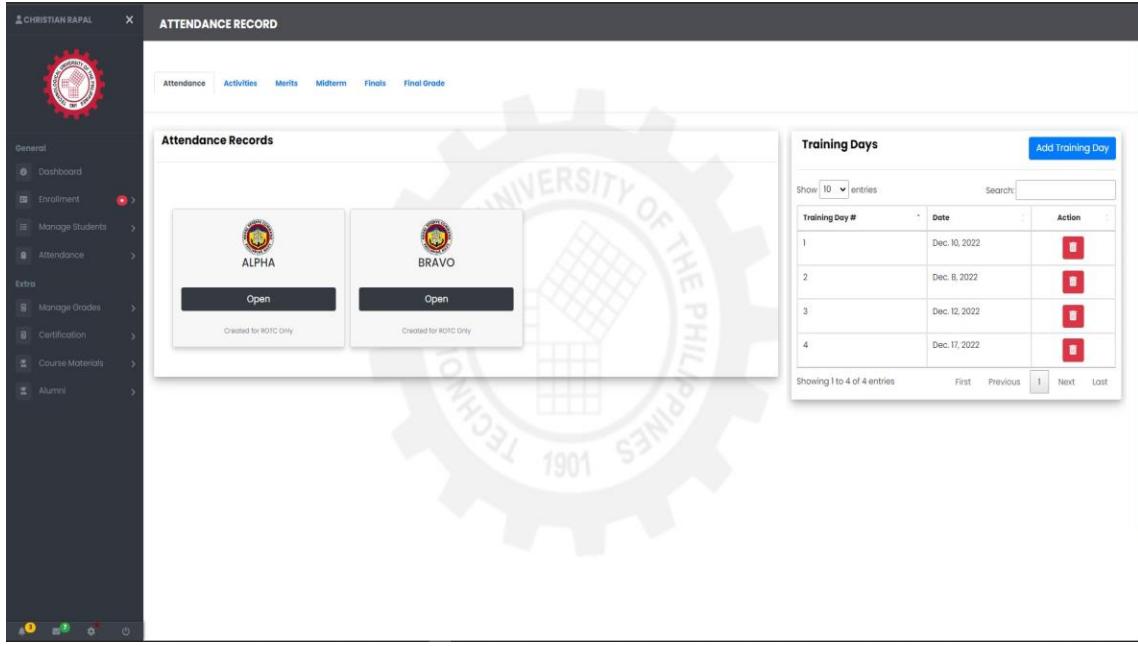


Figure 53. ROTC Company Attendance Records Page

Figure 53: Attendance Records. The administrator will add training days to this page so that another week will be recorded. The number of the training day and what date the training day was added can be seen here. Admin can also delete the training day he did.

The screenshot shows a web-based attendance record system. At the top, a header bar displays "ATTENDANCE RECORD > BRAVO" and the user's name, "CHRISTIAN RAPAL". On the left, a sidebar menu includes "General" (Dashboard, Enrollment, Manage Students, Attendance), "Extra" (Manage Grades, Certification, Course Materials, Alumni), and system status indicators (yellow, green, red, grey). The main content area is titled "Officially Enrolled Students" and contains a table with the following data:

ID NUMBER	FULL NAME	TD1	TD2	TD3	TD4	TD5	TD6	TD7	TD8	TD9	TD10	TD11	TD12	TD13	TD14	TD15	CREDITS
TUPC-18-0168	CHRISTIAN RAPAL CACHOLA RAPAL	1	1	1	1												30.00

Below the table, a message says "Showing 1 to 1 of 1 entries". A "Search:" input field and "Download List" button are at the top right. At the bottom right is a "Update Record" button.

Figure 54. Attendance Record for Bravo Company Page

In Figure 54, we can see bravo company's attendance list with its officially enrolled students detailing their training days that they have attended and missed with the credits that they have earned encoded in a table. We are able to update the record the more training days there are. We are also able to download all this information as a list for later viewing.

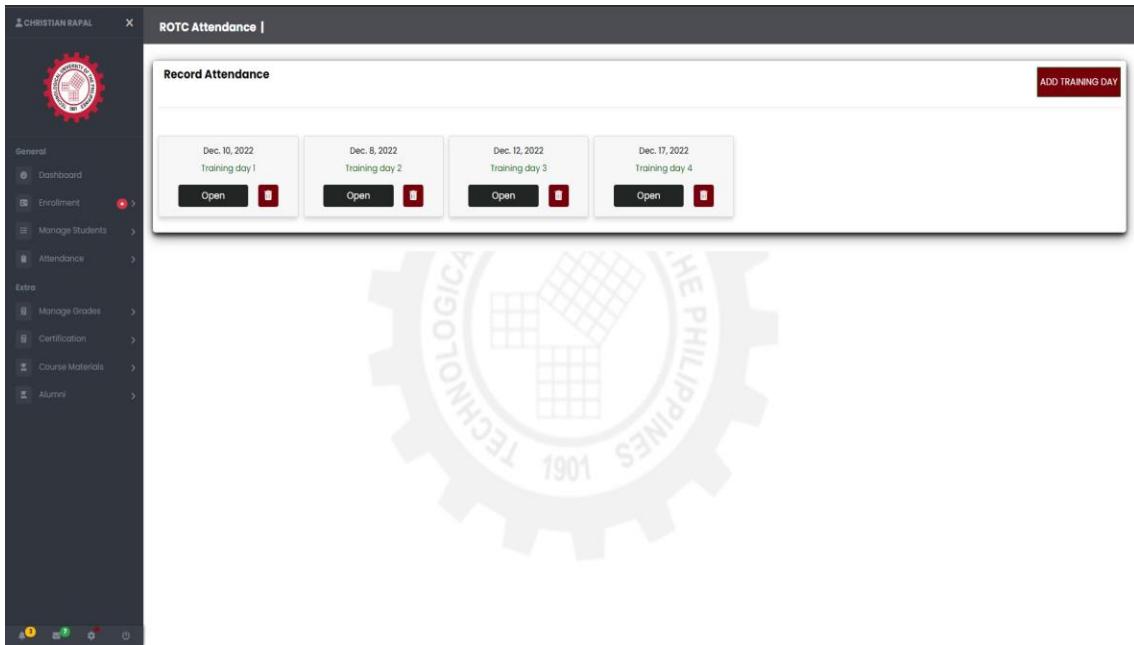


Figure 55. ROTC Training Day Attendance Page

In this part, you can see the number of training days in ROTC. Admin can also add new training days every week to this part. By clicking add training day in the upper right corner. The admin can also delete his added training days attendance.

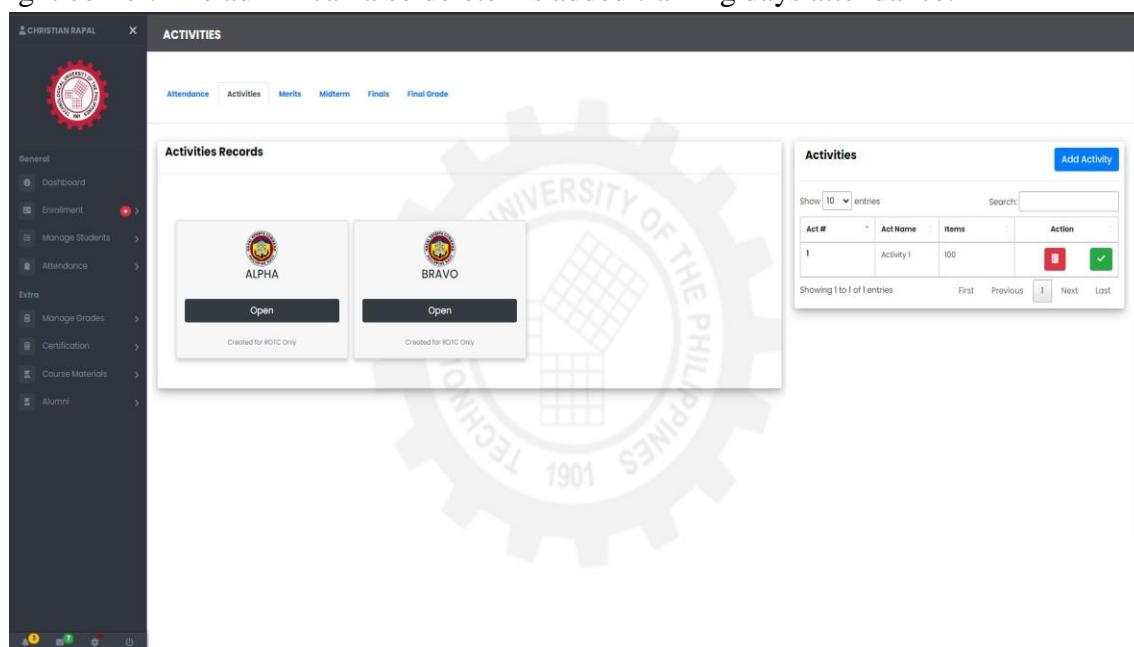


Figure 56. ROTC Company Activities Page

In this part, you can see the number of activity records made for ROTC students. The admin can also add activities to this part by clicking add activity in the upper right corner. You can also see the activity number, activity name, how many items the activity has and lastly, the admin can also delete the activity he did.

The screenshot shows a web-based application interface for managing ROTC student activities. The left sidebar contains navigation links for General (Dashboard, Enrollment, Manage Students, Attendance), Extra (Manage Grades, Certification, Course Materials, Alumni), and a bottom row of icons. The main content area is titled "ACTIVITIES > BRAVO". It displays a table titled "Activity data" with one entry for student "TUPC-1B-0168" named "CHRISTIAN RAPAL CACHOLA RAPAL". The table columns are ID NUMBER, FULL NAME, ACT1, ACT2, ACT3, ACT4, ACT5, ACT6, and ACTIVITY 10%. The ACT1 column shows a value of "90", while other columns show "1st Sem Activity". A large watermark of the Philippine Technological University logo is visible in the background. At the bottom of the page is a teal-colored button labeled "Save Activities".

ID NUMBER	FULL NAME	ACT1	ACT2	ACT3	ACT4	ACT5	ACT6	ACTIVITY 10%
TUPC-1B-0168	CHRISTIAN RAPAL CACHOLA RAPAL	90	1st Sem Activity	9.00				

Figure 57. ROTC Activities Page

Figure 57: ROTC Activities; on this page, all activity scores and the overall percentage of students are displayed. Grades are calculated automatically. The admin can also download the list and export the list in this page.

ID NUMBER	FULL NAME	QUIZ 1	QUIZ 2	QUIZ 3	QUIZ 4	QUIZ 5	QUIZ 6	TOTAL	QUIZ Percentage
TUPC-18-0606	JHOUSUA CAMARILLO JUMALON	40							24.00

Figure 58. CWTS Quiz Record for Section A

In this part, you will find here the quiz record of the CWTS student along with the TUPC - ID and full name of the CWTS student. The admin can also download the entire list of quiz records and export it by clicking the download list in the upper right corner. The grades in this part are automatically graded and calculated.

The screenshot shows a software interface titled "CWTS COURSE EVALUATION > MIDTERM > SECTION A". On the left is a dark sidebar with a logo at the top and several menu items: General, Dashboard, Enrollment, Manage Students, Attendance, Extra, Manage Grades, Certification, Course Materials, and Alumni. The main content area is titled "Midterm Grading" and contains a table with one entry. The table has columns for ID Number, Full name, Midterm Exam Result, Total Items, and Credits. The entry shows TUPC-18-0606, JUMALON JHOUSUA, 76, 100, and 11.40 respectively. Below the table is a message "Showing 1 to 1 of 1 entries". At the bottom right is a blue button labeled "Save Midterm". Above the table are buttons for "Download List" and "Export". A search bar is also present. A watermark for "TECHNOLÓGICO DE FILIPINAS 1901" is visible in the background.

ID Number	Full name	Midterm Exam Result	Total Items	Credits
TUPC-18-0606	JUMALON JHOUSUA	76	100	11.40

Figure 59. Midterm Exam Grading for CWTS Section A

In this part, you can see the total result of the midterm exam of CWTS Students, including the TUPC - ID, full name of students, midterm exam result, and complete items of the exam. The grades in this part are automatically graded and calculated.

The screenshot shows a software interface titled "CWTS COURSE EVALUATION > FINAL EXAM > SECTION A". The sidebar and layout are identical to the Midterm Grading page. The main content area is titled "Finals Grading" and contains a table with one entry. The table has columns for ID Number, Full name, Midterm Exam Result, Total Items, and Credits. The entry shows TUPC-18-0606, JUMALON JHOUSUA, 100, 100, and 15.00 respectively. Below the table is a message "Showing 1 to 1 of 1 entries". At the bottom right is a blue button labeled "Save Finals". Above the table are buttons for "Download List" and "Export". A search bar is also present. A watermark for "TECHNOLÓGICO DE FILIPINAS 1901" is visible in the background.

ID Number	Full name	Midterm Exam Result	Total Items	Credits
TUPC-18-0606	JUMALON JHOUSUA	100	100	15.00

Figure 60. Final Exam Grading for Section A

In this part, you can see the total result of the final exam of CWTS Students, including the TUPC - ID, full name of students, midterm exam result, and complete items of the exam. The grades in this part are automatically graded and calculated.

The screenshot shows a web-based course evaluation system for CWTS. The main title is "CWTS COURSE EVALUATION > FINAL GRADE > SECTION A". On the left, there's a sidebar with a logo and navigation links for General (Dashboard, Enrollment, Manage Students, Attendance) and Extra (Manage Grades, Certification, Course Materials, Alumni). The main content area is titled "Final Grade" and displays a table with one entry. The table columns are: ID Number, Full name, Attendance, Quizzes / Activities, Exercises, Midterm Exam, Final Exam, Final Grade, and Equivalent. The single row shows: TUPC-18-0606, JIMALON JHOUSUA, 5.00, 24.00, 22.50, 18.40, 15.00, 77.50, and 3. There are "Download List" and "Export" buttons at the top right, and a search bar. Below the table, it says "Showing 1 to 1 of 1 entries". At the bottom right is a "Update Grade" button. A watermark of the Polytechnic University of the Philippines seal is visible in the background. The Windows taskbar at the bottom shows icons for Start, Task View, File Explorer, Edge, and Power.

Figure 61. Final Grade for CWTS Section A

In this part, you can see the total result of the midterm exam of CWTS Students, including the TUPC - ID, full name of students, attendance, quizzes and activities, exercises, midterm and final exam result, and final grade of students. The grades in this part are automatically graded and calculated.

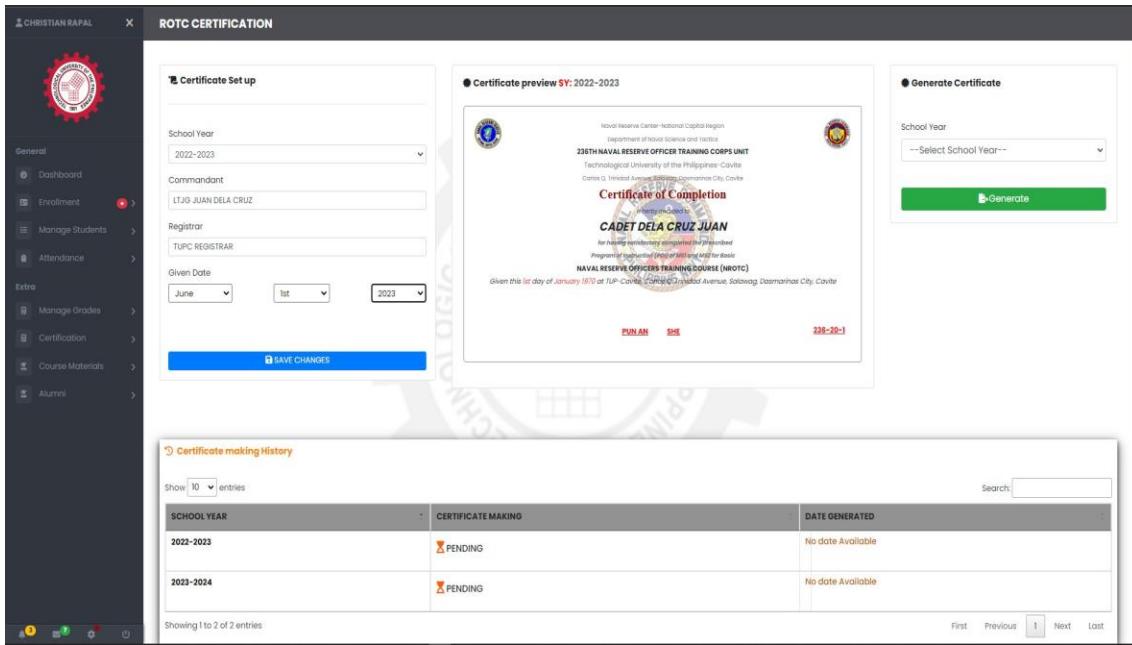


Figure 62. ROTC Certification Page

In this part, the creation of the ROTC Certificate can be seen here. In the left corner, you can see the setting up of the certificate by typing school year, name of commandant or ROTC student, registrar, and given date or day of making the certificate. And when everything needed has been entered, press the save changes button, and in the certificate, a preview will appear of all the information of the students entered earlier, including the school year. In the right corner, you can press generate to print the certificate that has been created. On the other hand, you can see the history of the certifications made at the same time as their school year.

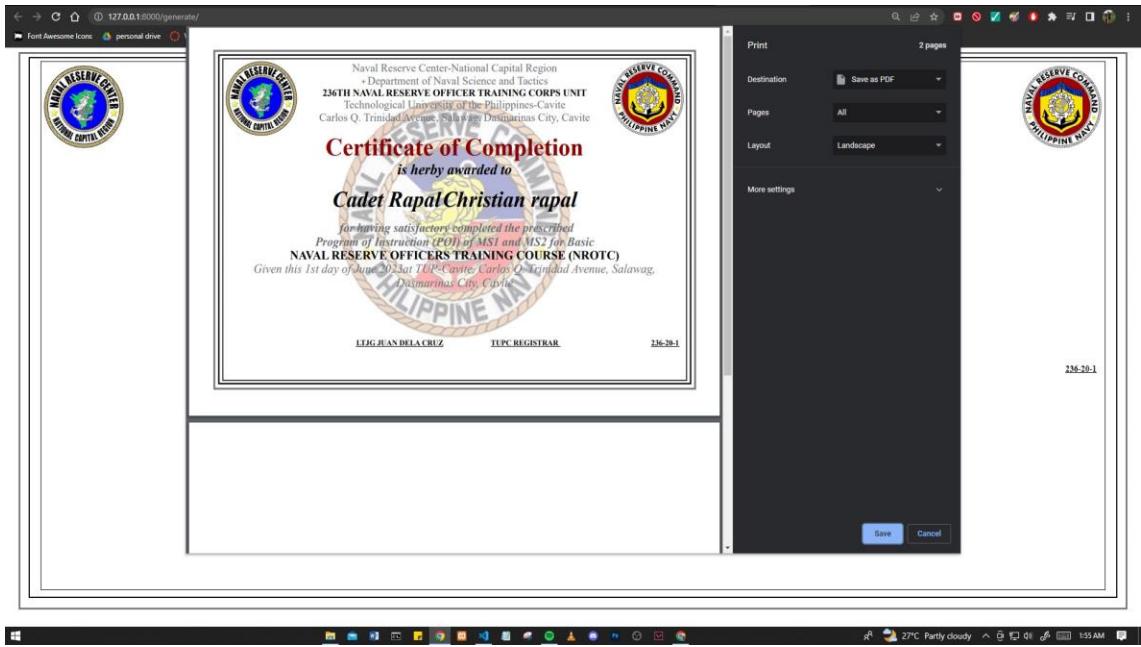


Figure 63. Certification of Completion

In this part, you can see the printing or saving of the ROTC Certificate. In this part, the student can choose whether they want to receive a pdf file or a hard copy of the certificate that was made to them. After that, the created certificate can be saved.

NOTE	PLATOON	FILE	Date Posted	ACTION
erwhtetet	ALPHA	/media/oi/_files/20548275_6326625.jpg	Dec. 10, 2022, 6:53 p.m.	<button>Delete</button>
fdog	ALPHA	/media/oi/_files/cbhfgl.png	Dec. 10, 2022, 6:40 p.m.	<button>Delete</button>
fqrqf	ALPHA	/media/oi/_files/seekpng.com_banner-design-png_9807829.png	Dec. 10, 2022, 6:53 p.m.	<button>Delete</button>
fafaf		/media/oi/_files/shopping.webp	Dec. 10, 2022, 6:41 p.m.	<button>Delete</button>
gsgsg		/media/oi/_files/fatty dev_.login.png	Dec. 10, 2022, 6:40 p.m.	<button>Delete</button>
gsgsgsg		/media/oi/_files/Pharmacy-Logo-Maker-Red.png	Dec. 10, 2022, 6:41 p.m.	<button>Delete</button>
gsgsgsg		/media/oi/_files/depositphotos_73262531-stock-illustration-vector-logo-for-letter-h.jpg	Dec. 10, 2022, 6:41 p.m.	<button>Delete</button>
images haha		/media/oi/_files/20209483_6249443.jpg	Dec. 10, 2022, 6:36 p.m.	<button>Delete</button>
srgsgrgs		/media/oi/_files/coding-logo-design-template-free-vector.webp	Dec. 10, 2022, 6:40 p.m.	<button>Delete</button>

The screenshot shows a user interface for managing course materials. On the left, a sidebar menu includes General, Enrollment, Manage Students, Attendance, Extra, Manage Grades, Certification, Course Materials, and Alumni. The main area is titled "CWTS FILES" and contains a "Course Materials" section. It displays a table with columns: NOTE, SECTION, FILE, Date Posted, and ACTION. Two entries are listed: "SECTION A" (Dec. 10, 2022) and "MANJI" (Dec. 11, 2022). To the right, there's an "Upload here" section with instructions: "Please upload documents only in 'pdf', 'docx', 'rtf', 'jpg', 'jpeg', 'png' & 'text' format." It includes a "Select Section" dropdown set to "-- Select Section --", an "Upload" button, and a "Note" input field. Below these are "Upload" and "Cancel" buttons.

Figures 64-65. ROTC/CWTS Course Materials Page

In this part, you can see the course materials for each ROTC/CWTS student. The admin can add the course materials to the upper right corner; the upload can be found here. There, the admin will choose a section, and then the required course materials will be uploaded. The admin will put a note and, after that, will press upload to save and appear the created course material.

The screenshot shows a user interface for managing ROTC ALUMNI. The sidebar menu is identical to the one in the previous screenshot. The main area is titled "ROTC ALUMNI" and features a "All School Years" section. It lists four school years: "2022-2023 Graduates" (with "Open" and "Edit" buttons), "2023-2024 Graduates" (with "Open" and "Edit" buttons), "kvjh Graduates" (with "Open" and "Edit" buttons), and "fwttet Graduates" (with "Open" and "Edit" buttons). A large watermark of the "THE PHILIPPINES 1901 TECHNOLOGICAL" logo is visible in the background. In the top right corner, there is a green "ADD SCHOOL YEAR" button.

The screenshot shows the 'CWTS ALUMNI' section of the system. At the top, there's a header with the title and a 'All School Years' button. Below it is a grid of four school year entries: '2022-2023 Graduates' (with 'Open' and 'Edit' buttons), '2023-2024 Graduates' (with 'Open' and 'Edit' buttons), 'kvjh Graduates' (with 'Open' and 'Edit' buttons), and 'fwtwt Graduates' (with 'Open' and 'Edit' buttons). In the top right corner of the main area, there's a green button labeled '+ ADD SCHOOL YEAR'. A large watermark of the Technological University of the Philippines (TUPC) seal is visible in the background.

Figures 66-67. Alumni Page for ROTC and CWTS

In this part, see all the school years that have passed in ROTC/CWTS. In the upper right corner, you will see the add school year button. The admin can add another year to this part. Included in each school year is each student who graduated in that particular year especially for those alumni that graduated in TUPC.

The screenshot shows the 'GRADUATES > 2022-2023' section. The title bar says 'GRADUATES > 2022-2023'. Below it is a table titled 'All Graduates' with columns: ID NUMBER, FULL NAME, COURSE, FIELD, PLATOON, NOTES, VIEW, and REMOVE. There are two entries: 'TUPC-18-0188 Christian Casilla Rapal' and 'ALUMNI1 Renah-Angelo Dala Rapal'. Both rows have 'View' and 'Remove' buttons. A green 'Add Alumni' button is located at the top right of the table area. A search bar is also present. A large watermark of the Technological University of the Philippines (TUPC) seal is visible in the background.

Figure 68. School Year 2022-2023 Alumni Page

In this part you can see the name of the alumni student who graduated from ROTC. It contains the student ID of the student, his full name, course, his platoon, the student's 1st, and 2nd term grade, and a note for the student. In the upper right corner, you will see the search button where the admin can search for the name of the student who is a graduate. In that tab, you will see the add alumni button where the admin can add the name of the student who is an alumni or a graduate student in TUPC.

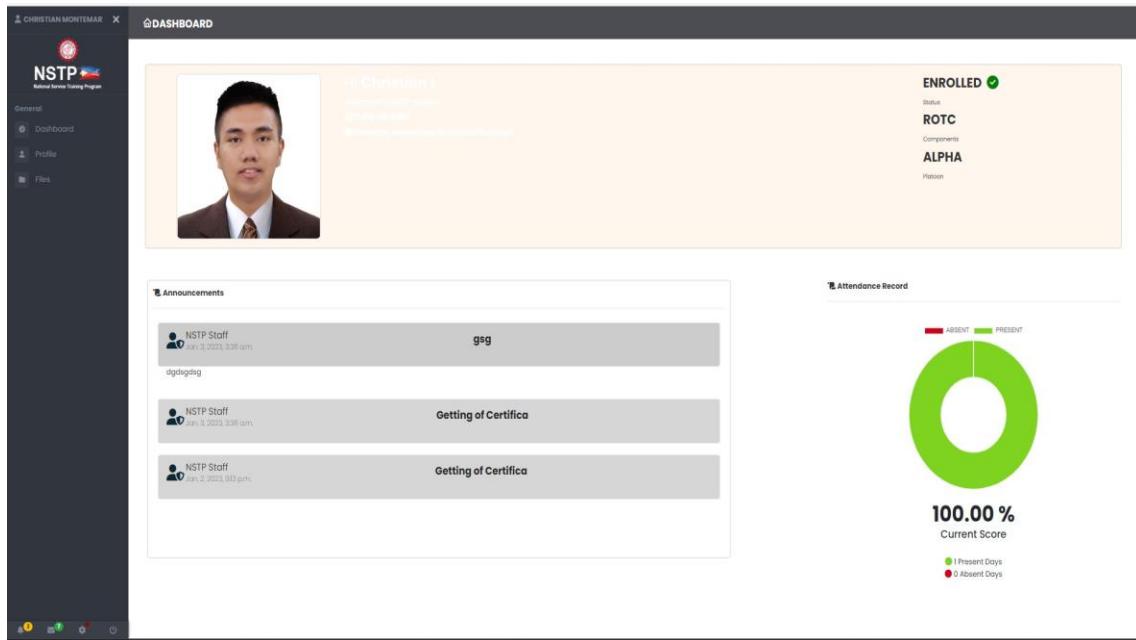
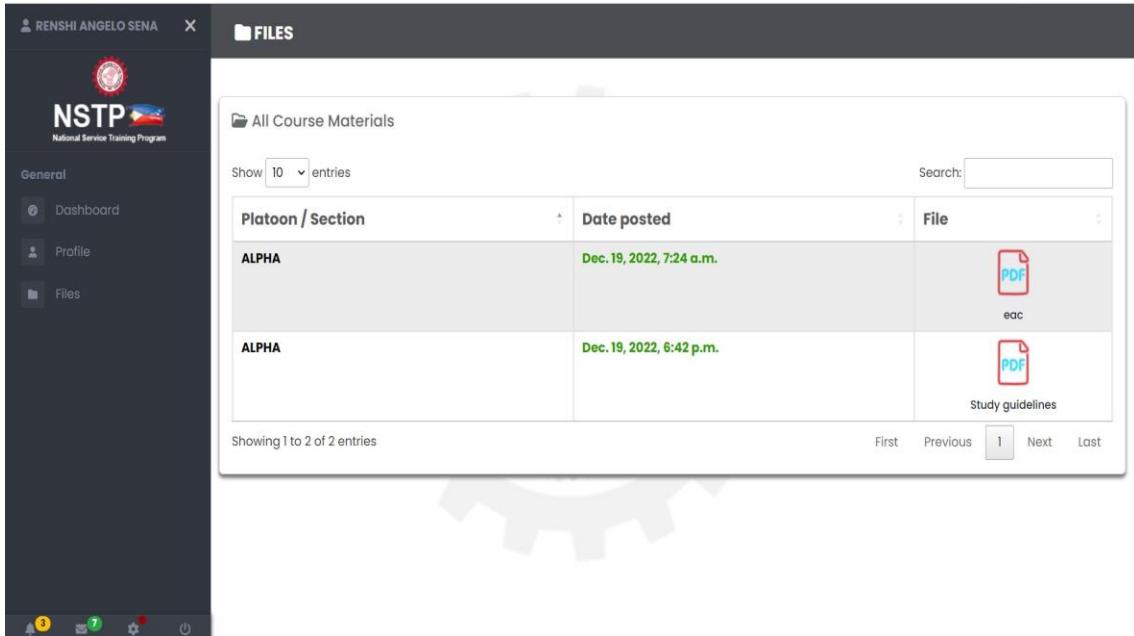


Figure 69. Student Dashboard

In this part, the student will see the dashboard where his name is written. His status, whether he is a graduate or not. Components or what course he took. It's either ROTC or CWTS. Next is what platoon he belongs to. And finally, what grade can be obtained. At the bottom, you can also see the announcement where the announcements posted by the

staff can be seen here. Even the attendance record can also be seen on our part. On the right side, the general can be noticed where it contains the dashboard, profile, and the files that the student will need in his studies.



The screenshot shows a web-based application interface for the National Service Training Program (NSTP). The top navigation bar includes a user profile icon for 'RENSHI ANGELO SENA' and a 'FILES' section. The main content area is titled 'All Course Materials' and displays a table of posted files. The table has columns for 'Platoon / Section', 'Date posted', and 'File'. There are two entries:

Platoon / Section	Date posted	File
ALPHA	Dec. 19, 2022, 7:24 a.m.	eac
ALPHA	Dec. 19, 2022, 6:42 p.m.	Study guidelines

At the bottom of the page, there are links for 'First', 'Previous', '1', 'Next', and 'Last'.

Figure 70. Student Course Materials Page

In this part, the files can be seen where it contains the learning materials that the student will need in his NSTP Course. The student's Platoon/Section, the date when the files or learning materials were posted, and lastly, the actual file that the student will need in his study of the NSTP Course. in this part, the student can search what platoon he is assigned to see the file posted in his platoon.

The screenshot shows the 'USER PROFILE' section of the NSTP system. On the left, a sidebar lists 'General', 'Dashboard', 'Profile', and 'Files'. The main area has a header 'RENSHI ANGELO SENA' and 'NSTP National Service Training Program'. The 'USER PROFILE' tab is selected. The profile card for 'Renshi Angelo Sena' shows a photo, the name 'Renshi Angelo Sena', email 'renshiangelo.sena@gsfe.tupcovite.edu.ph', and status 'GRADUATE'. A green 'Student' badge indicates the year 'SY. 2021-2022'. To the right, there's a 'Health Status' section with 'hika' listed, and a 'Health Certificate' section with a placeholder for file uploads ('pdf', 'docx', 'rtf', 'jpg', 'jpeg', 'png' & 'text' format). Below these are 'Select' and 'Upload' buttons, and a link to 'View Proof Submitted'. On the left side of the main content area, there are sections for 'Attendance Record' (with a red 'ABSENT' button and a green 'PRESENT' button), 'No Record yet', 'Grade' (with dropdowns for 'First Sem Grade', 'Second Sem Grade', and '2nd Sem grade'), and 'Student Information' (including fields for First Name, Middle Name, Last Name, Email, ID Number, Address, Gender, Age, Birthday, Course, Contact, Civil Status, Nationality, and NSTP Companion).

Figure 71. Student Profile

In this part, the profile or personal information of the student can be seen. You can find all the information about a student taking ROTC or CWTS. This part also shows the health status of the student if he has asthma or any other disease that will affect his taking the NSTP Course. On the right side, the health certificate can be seen here, where the student must also submit this part of his health certificate to know if he is safe and can take the ROTC Course. On the left side you can see the attendance record. At the bottom, you can see the grade. The student's 1st and 2nd sem grade is placed here.

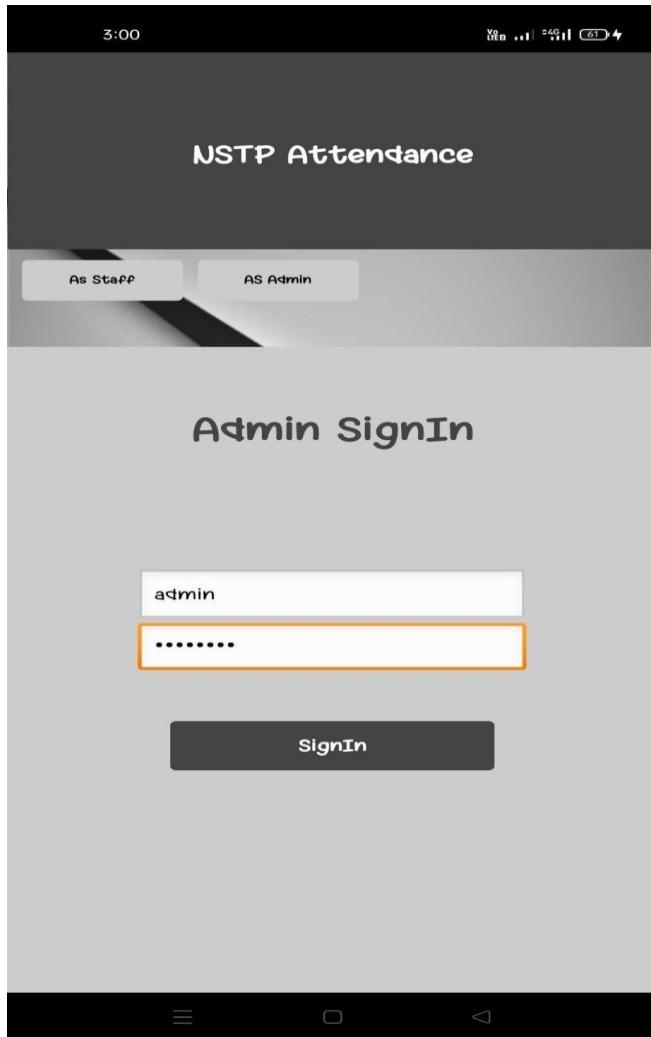


Figure 72. Admin Sign Up Screen (Mobile App)

As seen in figure 72, this is the admin's sign-in page, which is required to access the admin's home screen. In this part, the admin must enter the correct username and password to sign in.

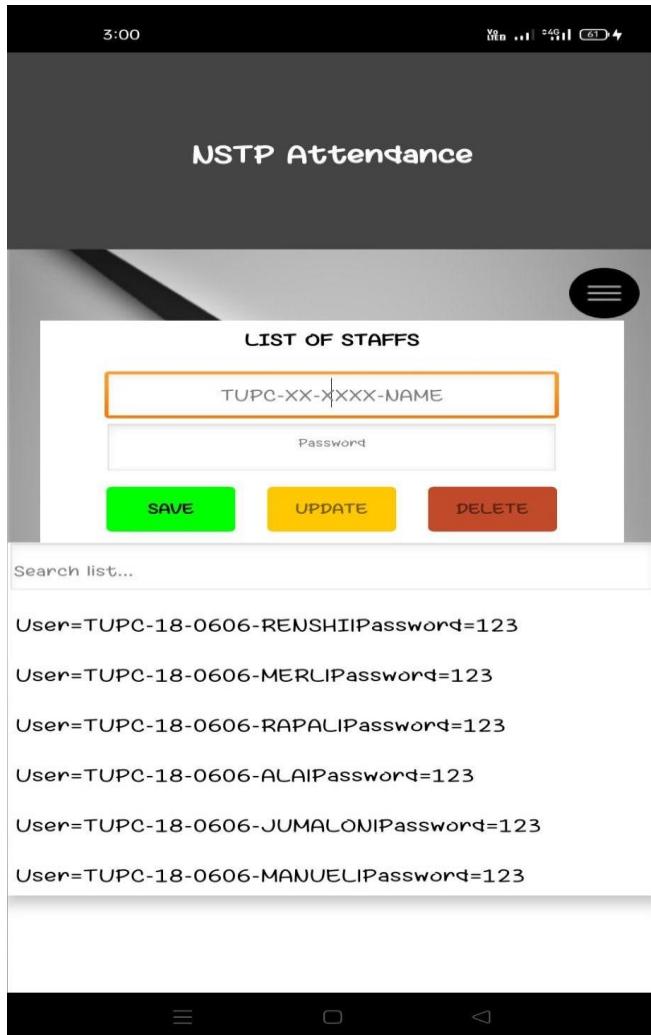


Figure 73. Admin Home Screen (Mobile App)

Figure 73 depicts the administrator's home screen, where they may see all of the staff members' accounts. It can add, update, and delete users as needed. They can also search the list of all of the staff member's accounts.

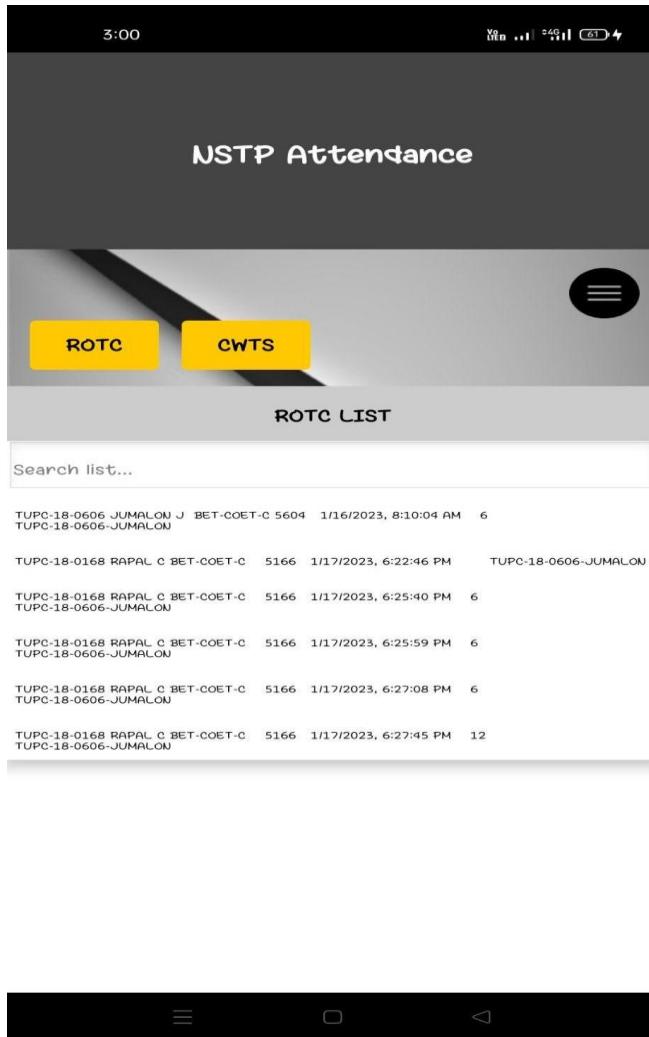


Figure 74. Admin View List Screen (Mobile App)

Figure 74 shows the View list page, which lists all of the scanned students' QR codes together with the date and time of the scan, as well as how many demerits they have received for the weekly training day and also the list is divided into two (2) for ROTC list and the other one (1) is for the CWTS list.

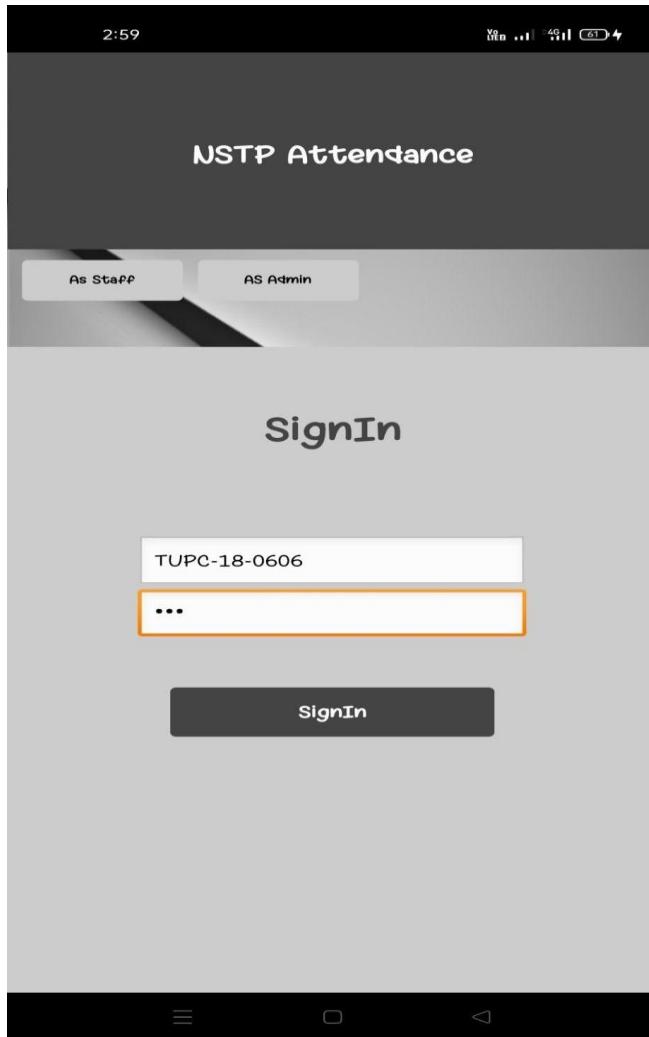


Figure 75. Staff Sign In Screen (Mobile App)

As seen in figure 75, this is the staff's sign-in page, which is required to access the home screen. In this part, the staff must be required to enter the correct username and password to sign in. At the top, you will see two options. One is for staff and the second one is for admin.

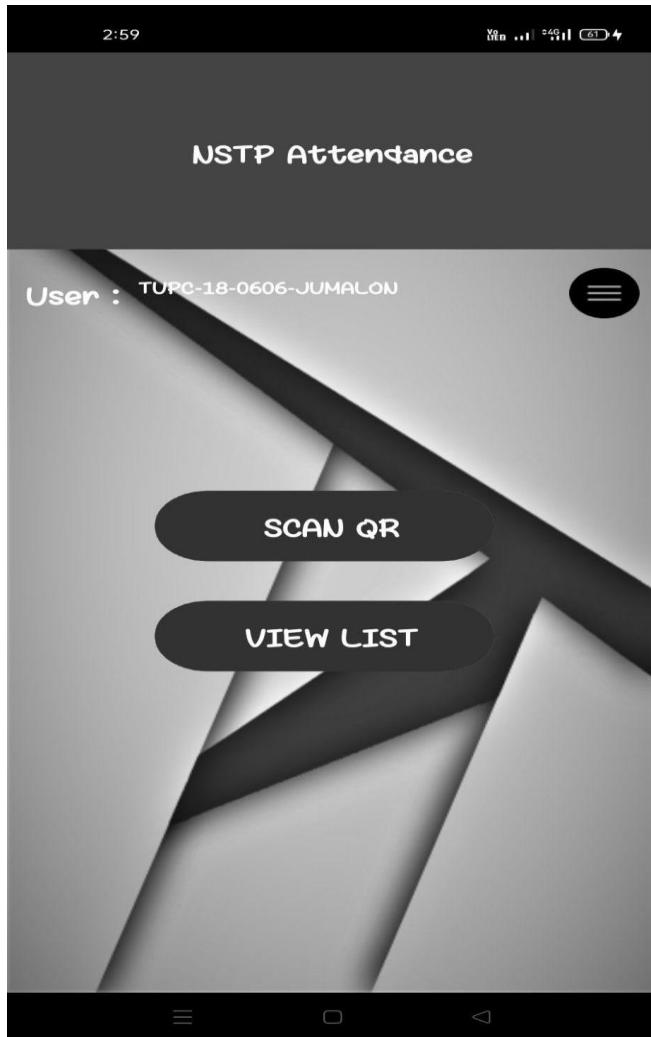


Figure 76. Staff Home Screen (Mobile App)

After signing in, this will be displayed as shown in figure 71. On this screen, the staff may scan the student's QR code and view the list of NSTP Attendance.

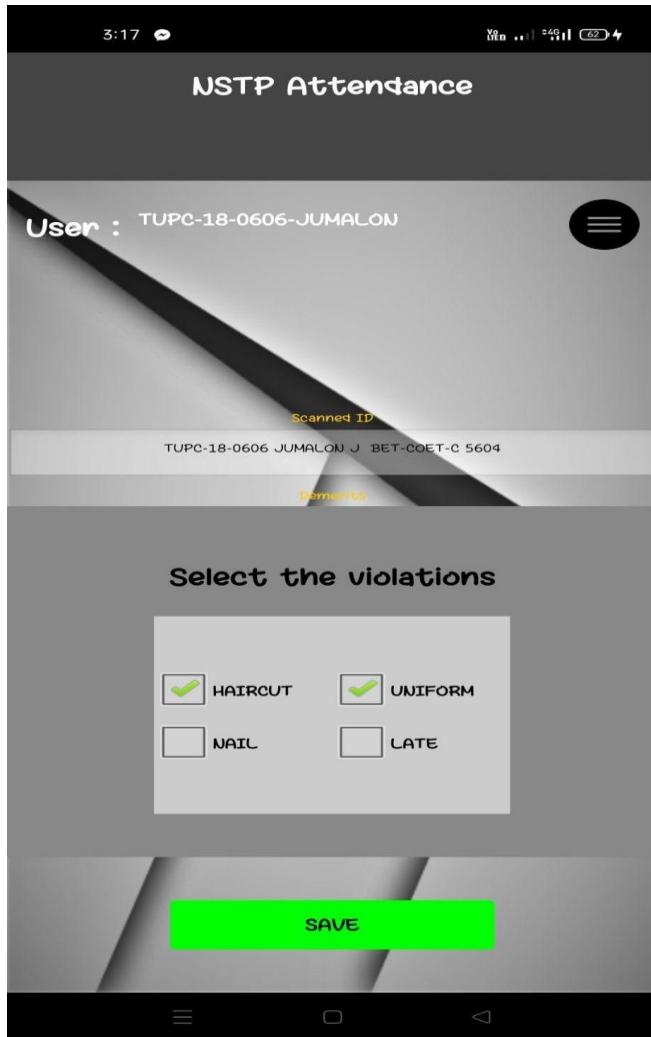
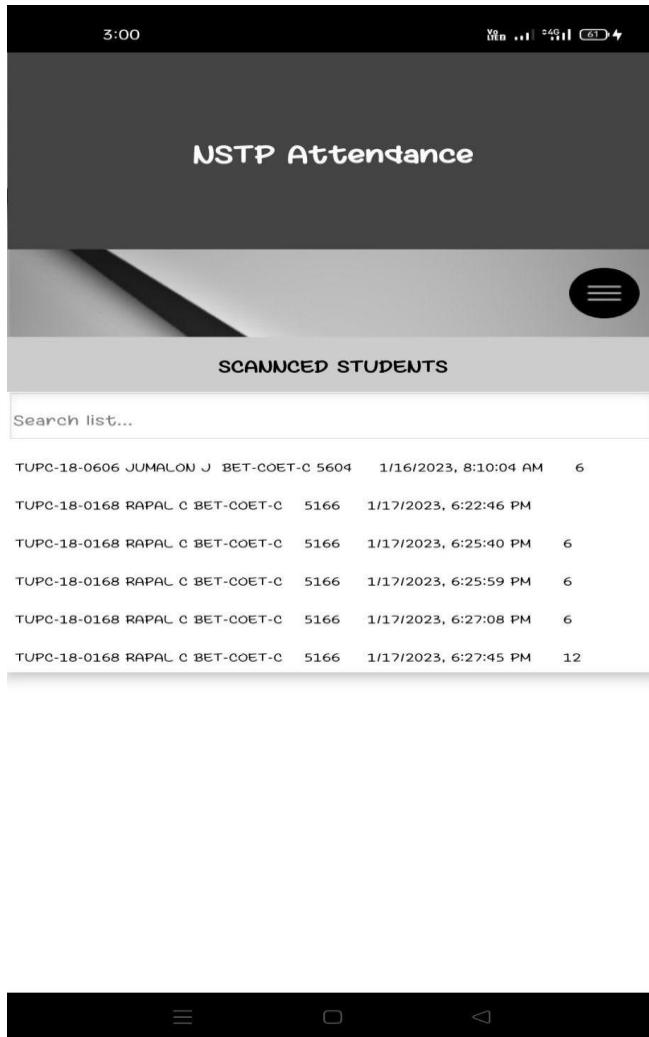


Figure 77. Scan QR Screen (Mobile App)

Figure 77 shows that after scanning the student's QR code, this screen will show up and the staff will select the student's violation. Each violation will have a certain value of demerits that will greatly affect their grades.



TUPC-18-0606 JUMALON J	BET-COET-C	5604	1/16/2023, 8:10:04 AM	6
TUPC-18-0168 RAPAL C	BET-COET-C	5166	1/17/2023, 6:22:46 PM	
TUPC-18-0168 RAPAL C	BET-COET-C	5166	1/17/2023, 6:25:40 PM	6
TUPC-18-0168 RAPAL C	BET-COET-C	5166	1/17/2023, 6:25:59 PM	6
TUPC-18-0168 RAPAL C	BET-COET-C	5166	1/17/2023, 6:27:08 PM	6
TUPC-18-0168 RAPAL C	BET-COET-C	5166	1/17/2023, 6:27:45 PM	12

Figure 78. Staff View List Screen (Mobile App)

Figure 78 shows the View list page, which lists all of the scanned students' QR codes, the date and time of the scan, and how many demerits they have received for the weekly training day.

Test Results

The project's functionality, reliability, usability, and efficiency were tested, and the results are presented in this part.

Table 7*The functionality of the NSTP System for Admin*

Test	Operation Procedure	Expected Output	Result
Admin sign-up	1. Open the signup page 2. Enter the Username and Password 3. Click the ‘Signup’ button	1. Successfully created an account.	1. Successfully created an account.
Admin sign-in	1. Open the sign-in page 2. Enter the Username and Password 3. Click the ‘Signin’ button	1. Redirected to the Admin Dashboard page.	1. Redirected to the Admin Dashboard page.
Assign to platoon	1. Open the pending enrollees page 2. View student profile to assign platoon 3. Select a platoon 4. Click the ‘UPDATE’ button	1. Student will be assigned to the selected platoon	1. Student is assigned to the selected platoon

Setting of school year	<ol style="list-style-type: none"> 1. Click the 'Enrollment' drop-down 2. Click the School year 3. Enter the School year 4. Click the 'Add schoolyear' button 	<ol style="list-style-type: none"> 1. Show 2. Successful pop-up message <p>School year will be displayed on the table.</p>	<ol style="list-style-type: none"> 1. Shown 2. Successful pop-up message <p>School year displayed on the table.</p>
Creating announcements	<ol style="list-style-type: none"> 1. Click the 'Addannouncements' button 2. Select a target audience 2. Enter the Subject and content 3. Click the 'Post' button 	<ol style="list-style-type: none"> 1. New announcements will be displayed. 	<ol style="list-style-type: none"> 1. Page is refreshed to reflect new announcements.
Student's approval	<ol style="list-style-type: none"> 1. Click the Pendingenrollees 'more info' button 2. View the student's profile 3. Click the 'Approve' button 	<ol style="list-style-type: none"> 1. Students will be moved to the officially enrolled list. 2. Student status will become 'Enrolled' 	<ol style="list-style-type: none"> 1. Student is moved to the officially enrolled list 2. Student status is now 'Enrolled'
Rejecting	<ol style="list-style-type: none"> 1. Click the Pending enrollees 'more info' button 2. Review the student's profile 3. Click the 'Reject' button 	<ol style="list-style-type: none"> 1. Student will be moved to the rejected list. 	<ol style="list-style-type: none"> 1. Student is moved to the rejected list.

Add of Platoon/Section	<ol style="list-style-type: none"> 1. Click the 'Add newsection' button 2. Select a Component3. Enter the name of the platoon/section 	<ol style="list-style-type: none"> 1. The new platoon/section will be added. 	<ol style="list-style-type: none"> 1. The new platoon/section is added.
Adding of training days	<ol style="list-style-type: none"> 1. Click the 'Attendance' drop-down menu 2. Select a component 3. Click the 'Add trainingday' button 4. Enter the date and training day number 5. Click the 'Create' button 	<ol style="list-style-type: none"> 1. The new training day will be added. 	<ol style="list-style-type: none"> 1. The new training day is added.
Attendance Update	<ol style="list-style-type: none"> 1. Click the 'Attendance' drop-down menu 2. Select a component 3. Choose a CSV file generated by the mobile app NSTP Attendance 4. Click the 'Load CSVfile' button 5. Click the 'Update Record' button 	<ol style="list-style-type: none"> 1. There will be an update to the attendance record. 2. The grade for attendance will be calculated automatically. 3. The attendance Pie chart will be updated both in admin and student 	<ol style="list-style-type: none"> 1. Attendance record is updated 2. Attendance grade is automatically updated. 3. The attendance Pie chart is updated both in admin and student

Adding of Activities	<ol style="list-style-type: none"> 1. Click the ‘Manage grades’ drop-down menu 2. Select a component 3. Click the Activities 4. Click the ‘Add Activity’button 5. Enter the Activity name,Activity number, and total items. 6. Click the ‘Create’ button 	<ol style="list-style-type: none"> 1. Activities will be added 	<ol style="list-style-type: none"> 1. New activity shown in the activity table
----------------------	--	---	---

Uploading of course materials	<ol style="list-style-type: none"> 1. Click the ‘Course materials’ drop-down menu 2. Select a component 3. Choose a section whereyou want to upload 4. Select a file and enter anote 5. Click the ‘Upload’button 	<ol style="list-style-type: none"> 1. The course material will be displayed in admin and student UI together with the file name and date when it was posted. 	<ol style="list-style-type: none"> 1. The new course material is displayed in admin and student UI together with the file name and date when it was posted.
-------------------------------	---	---	--

Adding of Midterm Exam	<ol style="list-style-type: none"> 1. Click the 'Managegrades' drop-down menu 2. Select a component 3. Click the Midterm 4. Click the 'Add Midterm' button 5. Enter the Semester, date, and total items. 6. Click the 'Create' button 	<ol style="list-style-type: none"> 1. Midterm will be added. <p>The Midterm exam total score will be calculated, and the percentage will be displayed.</p>	<ol style="list-style-type: none"> 1. Midterm 2. added. <p>The Midterm exam total score is calculated, and the percentage is displayed.</p>
Adding of Final Exam	<ol style="list-style-type: none"> 1. Click the 'Manage grades' drop-down menu 2. Select a component 	<ol style="list-style-type: none"> 1. Finals will be added 2. The Final 	<ol style="list-style-type: none"> 1. Finals is added 2. The Final
	<ol style="list-style-type: none"> 3. Click the Finals 4. Click the 'Add Finas' button 5. Enter the Semester, date, and total items. 6. Click the 'Create' button. 	<p>exam total score will be calculated, and the percentage will be displayed.</p>	<p>exam total score is calculated, and the percentage is displayed.</p>

Grades management	<ol style="list-style-type: none"> 1. Click the ‘Manage grades’ drop-down menu 2. Select a component 3. Enter all the scores of Activities, Midterm, and finals 	<ol style="list-style-type: none"> 1. The Total grade will be displayed automatically 	<ol style="list-style-type: none"> 1. The Total grade is displayed automatically
Certification	<ol style="list-style-type: none"> 1. Click the ‘Certification’button 2. Select a Component 3. Setup the certificateinformation such as The school year, commandants’ name, registrar, and the given date 4. Click the ‘Save changes’button 5. Select a specific schoolyear 6. Click the ‘Generate’ button 	<ol style="list-style-type: none"> 1. 2.Every student in the selected academic year will have a Certificate <p>The selected certificate will have its status changed to done, and the date when it was generated will be displayed.</p>	<ol style="list-style-type: none"> 1. 2.Every student in the selected academic will Certificate <p>The selected certificate will have its status changed to done, and the date when it was generated will be displayed.</p>
Adding of alumni	<ol style="list-style-type: none"> 1. Click the ‘Alumni’drop-down menu 2. Select a component 3. Select a school year 4. Click the ‘Add Alumni’button 5. Select a Student 6. Click the ‘Add’ button. 	<ol style="list-style-type: none"> 1. The selected student will be displayed on the alumni table 	<ol style="list-style-type: none"> 1. The selected student is displayed on the alumni table

Table 8

The functionality of the NSTP System for student

Test	Operation Procedure	Expected Output	Result
Student sign-up	<ol style="list-style-type: none">1. Open the signup page2. Enter the Username and Password3. Click the ‘Signup’ button	<ol style="list-style-type: none">1. Successfully created an account2. The account will be displayed as pending enrollee at the admin dashboard	<ol style="list-style-type: none">1. Successfully created an account2. The account is displayed as pending enrollee at the admin dashboard
Student sign-in	<ol style="list-style-type: none">1. Open the sign-inpage2. Enter the Username and Password	<ol style="list-style-type: none">1. Redirected at the Student Dashboard	<ol style="list-style-type: none">1. Redirected at the Student Dashboard
	<ol style="list-style-type: none">3. Click the ‘Signin’ button		

Edit profile	<ol style="list-style-type: none"> 1. Click the Profile menu 2. Enter all the Editable information such as the address, age, civil status, contact number, and so on 3. Click the 'Update' button 	<ol style="list-style-type: none"> 1. Page refreshed to reflect updated information 	<ol style="list-style-type: none"> 1. Page refreshed to reflect updated information
Uploading of health certificate	<ol style="list-style-type: none"> 1. Click the Profile menu 2. Enter the healthstatus 3. Select a File ('pdf', 'Docx', 'jpg', 'jpeg', 'png') 4. Click the 'Upload' button 	<ol style="list-style-type: none"> 1. The file uploaded can be viewed by the admin <p>The student can preview the uploaded file</p>	<ol style="list-style-type: none"> 1. Uploaded file 2. viewable by admin in new tab <p>Uploaded file viewable by student in new tab</p>
Downloading of Course material	<ol style="list-style-type: none"> 1. Click the File menu 2. Choose a coursematerial 	<ol style="list-style-type: none"> 1. If the browser supports the file format it will be previewed, else it will be downloaded 	<ol style="list-style-type: none"> 1. If the browser supports the file format it will be previewed, else it will be downloaded

Table 9

The functionality of the admin NSTP attendance (mobile app)

Test	Operation Procedure	Expected Output	Result

Admin login	<ol style="list-style-type: none"> 1. Click the 'As Admin' button 2. Enter the username and password 3. Click the sign-in button 	<ol style="list-style-type: none"> 1. The home screen will be displayed. 	<ol style="list-style-type: none"> 1. Home screen is displayed.
Adding staff	<ol style="list-style-type: none"> 1. Enter the username of the staff in the text box 2. Enter the password in the password in the text box 3. Click the 'SAVE' button 	<ol style="list-style-type: none"> 1. The new staff will show in the listview table. 	<ol style="list-style-type: none"> 1. New staff account created and shown in table.
Updating of password	<ol style="list-style-type: none"> 1. Select a staff in the listview table 2. Enter a new password in the password text box 3. Select the Update button 	<ol style="list-style-type: none"> 1. The old password will be updated. 	<ol style="list-style-type: none"> 1. Account's old password updated to new password and reflected in table.
Deletion of staff	<ol style="list-style-type: none"> 1. Select a staff in the listview table 2. Select the Delete button 	<ol style="list-style-type: none"> 1. Staff account will be deleted. 	<ol style="list-style-type: none"> 1. Staff account is deleted.

Table 10

The functionality of the staff NSTP attendance (mobile app)

Test	Operation Procedure	Expected Output	Result
Staff login	<ol style="list-style-type: none"> 1. Click the 'As Staff' button 2. Enter the username and password 3. Click the sign-in button 	<ol style="list-style-type: none"> 1. The home screen will be displayed 	<ol style="list-style-type: none"> 1. The home screen is displayed
Students attendance	<ol style="list-style-type: none"> 1. Click on the 'SCAN' button 2. Scan the QR code of the student. 	<ol style="list-style-type: none"> 1. The scanned student QR code will be saved in a CSV file 2. The Student's information will be shown in listview 	<ol style="list-style-type: none"> 1. The QR code is scanned and information is saved
Demerits	<ol style="list-style-type: none"> 1. Click the 'SCAN' button 2. Scan the QR code of the student 3. Enter the demerits of the student obtained 	<ol style="list-style-type: none"> 1. The demerits will be saved in the CSV file 2. The demerits will be displayed in the listview 	<ol style="list-style-type: none"> 1. The demerits is saved and shown in the list

Table 11

Portability, Reliability and Usability tests

Test	Procedure	Expected Output	Result
-------------	------------------	------------------------	---------------

A. Portability	1. Access the system using Android and iOS web browsers 2. Access the system using windows and Mac web browsers	1. System interface not having any problem when used in different operating systems. 2. System interface aligned and distributed properly in any browser or OS, even in smaller devices	1. The system interface did not encounter any problem while being used in different operating systems and browsers. 2. The system interface is properly aligned and distributed.
B. Reliability	1. Staff/Cadets can use the system for getting attendance via QR Code scanning using the mobile application simultaneously. 2. Access the platform with right and wrong login details	1. Users can still use the application to get attendance without getting interruption, even if the app is used simultaneously. 2. Successful login with right details and unsuccessful login with wrong details	1. Users can still use the application to get attendance without getting interruption, even if the app is used simultaneously. 2. Successful login with right details and unsuccessful login with wrong details
C. Usability	1. Check the different functions in the system like the account creation, scanning I.D using the mobile app 2. Generating certificates, and sending emails to students.	1. All the functions are working properly. 2. System can generate certificates and sends email to the respective addresses for verification	1.1. All the functions are working properly. 2. System can generate certificates and sends email to the respective addresses for verification

Project Capabilities and Limitations

For the teachers and students at the Technological University of the Philippines Cavite Campus, a web and mobile application called The Development of NSTP System was created. The system's the capabilities and limitations are shown in this chapter's section.

The system that was developed has the following capabilities:

1. Admins are capable of the registration of a new admin.
2. Admins are capable of setting a new school year.
3. Admins are capable of creating new announcements.
4. Admins are capable of uploading course materials.
5. Admins are capable of approving pending enrollees for students to get ‘Enrolled status’.
6. Admins are capable of rejecting pending enrollees.
7. Admins are capable of adding a new section or platoon.
8. Admins are capable of adding new training days.
9. Admins are capable of updating the attendance record of a student.
10. Admins are capable of adding activities.
11. Admins are capable of adding midterm and final exams.
12. Admins are capable of managing grades of students
13. Admins are capable of generating certificates for students
14. Admins are capable of adding alumni.

15. Students are capable of creating new student accounts.
16. Students are capable of editing their profile.
17. Students are capable of downloading course materials.
18. Students are capable of uploading health certificates.
19. Admin are capable of creating new staff accounts.
20. Admin are capable of updating the password of a staff account.
21. Admin are capable of deleting a staff account.
22. Staff are capable of scanning a student's QR code and taking their attendance.
23. Staff are capable of entering a student's demerits for a certain training day.

The following were the limitations of the developed system:

1. The Mobile App Cannot verify if the owner of the I.D card physically attended.
2. The Mobile App attendance is only applicable to the Technological University of the Philippines Cavite students I.D
3. NSTP system can't attach the serial number in the certificate

Project Evaluation

The evaluation on the performance of the developed web application is based on four (4) criterias, namely: functionality, reliability, usability, and efficiency

Table 12

Criteria for Evaluation

Criteria	Mean	Descriptive Rating
Functionality	4.73	Outstanding

Reliability	4.63	Outstanding
Usability	4.65	Outstanding
Efficiency	4.67	Outstanding
Overall Mean	4.67	Outstanding

Legend:

Score	Descriptive Rating
4.51 - 5.00	Outstanding
3.51 - 4.50	Very Satisfactory
2.51 - 3.50	Satisfactory
1.51 - 2.50	Fair
1.00 - 1.50	Poor

The evaluators gave a mean rating of 4.73 out of 5 for functionality. The prototype has been given a "Outstanding" grade, which indicates how user-friendly it is to operate.

The evaluators gave a mean rating of 4.63 with a maximum of 5 for reliability. The prototype was given an "Outstanding" grade. This means that the prototype is consistently well.

The evaluators gave a mean rating of 4.65 with a maximum of 5 for usability. This means that the prototype performs outstandingly when performing a designated goal.

The evaluators gave the Efficiency criteria a mean rating of 4.67 out of a possible 5 points. An "outstanding" grade indicates that the prototype met system performance

standards for productivity.

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

Summary of Findings

After performing several tests, with positive outcomes for the functionality of the NSTP System for the Cavite Campus of the Technological University of the Philippines A summary of the study was written by the researchers.

The study was conducted to improve the current system of the Technological University of the Philippines - Cavite Campus' NSTP system, namely the ROTC and CWTS programs through the usage of the newly developed NSTP systems made by the researchers. This new system aimed to bring the old system to a new platform that is more accessible to its end users than its previous iteration. It greatly enhances the experience of the user, especially its staff users by way of QR code scanning when taking a student's attendance. Another way it enhances the user experience is when grading a student's work, all the staff needs to do is enter the data required and the system will display the grade of the student automatically.

After the system was developed, it was thoroughly tested to evaluate the system's functionality, reliability, usability and efficiency to determine if a problem, or an error occurred from within the system. The researchers tested the main functions of the system, from registration of a user to certification. Should a problem or error occur, the

researchers will troubleshoot until the error has been rectified.

Conclusions

After considering the study's stated aims as well as the outcomes of the set of tests, the researchers accomplished the following specific objectives:

1. Documentation of enrolled students in NSTP program (for SY 2022-2023 1st semester, and sampling from previous semesters);
2. Viewing of grades by the enrolled students;
3. Uploading teaching materials by the teacher-in-charge;
4. Checking of attendance via QR code scanning;
5. Sending of request for a certificate with serial number (subject for approval by NSTP personnel, attachment of dry seal, and affixing of signatures)
6. Students with medical conditions that hinders them from undergoing the physical aspects of the training will fill out a form that details their medical history to be assigned to an appropriate platoon
7. Inquire about a certificate and serial number
8. Allow for a transferee to credit their NSTP component when transferring to another school using their NSTP Serial Number
9. This data privacy notice only applies to the Technological University of the Philippines NSTP system and explains the collection and use of information. The information we have collected shall be kept private and confidential and shall only be used for legal purposes as mandated by the Data Privacy Act and other relevant laws. Only authorized individuals will have access to this information.

Recommendation

For upcoming advancements and enhancements to the NSTP System prototype, the following suggestions are made:

1. Provide or fabricate a dry sealing machine for the certificates
2. Provide a feature that allows the students to communicate or send a message to their NSTP classmates over the system.

3. Provide a function that allows students to submit activities, assignments, or quizzes through the system.

