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# ***SYSTEM ANALYSIS AND DESIGN REPORT***

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## *Class Registration Project*



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*For our parents*

### *Acknowledgement*

Before starting this project report, we would like to express our sincere gratitude to our professor Mr. M. OUBRICH who gave us the opportunity to work on this project, for his generosity in transmitting his knowledge and his knowledge -do in the best possible conditions.

## **I. ABSTRACT:**

System analysis and Design is essentially composed of two main systems: system analysis and system design. When it comes to the first one; system Analysis; It is a process of collecting and interpreting facts, identifying the problems, and decomposition of a system into its components.

System analysis is conducted for the purpose of studying a system or its parts in order to identify its objectives. It is a problem-solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose. In other words,

System Analysis specifies what the system should do. Concerning System Design, it is also a process of planning a new business system or replacing an existing system by defining its components or modules to satisfy the specific requirements. Before planning, you need to understand the old system thoroughly and determine how computers can best be used in order to operate efficiently.

## **II. PROJECT OVERVIEW:**

During This project, we should be able to understand a system and realize all the diagrams necessary for the system. Our system here consists of Class Registration system. The first step we should do is to create a context diagram, the draw as many nested DFDs as we consider necessary starting with a level-O diagram. After, we should draw an Entity-relationship diagram, design a database for the system. Finally, we are going to realize a prototype for the human interface of that system.

## 1) Class Registration System Context DFD diagram

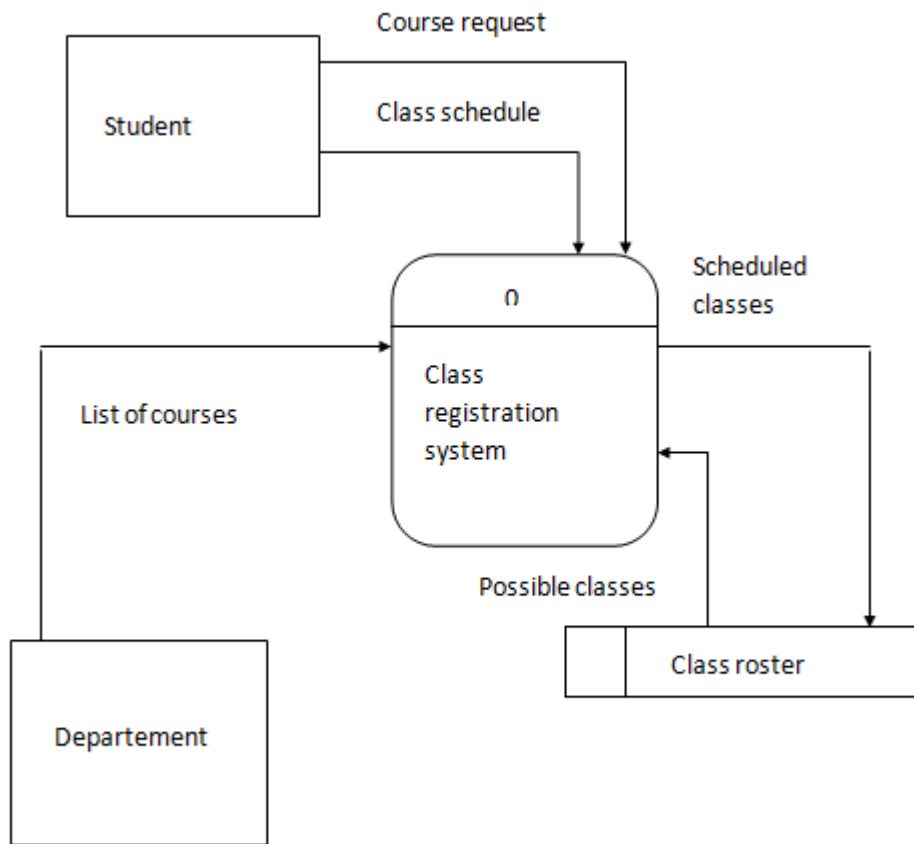


Figure 1: DFD diagram

This very diagram gives a general idea on how the Class Regeistration System function. The data comes from the student and the department, then it will be gathered, stored and be subject to the Class Registration System.

## 2) Class Registration System level-0 DFD diagram

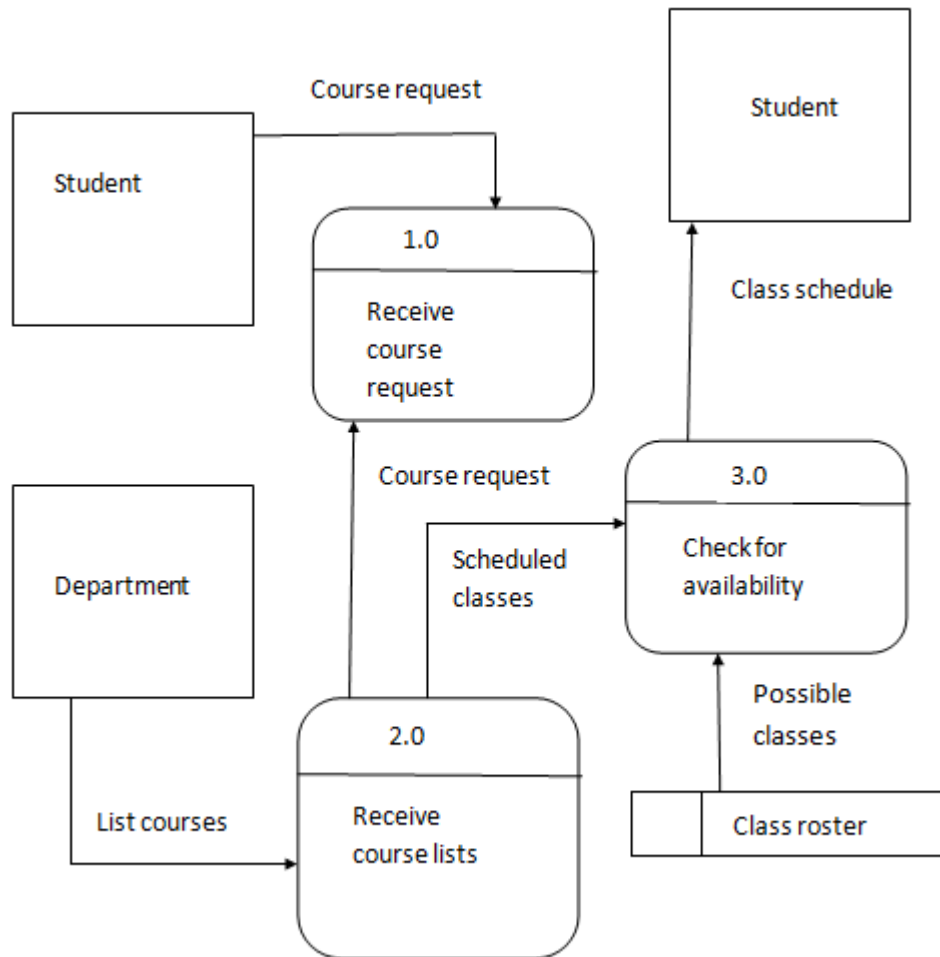


Figure 2: System level-0 DFD diagram

The diagram represents the main processes in this system, which aim basically to Receive the course request, Receive the course lists and Check for availability. The data comes from the student and the department.



### 3) Class Registration System level-1 DFD diagrams

❖ level-1 DFD diagram for the 1.0 process: Receive course request

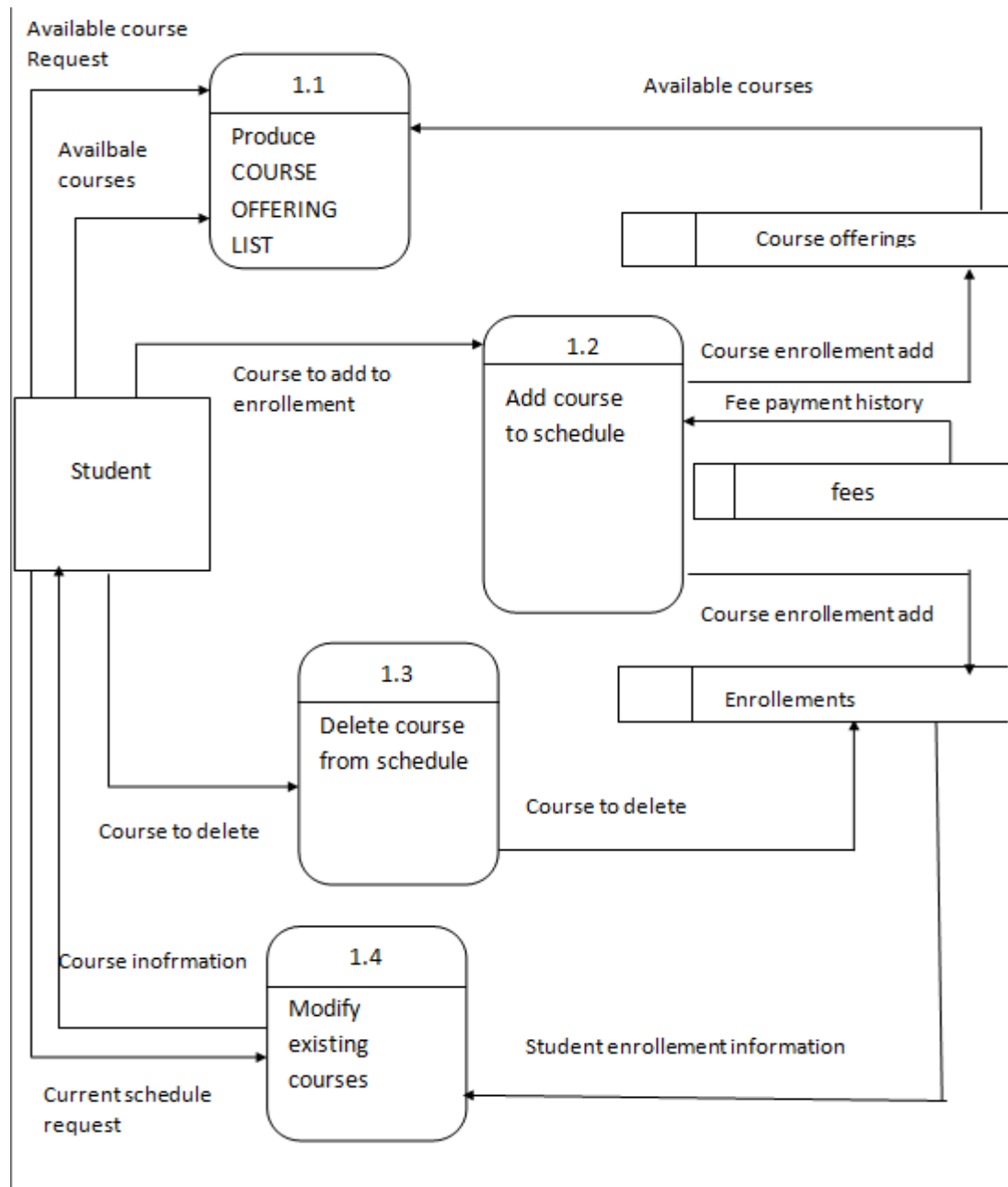


Figure 3:level-1 DFD diagram for the 1.0 process

If the students asks for a course, or asks to delete one, request the current schedule, the request is handled under one of the three processes (as the image shows), then the student receives the result.

❖ level-1 DFD diagram for the 2.0 process: Receive course lists

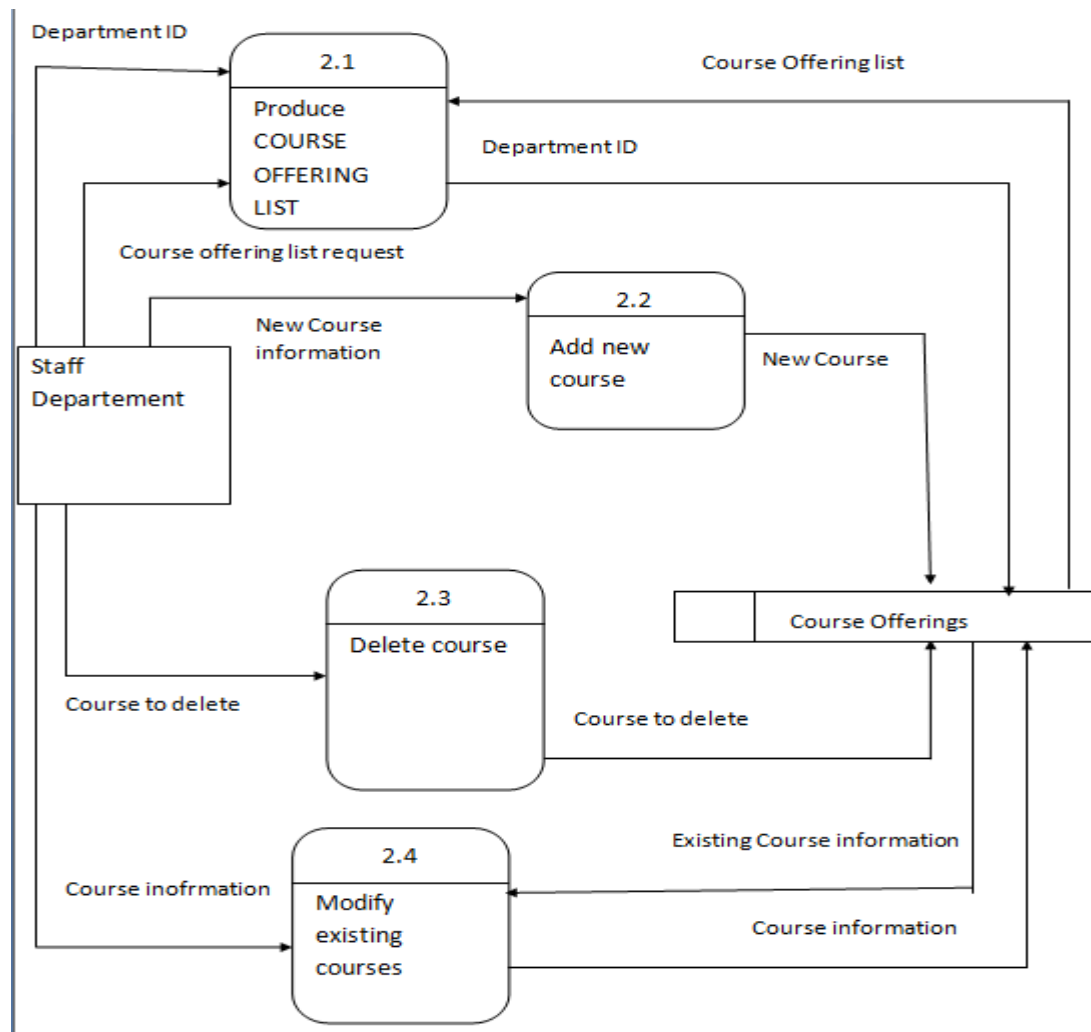


Figure 4: level-1 DFD diagram for the 2.0

This diagram handles the scenario when the staff department asks to receive the courses lists. The request is received and processed , then the class lists are received

❖ level-1 DFD diagram for the 3.0 process: Check for availability

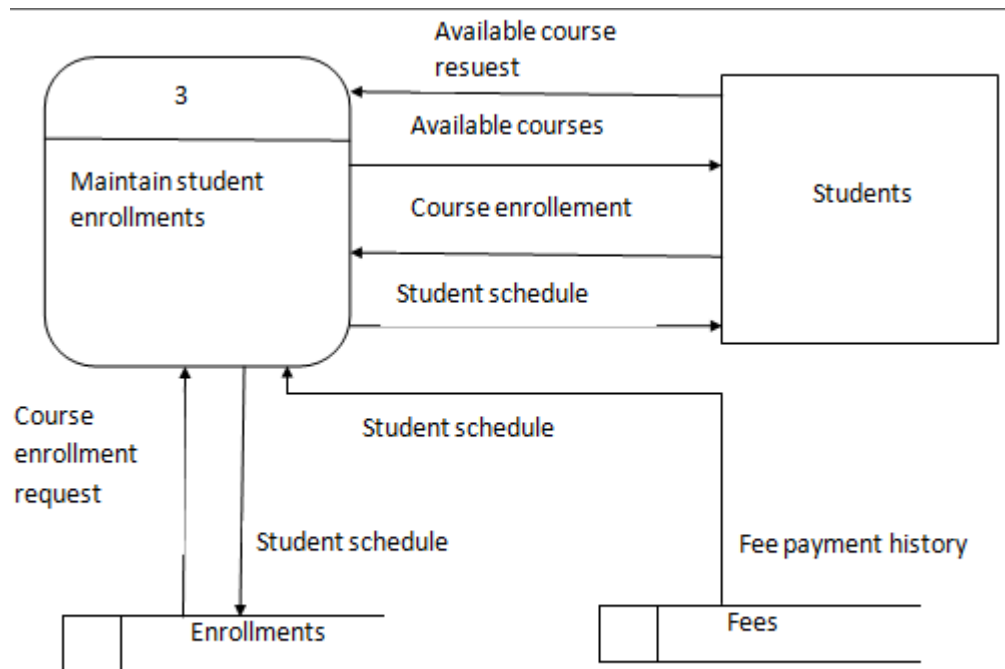


Figure 5: level-1 DFD diagram for the 3.0

This diagram show how the data is being processed when the student asks for the availability of a giving course.

### **III. Entity-Relationship Diagram:**

#### **1) Definition**

An entity relationship diagram (ERD), also known as an entity relationship model, is a graphical representation that depicts relationships among people, objects, places, concepts or events within an information technology (IT) system. An ERD uses data modeling techniques that can help define business processes and serve as the foundation for a relational database.

#### **2) practical side**

in the figure below we show the relationships between the entities, as you even have between the student entity and the class entity a relation from many to many, that is to say that one or more students can study in one or more class, and vice versa, even if for student and course, in addition there is a many to one relationship between teacher entity and department (a department can include several teachers but one or more teacher can work in one or more departments) same relationship between the teachers entity and class entity, and finally the one-to-one relationship between department entity and department head.

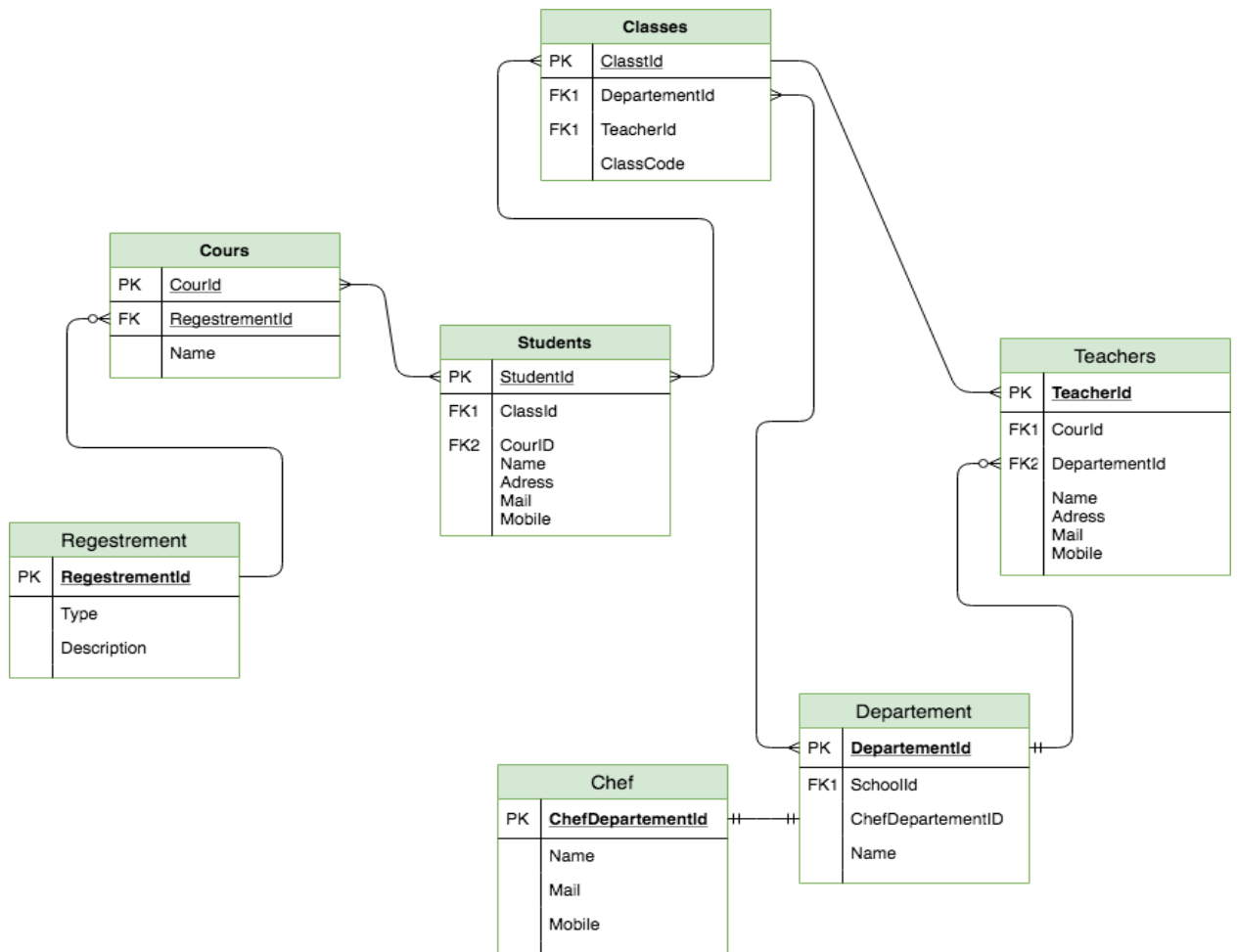


Figure 6: diagram of Entity Relationship

## IV. Database Design:

Working in Access, we realize a database that contains eight tables: one for students who are going to courses to study, class registration to register their access to the system, table of courses, composed of subjects to be learnt in every semester with the number of hours should be done in every course, the department and professor's name .... The fourth table is for the section, then the course scheduled; composed of the schedule launched every time something is changed (updated schedule). The left tables are for the professor information and department along with the

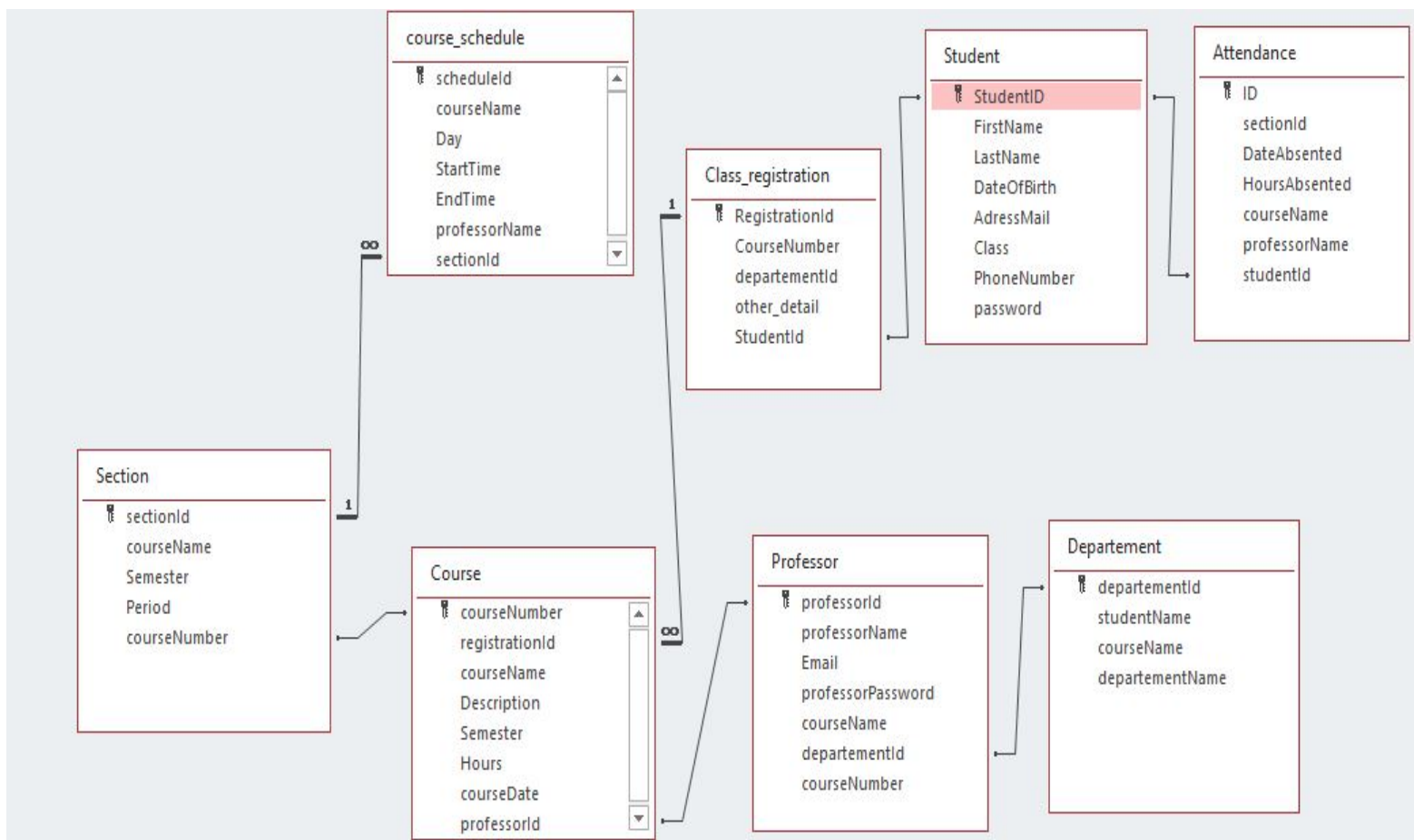


Figure 7: class registration Database

## V. Human Interface:

Concerning the user interface, we realized a prototype for the class registration system in form of a website or a mobile application.

Working with ForeUI tool, we created many interfaces that should be included in the system.

ForeUI is an easy-to-use UI prototyping tool, designed to create mockup / wireframe / prototypes for any application or website we have in mind. With ForeUI, our prototype can then be exported to wireframe images, PDF documents or HTML5 simulation. We use this tool to create better prototypes to share our idea so as to be clear.

The figure bellow shows the essential page in our website of class registration; this page will contain all the courses, the schedules, the events, holidays and even zoom meeting. It will contain also notifications or even messages received from professors, administration or from colleagues. The courses will be ordered by the semester, period so that every student can access to any course he wants the time he wants. This page may also lead to page containing exam marks and projects to do... .

Not every one could access to this website, but only students of the school and depending on the branch of the student and his degree. For example, an INPT student may access to the website, but depending on his degree and branch; in other words, the student could access only to the courses he studies.

The website could also contain a list of the number of absented hours the student had made in every subject with the level that should not be exceed so as there will be no punishment...

## 1) Class registration Website:

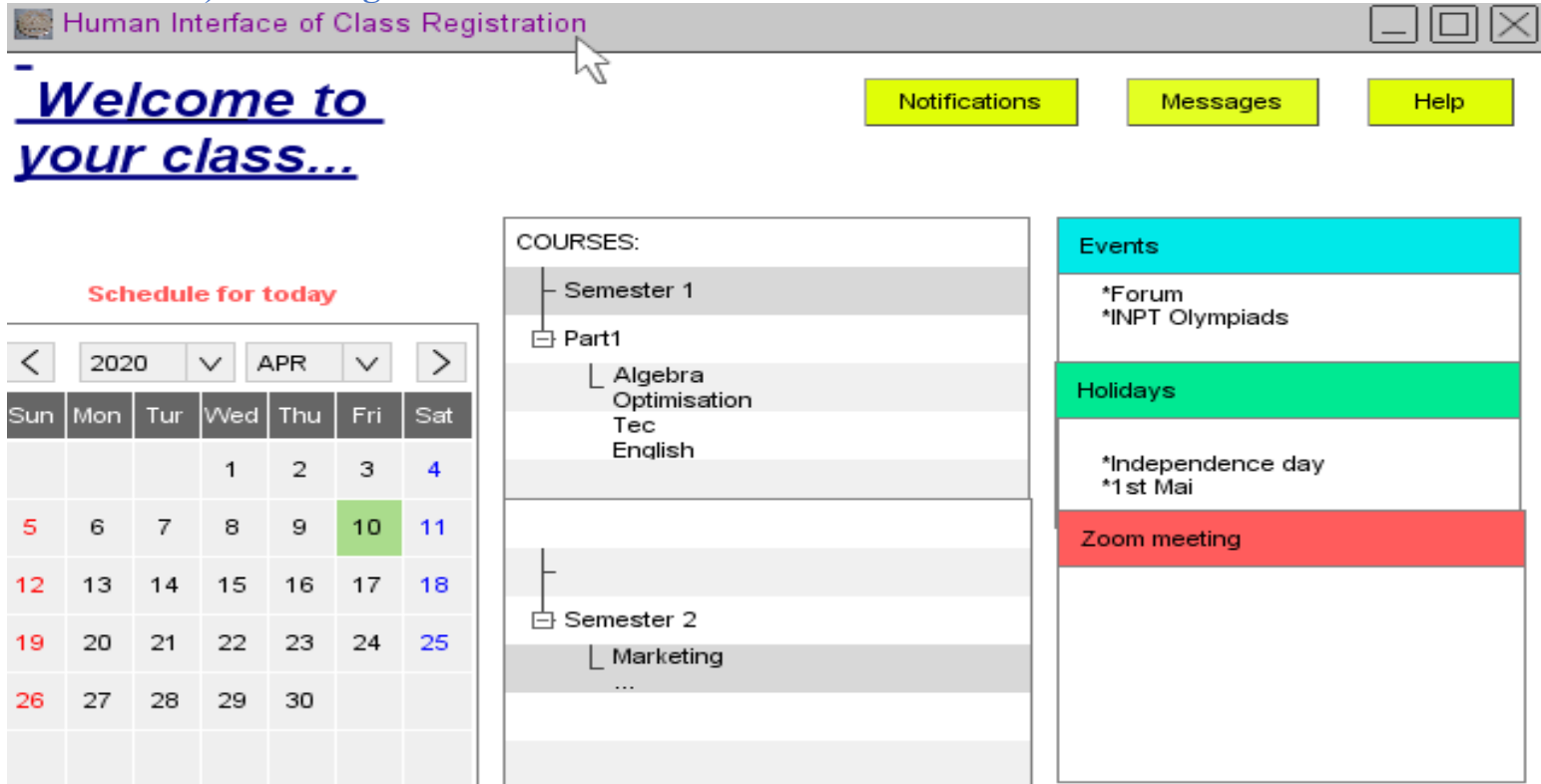


Figure 8: Human interface for class registration

Before having the access to this page, every student should log in by entering his information: his username, email and his password so that we make sure that the student really belongs to the school. The student has to make sure that he is already signed up so his log in works successfully. The log in form should be as the prototype below:



LOGIN

**User Name**

**Email**

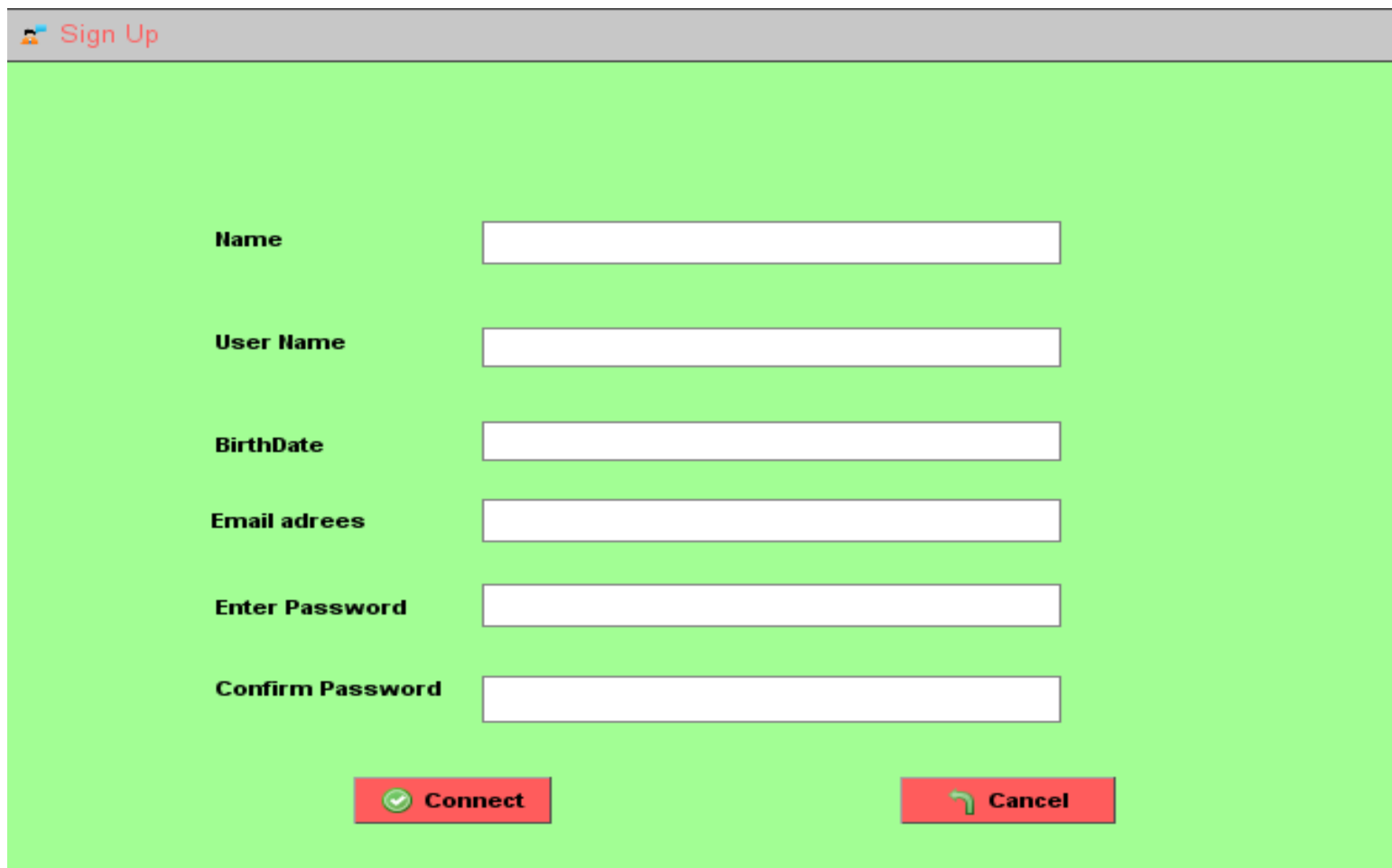
**Password**

☐ I am not a robot

**Singnin** **Singn Up** **Cancel**

*Figure 9: The log in form*

Since the student's first access, there will be a sing up form that the student should fill in with the right information: the student's name, phone, email address .... If the information are correct, the essential page will appear immediately to the student. Otherwise, he will not have the right to access to the page. The student will access to the right page depending on his branch (the administration already has the detailed lists about the students in the course, it will affect directly the student to the right page to revise his courses or whatever). The sing up form will be like:

A sign-up form with a grey header bar containing a user icon and the text "Sign Up". The main area has a light green background. It contains six white input fields with black borders, each preceded by a label: "Name", "User Name", "BirthDate", "Email adrees", "Enter Password", and "Confirm Password". At the bottom, there are two red buttons: "Connect" with a green checkmark icon and "Cancel" with a green arrow icon.

**Sign Up**

**Name**

**User Name**

**BirthDate**

**Email adrees**

**Enter Password**

**Confirm Password**

*Figure 10: The sing up form*

From the beginning, the administration should have the list of all the students, then it should enter the list to the system so there will be no problem during the access trial,

The list should be classified and ordered by students' degrees and their branches, The student's registration form has the next prototype example:

**Student Information**

**Student ID**  **Search**

**Full Name**

**Date of Birth**

**Phone Number**

**Email**

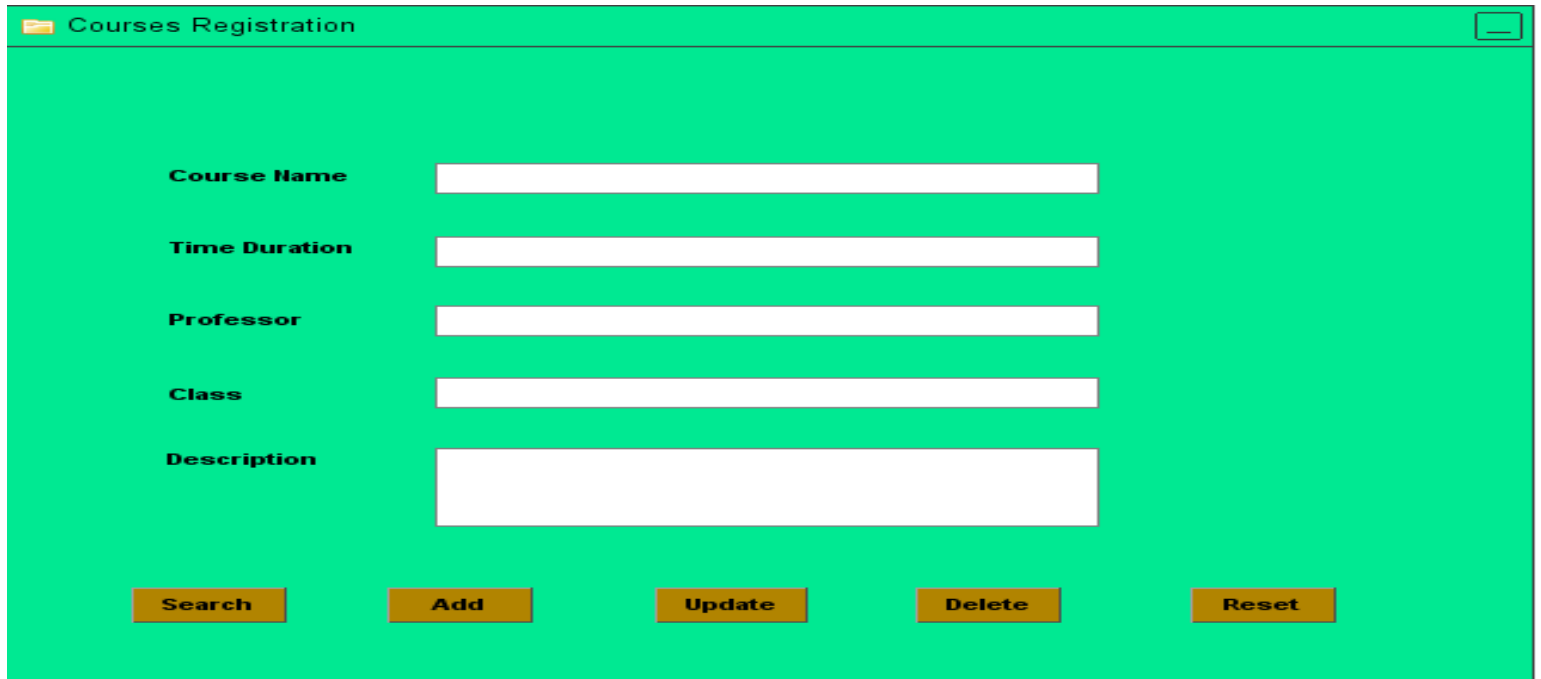
**Add** **Update** **Delete** **Reset**

*Figure 11:students registration form*

Add to that, the administration should also keep in charge the courses registration: the addition of the courses, professors teaching those courses and every detail that depends on registering courses and also the events and holidays.

The system should be their responsibility when it comes to send new notifications, messages and new events. They have the ability to update, delete, add

A new course or event..., and modify the information. The system will be inspired in this prototype:(we realize a form for the course, but it is the same for events, notifications and messages...)

A screenshot of a web application titled "Courses Registration". The form contains five input fields: "Course Name", "Time Duration", "Professor", "Class", and "Description". The "Description" field is a larger text area. Below the form are five buttons: "Search", "Add", "Update", "Delete", and "Reset".

<b>Course Name</b>	<input type="text"/>
<b>Time Duration</b>	<input type="text"/>
<b>Professor</b>	<input type="text"/>
<b>Class</b>	<input type="text"/>
<b>Description</b>	<input type="text"/>

*Figure 12: Courses registration form*

## 2) Class registration mobile application:


As an example of class registration, we realize an INPT mobile application prototype. The figure bellow shows the initial page of the mobile application. It contains two buttons: one button of log in, another is made for sign in in the application. Add to that, the page has many details about the application objectives.



*Figure 13: fisrt page of mobile application*

Afterwards, the log in and sign up forms will be as:

15:45



المعهد الوطني للبريد والمواصلات  
የኢትዮጵያ ፖስታና ቴሌኮሙኒኬሽንስ ኢንስቲትዩት  
Institut National des Postes et Télécommunications

Enter Email

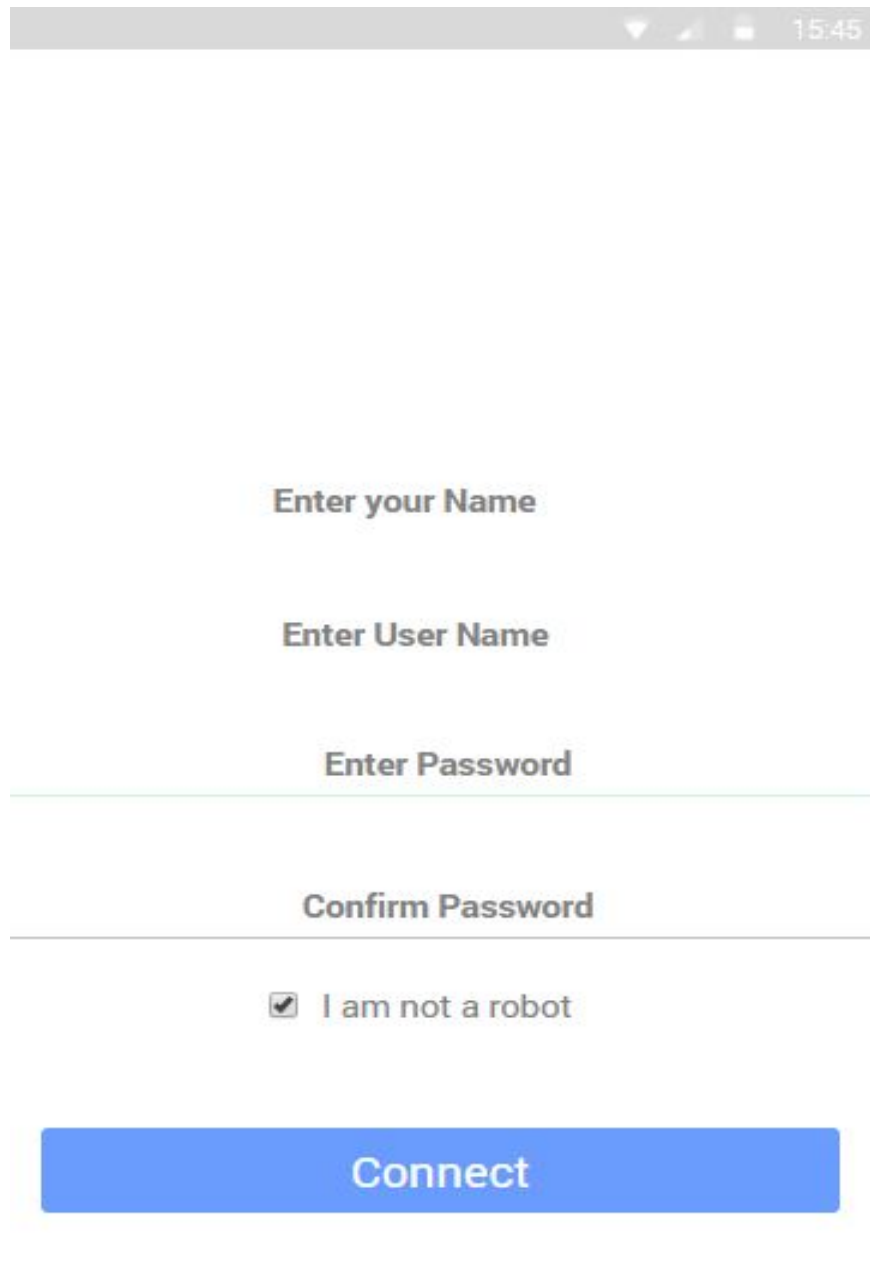
Enter Password

**SIGN IN**

[Forgot Password ??](#)

**Sing Up**

Figure 14: log in form of the mobile app

A screenshot of a mobile application's sign-up form. The form is displayed on a light gray background. At the top, there is a status bar with a gray background, showing a white Wi-Fi icon, a white signal strength icon, a white battery icon, and the time "15:45" in white. The form itself consists of several text input fields, each with a label above it: "Enter your Name", "Enter User Name", "Enter Password", and "Confirm Password". The "Enter Password" and "Confirm Password" fields are separated by a thin horizontal line. Below the "Confirm Password" field, there is a checkbox with a checkmark icon and the text "I am not a robot". At the bottom of the form, there is a large blue button with the word "Connect" in white text. The entire form is enclosed in a thin black border on the right side.

15:45

Enter your Name

Enter User Name

Enter Password

Confirm Password

☒ I am not a robot

Connect

*Figure 15:sign up form of the mobile app*

The principal page as we already said, it will contain every detail the student needs: courses, events, schedules....

The wireframe illustrates the layout of the class registration form. It includes a top navigation bar with three tabs: 'Notifications', 'ButtonZoom meeting', and 'Help'. The main content area is divided into several sections. On the left, there's a 'Semester' dropdown menu with a list of semesters (1, 3, 4, 5, 2). Below it is a 'Schedule of the day' section with a 3x3 grid of placeholder text. The central part features a 'System Analysis and design' section with a document icon and a list of bullet points. To the right of this are two large empty boxes with diagonal lines. On the far right, there are two buttons labeled 'New Events' and 'Holidays'. The bottom of the screen has a blue bar.

Figure 16: class registration form of the mobile app



## Conclusion:

To sum up, this project was, for us, a great chance to practice what we have learned in theoretical classes with our professor. In doing this project, we have learned how to deal with a system by analyzing it, decompose it, and design its database and human interface the thing that, for sur, will be beneficial in our future professional life.