***DegreeOverview*: A Course Definition System**

Understanding and visualizing the relationships between courses and their proposed learning outcomes is fundamental when planning, designing and delivering university courses. Enter *DegreeOverview*, a web-based tool that will allow course designers and students to visualize entire degrees as well as particular course sequences. *DegreeOverview* will allow both course designers and students to answer the eternal question: what have I learned in my degree? This program will allow University lecturers to define and relate the learning outcomes of each course with other courses within the degree. The *DegreeOverview* has functionalities as follows.

**For Lecturers (Course Designer）**

* ~~search for the information about any course available in the system (~~See “About Search Function”)
* input or edit CILOs (Course Intended Learning Outcomes) through keyboard or import the file of CILOs of a course. (refer to the syllabus sample document)
* define the dependences between CILOs of courses (CILOs of a course can depend on some CILOs of it prerequisite courses. E.g., Course A is the pre-requisite of Course B, because CILO 2 of Course B depends on CILO 3 of Course A). One CILO may simultaneously depend on multiple CILOs (multiple CILOs have only “and” logical relationships) and several CILOs can depend on one CILOs.
* input or edit assessment methods through keyboard or import the file of assessment methods of a course (refer to the syllabus sample document),
* define the relationships between the learning outcomes (CILOs) and the course assessment methods and their percentages (refer to the syllabus document and Appendix),
* visualize the dependencies between learning outcomes across a degree
* ~~see what courses offer a particular learning outcome~~ (See “About Search Function” )

**For Normal Lectures (Non-Course Designer)**

* ~~search for the information about any course available in the system~~ (See “About Search Function”)
* see the analysis results (not a MUST function).
  + The lecturer can check the CILO achievements for a course (e.g., students’ average performance in one year on a CILO, comparison of average performance for different years on a CILO).
* visualize the dependencies between learning outcomes across a degree

**For Students**

* visualize the dependencies between learning outcomes across a degree.
* ~~see what courses offer a particular learning outcome (~~See “About Search Function”~~)~~.
* see his or her performance on CILOs of a course.
  + This can be calculated from the grade and assessment methods table. Take Appendices A and B as an example.

First, calculate the distribution of full marks on each CILO. For the assessment method which contributes to several CILOs, each CILO will get an equal distribution. So

CILO1: C1 = 15 + 10 \* 0.5 + 50 \* 0.5 = 45

CILO2: C2 = 25 + 10 \* 0.5 + 50 \* 0,5 = 55

Assume marks that a student gets for each assessment are *Sa* (for assignment/Quizzes), *Si* (for labs), *Sp* (for projects), *Se* (for final examination) respectively, then the student achievements are

CILO1: S1 = *Sa* + Sp \* 0.5 + *Se* \* 0.5

CILO2: S2 = *Si* + *Sp* \* 0 5 + *Se* \* 0.5

Then student performance on learning outcomes CILO1 is S1/C1 \* 100% and CILO2 is S2/C2 \* 100%.

E.g., for the first student *name1*, the performance on CILO1 is (14.71 + 9.63 \* 0.5 + 49.75 \* 0.5)/45 \* 100% = 98.7%，the performance on CILO2 is (23.5 + 9.63 \* 0.5 + 49.75 \* 0.5)/55 \* 100% = 96.7%

* + We assume that there could be different models used to calculate the performance. The model used above is only one of the models. It is possible that other models are added later to calculate the performance though the implementations of these models are not required temporarily in this project.

**About Search Function**

* The system should include the following search functions (or more).

1. Given a course, find the prerequisite courses or the courses that use this course as a prerequisite.
2. Given a CILO of a course, find the CILOs it depends on or the CILOs that depend on it.
3. Given keywords, find the courses or CILOs.
4. Search function is common for all users.

**About Visualization**

* For the visualization of the dependency between the learning outcomes, software developers can use what they thought the best way to show the result to user. The students’ learning performance can also be visualized. Students’ performance is limited to a course. i.e., when a student needs to view performance, he needs to give the course name and the academic semester (e.g., 2020-2021-2) in which he/she took the course
* For the visualization, any user can see any degree by inputting the name of programme.
* Visualization of degree is common to all users.

**About Modification**

* Whenever a course designer creates or modifies a course, the operations should be recorded in a log file. The log file will not be seen by any users through login.
* When a course designer adds CILOs or change assessment methods (include the relationships between CILO and assessment method), it is possible that the old version has been used previously to evaluate performance or overview a degree. Therefore, the used old version of assessment method and CILOs should be saved. When a course is created or modified, the course designer must specify the cohort which start to use. For example, 2020 means only the students joining in college in 2020 or after will use the course CILOs and assessment methods.
* To simply the project, assume that a course designer can **modify CILO (limited to wording, not the meaning)** but **cannot delete a CILO.** (during the process of creating a new course, any CILO can be deleted).
* No course can be deleted.

**About Course**

* Besides CILOs and assessment methods, each course also includes some basic information such as course name, course code and type (MR, ME or FE).
* Each course can have one or more prerequisite courses (and, or). Please refer to the syllabus samples. However, it is not necessary to include all the information in a syllabus in the system.
* Assume that each course will have 2-3 CILOs.
* Each course contains the following information
  + Course name
  + Course code
  + Academic year it starts to be applied.
  + Programme (Assume that all centers are programmes)
  + Type (major required, major election, GE, FE)
  + CILOs and assessment methods.
    - It is assumed that the number of CILOs for each course is 2-3 (inclusive).
    - The total of percentage should be 100%
    - One assessment method can be related to multiple CILOs (and) of this course.

**About Students’ Grade Report**

* Assume that students’ marks for each courses have been prepared by another system “Grade Report System” and stored in database. The contents can refer to Appendix.
* Assessment method names in grade report are strictly as those in this system for a course.
* Each grade report includes the following information:
  + Students’ names,
  + Students IDs,
  + Semester (e.g., 2020-2021-1)
  + Assessment methods and marks for each assessment methods. Marks have been transformed according to the percentage of each assessment method. E.g., if an assessment method occupies 15%, then the full score for this assessment is 15.

**About Login Information**

* Assume that all user will login with their school accounts and passwords. e.g, the login information is available in a security information database.
* Assume that the security information database also includes the information about whether a staff member is a legal course designer, i.e, the database includes the users’ type: student, lecturer, or a course designer. A course designer is also a lecturer.
* Each user has the following information besides the user name and passwords.
  + Full Name
  + Student ID or staff ID
  + Programme

**Log**

* Each course has a log recording any operations on this course, including creation and modification. information of course designer who do these operations.

**More Requirements**

* Browser: Chrome or IE
* OS: Windows 7 or above
* Language: OO
* Import: if import function is supported, imported file is in .xlsx format.
* No user manual, online help is required.
* Students’grade reports and login information cannot be modified.

**Appendices**

1. Sample grade report for the Structured Programming course.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Student ID | Name | *Assignment/Quizzes* | *Labs* | *Projects* | *Examination* | Total |
| 1400000000 | name1 | 14.71 | 23.50 | 9.63 | 49.75 | 97.58 |
| 1400000001 | name2 | 14.13 | 23.88 | 9.63 | 47.00 | 94.63 |
| 1400000002 | name3 | 14.10 | 22.19 | 8.88 | 48.75 | 93.92 |
| 1400000003 | name4 | 12.58 | 23.73 | 8.88 | 45.75 | 90.94 |
| 1400000004 | name5 | 13.35 | 22.32 | 10.00 | 44.00 | 89.67 |
| 1400000005 | name6 | 12.96 | 24.55 | 10.00 | 41.00 | 88.50 |
| 1400000006 | name7 | 13.22 | 22.41 | 8.88 | 43.75 | 88.25 |

1. The assessment methods for the structured programming course

|  |  |  |
| --- | --- | --- |
| Evaluation Method | Percentage | CILOs |
| Assignments/ Quizzes | 15% | 1 |
| Labs | 25% | 2 |
| Projects | 10% | 1-2 |
| Examination | 50% | 1-2 |