### Functional Requirements

1. The user shall be able to login into the system.

1.1. All users shall have guest-level access by default, without having to login.

1.1.1. The Guest shall be able to display information.

1.1.2. The Guest shall be able to plot graphs with given information.

1.1.3. The Guest shall be able to view the discussion forum.

1.1.4. The Guest shall be able to view reviews on the module review forums.

1.2. Users must be able to login as a student to gain student-level access.

1.2.1. The login shall require the user to input their credentials.

1.2.1.1. The user must input their email.

1.2.1.2. The user must input their password.

1.2.2. The Student shall be able to display information.

1.2.3. The Student shall be able to plot graphs with given information.

1.2.4. The Student shall be able to use the discussion forum.

1.2.5. The Student shall be able to use a profile.

1.2.6. The Student shall be able to write reviews onto the module review forums.

1.3. User shall be able to reset their password of their account

1.3.1. System shall send an email to user detailing instructions to reset password

2. Users shall be able to create an account.

2.1. Users shall be able to access the account creation page from the login page.

2.1.1. The User must input their school email

2.1.2. The user must input their password

2.1.2.1. The password must contain at least one uppercase, lowercase,

  and a special character.

2.1.2.2. The password must contain at least 8 characters.

2.1.2.3. The password must contain at most 20 characters.

2.2  Users who have created an account shall have a profile

2.2.1. User’s profile must display their full name

2.2.2. User’s profile must display their email

2.2.3. User’s profile must display their profile picture

2.2.4. User’s profile must display their saved information

2.3. Users shall edit their profile

2.3.1. Users can change their name, password, profile picture or saved

                                  information

2.3.2. Users must confirm their update before finishing editing their profile

2.4. Admins shall be able to delete a user account.

3. User shall be able to view the discussion forum.

3.1. Student users shall be able to use the discussion forum.

3.1.1. Students must be able to create posts on the forum.

3.1.2. Students must be able to comment on a post on the forum.

3.1.3. Students must be able to upvote or downvote a post on the forum.

3.1.4. Students must be able to search for a post on the forum.

3.1.5. Students must be able to delete their own comment on a post on the forum

3.1.6. Students must be able to delete their own post on the forum.

3.2. Admins shall be able to delete any post on the discussion forum.

4. User shall be able to query the system for information.

4.1. User must be able to type their query into the search bar.

4.1.1. The system must be able to suggest relevant searches.

4.2. The system must be able to suggest and display, and direct user to relevant pages

       based on user’s query.

4.2.1. The system shall be able to display pages that contain individual course

          information.

4.2.1.1. The system shall be able to display the Indicative Grade Profile

  (IGP).

4.2.1.2. The system shall be able to display the course population over

  the years.

4.2.1.3. The system shall be able to display the graduate employment

  rate.

4.2.1.4. The system shall be able to display the course gender ratio.

4.2.1.5. The system shall be able to display the link to the original course

  site from the university website.

4.2.2. The system shall display pages that contain starting salary information.

4.2.3. The system shall display discussion forums.

4.2.4. The system shall display interest groups.

4.2.5. The system shall display course module review forums.

4.3. User shall be able to see all the courses available and stored in system

4.3.1. User shall be able to sort courses according to their IGP

4.3.2. User shall be able to sort courses according to starting salary

5. When the system displays course population or starting salary, the User shall be able to request for a graph based on which information User selects.

5.1. The system shall plot a graph of population or salary (y-axis) against year (x-axis).

5.2. The graph shall be displayed as a line plot.

5.3. The graph must have proper labels on both x and y axis

5.4. The graph must fit to scale to adequately show relevant information.

5.5. The graph shall display accurate data when mouse is hovering over specific data

       points.

6. Users shall be able to join groups.

6.1. Each group shall have its own group page.

6.1.1. The group name must be displayed on the group page.

6.1.2. The group picture must be displayed on the group page.

6.1.3. The group description must be displayed on the group page.

6.1.4. A join/leave group button must be displayed on the group page.

6.2. Users shall be able to create groups.

6.2.1. The user must set the group name.

6.2.1.1. The group name must be at least 1 character long.

6.2.1.2. The group name must be at most 20 characters long.

6.2.1.3. The group name must contain only uppercase, lowercase,

  numbers, special characters, or emojis.

6.2.2. The user must set the group description.

6.2.2.1. The group description must be at least 1 character long.

6.2.2.2. The group description must be at most 200 characters long.

6.2.2.3. The group description must contain only uppercase, lowercase,

  numbers, special characters, or emojis.

6.2.3. The user must set the group description.

6.2.3.1. The group display picture must be displayed as a 170 x 170 pixel

  format.

6.2.4. The user must set the group as public or private.

6.3. Users shall be able to join groups.

6.3.1. Users shall be able to join a public group immediately by pressing the “Join

          group” button.

6.3.2. Users must send a join request to join a private group.

6.3.2.1. The moderator must accept the join request to allow the

  user to join the group

6.4. The group chat shall only be accessible when the user has joined the group.

6.4.1. The chat page shall display up to 30 previous messages.

6.4.2. User must be able to type their message into the chat box.

6.4.3. User must be able to publish their message to text chat.

6.4.4. User must be able to send images to the chat.

7. Users who have created an account shall have a profile.

7.1. Users are able to bookmark information displayed by the system into their profile.

7.1.1. Users shall be able to bookmark individual course information.

7.1.2. Users shall be able to bookmark posts on discussion forum.

7.1.3. Users shall be able to bookmark plotted graphs.

7.1.4. Users shall be able to bookmark salary information.

7.1.5. Users shall be able to bookmark interest groups.

7.2. Users must be able to view the bookmarked information on their profile page.

8. User shall be able to use course review forums for their courses.

8.1. User shall be able to type their review into a text box.

8.1.1. Review must be at least 1 character long.

8.1.2. Review must be at most 300 characters long.

8.1.3. Review must contain only uppercase, lowercase, numbers, special

          characters, or emojis

8.2. User shall be able to view reviews that have been posted.

8.3. User shall be able to delete reviews that the user has posted

8.4. Admins shall be able to delete any reviews posted.

9. User shall be able to find the shortest distance from any location to their desired university.

9.1. System shall direct user to Google Maps to display the shortest distance

9.2. User shall be able to save their address in their profile.

9.2.1. User must verify their user account to save into their profile.

### Non-Functional Requirements

**Security:**

1. Authentication for login, user password must be encrypted.

**Reliability:**

1. System must be online and ready for use at all times of the day, except for scheduled maintenance.
2. Information provided must be updated to at most one year’s recency.
3. System must be able to restart and update without losing data.

**Performance:**

1. System should respond to any request given by the user within 0.5 seconds.
2. System should be able to display information in several languages accurately.
3. System should be able to display the shortest distance within 0.5 seconds.

**Maintainability:**

1. Write clean code and follow Object-Oriented principles so that any changes to the code will not break the whole system.
2. The system must be able to debug
3. If system is down, the system should be under maintenance for no more than 3 hours

**Scalability:**

1. Able to add functions to the website easily with minimal changes to code.

**Usability: Friendliness**

1. Any user who knows how to read and knows what they are searching for should be able to use it without the user guide.
2. User guide is available in the local language according to the user’s locale

**ATOMIZATION**

(1. USER LOGIN)

User shall be able to login into the system

→ User must register and create their account in order to login into the system

→ Login system has 3 levels

→ → all users will have guest-level access by default

→ → → the Guest does not require any login

→ → → the Guest must be able to display information

→ → → the Guest must be able to plot graphs with the given information

→ → → the Guest must be able to view the discussion board only

→ → users can login as a Student to gain student-level access

→ → → the Student must be able to login into the system with an account

→ → → → login requires user to input credentials:

→ → → → → the user must input their school email

→ → → → → the user must input their password

→ → → the Student must be able to display information

→ → → the Student must be able to plot graphs with the given information

→ → → the Student must be able to use the discussion forum

→ → users can login as a Professor to gain professor-level access

→ → → the Professor must be able to login into the system with an account

→ → → → login requires user to input credentials:

→ → → → → the user must input their school email

→ → → → → the user must input their password

→ → → the Professor must be able to display information

→ → → the Professor must be able to plot graphs with the given information

→ → → the Professor must be able to moderate the discussion forum

→ User shall be able to reset their password of their account

→ → The system shall send an email to the user detailing instructions to reset their password

(2. ACCOUNT CREATION)

User shall be able to create an account

→ User shall be able to access the account creation page from the login page

→ → the user must input their school email (for students and prof)

→ → → System shall send a verification email to the email provided

→ → → → verification email shall contain a link to complete account creation

→ → the user must input their password

→ → → password must contain at least one uppercase, lowercase, and special character

→ → → password must contain at least 8 characters

→ → → password must contain at most 20 characters

→ Users who have created an account shall have a profile

→ → The user’s profile will show the following:

→ → → Their full name

→ → → Their school email

→ → → Their profile picture

→ → → Their saved information

→ → Users shall edit their profile:

→ → → Users can change their name, password, profile picture or saved information

→ → → Users must confirm their update before finishing editing their profile

(3. DISCUSSION FORUM)

User shall be able to view the discussion forum

→ User must be able to login in order to use the discussion forum

→ → User shall be able to create a post on the discussion forum

→ → User shall be able to report a post on the discussion forum

→ → User shall be able to comment on a post on the discussion forum

→ → User shall be able to upvote or downvote a post on the discussion forum

→ → User shall be able to search for a post on the discussion forum

→ → User shall be able to delete their own comment on a post on the discussion forum

→ → User shall be able to delete their own post on the discussion forum

→ Professor shall be able to moderate the discussion forum

→ → Professor shall be able to delete a post on the discussion forum

(4. DISPLAY INFORMATION)

User shall be able to query the system for information

→ User must be able to type their query onto the search bar

→ → The system must be able to suggest relevant searches

→ The system must be able to direct user to relevant pages, such as:

→ → individual course information

→ → → Indicative Grade Profile of course

→ → → Employment rate of course

→ → → Gender ratio of course

→ → → Link to original course site from the university website

→ → course starting salary (over the years)

→ → discussion forums

→ → interest groups

→ User shall be able to view all the courses available and stored in the system

→ → User shall be able to sort the courses according to:

→ → → the course’s indicative grade profile (IGP)

→ → → the course’s entry salary after graduation

(5. PLOT GRAPH)

When System displays course population or starting salary information, User shall be able to request for a graph

→ System shall plot and display graph showing clearly relevant information

→ → graph shall plot population or salary (y-axis) against year (x-axis)

→ → graph shall be a line plot (?)

→ → graph shall only show one data point per year

→ → graph shall be properly labeled

→ → graph shall have a scalable axis to adequately fit information

(6. GROUPS)

Students and Professors shall be able to join groups

→ each group shall have a group page that contains the following information:

→ → group name must be displayed

→ → group display picture must be displayed

→ → group description must be displayed below group name

→ → join/leave group button must be displayed

→ only Professors (or Moderators?) shall be able to create groups

→ → Moderators shall be able to set up group:

→ → → Moderators must set group name

→ → → → group name must be at least one character long

→ → → → group name must be at most 20 characters long

→ → → → group name must contain only uppercase, lowercase, numbers, special characters, or emojis

→ → → Moderators must set group description

→ → → → group description must be at least one character long

→ → → → group description must be at most 200 characters long

→ → → → group description must contain only uppercase, lowercase, numbers, special characters, or emojis

→ → → Moderators must set group display picture

→ → → → group display picture must be in square format

→ → → Moderators must determine if group is public or private

→ → → → public groups can be joined immediately

→ → → → private groups can be joined through request, moderator must accept request

→ group chat shall be accessible only when user has joined the group

→ → Chat page must display up to 30 previous messages, in order of chronology

→ → User must be able to type their message in a text box

→ → User must be able to publish their message to the chat

→ → User must be able to send images to the chat

(7. SAVE TO PROFILE)

Users who have created an account shall have a profile

→ Users are able to save information displayed by the system into their profile

→ → Users must login into their account to save information into their profile

→ → The saved information shall include:

→ → → Individual course information

→ → → Posts on discussion forum

→ → → Plotted graphs

→ → → Salary information

→ → → Interest groups

→ → Users must be able to view the saved information on their profile

(8. GPS SYSTEM?) → see whether can implement

User shall be able to find the shortest distance from their home to their desired university

→ System shall direct user to Google Maps to display the shortest distance

→ User shall be able to save the shortest distance in their profile

→ → User must verify his user account to save into their profile

(9. MODULE REVIEW)

User shall be able to create a review for a module that is available in their course

→ User must login into their account in order to create a review

→ User shall be able to type their review into a text box

→ → Review must be at least 1 character long

→ → Review must be at most 300 characters long

→ → Review must contain only uppercase, lowercase, numbers, special characters, or emojis

**Data Dictionary**

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| --- | --- |
| Term | Definition |
| Guest | Guests are users that have not logged in. All users are guests by default, until they log in. These users have limited access to features. |
| Student | Students are users that have logged in. These users have access to more features, in addition to the guest-level features. |
| Discussion Forum | The discussion forum is a platform for students to ask and answer questions, and discuss topics apart from module reviews. Guests may only view the discussion forums. |
| Module Review Forum | The module review forum is a platform for students to review their modules after completion, and to provide advice for other students who are thinking of taking the mod in the future. Guests may only view the module review forums. |
| Profile | The profile is a personalized page for students to save information that they deem useful or relevant. All saved information can easily be accessed in the profile page. |
| Email (?) | Email refers to either school email or personal email. |
| IGP (Indicative Grade Profile) | A grade measure of a course for pre-university students to check whether they are eligible to enter |
| Course population | Number of students enrolled into a certain course for that year |
| Group | An online interest group relating to any topic where both students and professor can join. Members of the group can talk with each through a group chat |
| Admin | Special users who are able to moderate the website by handling user reports (discussion forum, course review, user profiles). Currently only those who created the website are deemed as Admins. |