An Effective Role of Year Coordinators using ICT tools in the two tier Engineering Education Institution following Fully Flexible Credit System

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ABSTRACT

In the recent years, Engineering Education had seen rapid changes which include transferring of traditional fixed credit system into Fully Flexible Credit System (FFCS). Recent day students like to make decisions on their own and like to plan their future by themselves. Employers expect students to have multi-disciplinary competency, leadership skills and be ICT ready. But student aspirations and demands of the workplace have become highly diverse. The present rigid, fixed-credit system of learning offers very little flexibility to students in choosing the courses of their liking and helps little in becoming a well-rounded person. As part of continuous improvement in providing quality education. the next step in this direction is by introducing the Fully Flexible Credit System into its academic curriculum. By this, students can register for courses according to their interests and academic ability in completing them. FFCS allows students to decide their academic plans and permits them to alter it as they progress in time. For this process; each batch shall be allotted with the year coordinator as the class coordinator does not work well. The idea is to make the year coordinator as the key person once the batch starts in the academic and to continue until the batch comes out after four years. This will ensure that the student makes the right decision at the right time like choosing of credits and the courses. Year Coordinator will also take up the role of the project coordinator what is followed in the earlier method. The efficiency and effectiveness of the final year project lies on the hand of year coordinator. In this paper, we present an effective method of managing student strength in specifically coordinating the final semester project work which shapes the student community to shine in the industry.

Introduction

FFCS allows students to decide their academic plans and permits them to alter it as they progress in time. Under FFCS, each Programme will have baskets of courses classified under University Core, University Electives, Programme Core and Programme Electives. At the end of the Programme, each student is expected to have the following credit distribution in various disciplines: Engineering (64%), Science (20%), Humanities (8%), and Management (8%). Ample options are given to choose interdisciplinary courses from other Engineering Schools which will help the student develop additional skills, under the University Electives. The slot-based timetable, coupled with a campus-wide Course Registration in each semester helps individual students to choose the course they want to study, the time of attending a theory/ lab class and even the teacher. Thus, students can make their own time table and each student in a class may have a different time table of his / her own. Depending on the interest developed by students while studying for a degree in another or their own discipline, students can choose a 'Minor' or 'Honours' specialization respectively which will be offered as a combination of Core and Elective courses, across Schools. University Electives will definitely be an attraction to students to extend their knowledge beyond their specialization. Students having high grades will also get a chance to complete the credit requirements earlier and can take up Teaching / Research Assistants hips in their final year of studies. They can also pursue student / research project in parallel.

Other features of FFCS include: Add or Drop of registered courses to balance workload; Course Withdrawal to maximize grades; Course Auditing to gain additional knowledge; Registering for M.Tech. level courses for in-depth experience; Course Substitution option; Grade Improvement; Credit Transfer for course migration, etc.

- Choice in the order of selection of courses for each semester
- Choice in the timings/time slots in the selection of courses
- Choice in the selection of number of courses per semester
- Choice of preparing his/her own Timetable and Academic Plan for each semester suiting his/her academic ability and interest
- Balanced curriculum with engineering, science, humanities and management courses
- Ample opportunities to do inter-disciplinary courses
- Possibility of altering course plan each semester depending on individual's academic ability
- Soft on slow learners by offering important/common courses in all semesters.

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In this paper, we use information and communication technology for performing academic activities like project management, Quiz, Timetable Slotter. This project aims at providing a complete system to automate the activities and provide ease of use of the system. Here, we make a complete system where the project registration, approval, review panel set up and marks updation are done automatically using a web portal. Also we conduct an online test for students where the students can select the subject and take the test, as soon as the test completes, it is evaluated and the marks are displayed to the student. In another module, we automate the allocation of different slots and subjects to faculties with their class slots and student registration in FFCS fashion. This system also includes a file uploading and downloading scheme for faculties and students to share resources. The system aims at increasing the quality of the review by making good review panel thus assessing the project well, allow the students to take quiz examinations online, automating the allocation and slots for various faculties without clashes in timings or classes and automate the student's selection of classes and timings

System Setup

The overall system comprises of three main modules.

- Project Module
- Quiz Module
- Timetable- Slot allocation Module

The overall system follows repository architecture style as there is a continuous interaction with database in all the activities. The individual modules forms pipes and filter architecture since there occur a linear flow of information.
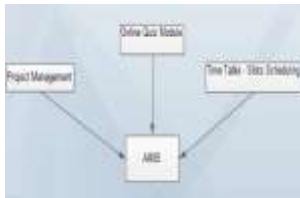

Fig. 1. System Overview

Project Module

In Project management module, faculties and students are allowed to register into the system first with a password, and then login. The registration forms are thoroughly validated. Student can choose a guide from the list of available faculties and register project. As soon as the project is registered, the faculty gets a request, claiming his approval with the details of the project such as member's details and abstract. The faculty can accept or reject the project. If the faculty rejects the project, the student will be notified to register again. The review panel is set up based on the following logic we employ. The domain of the project is taken into account and the faculties who gave their first domain as that of the project are retrieved and random of three members is selected. It there are no sufficient members with the project's domain as their first domain, we search for the faculties who gave it as second area of specialization. This process is repeated till all the three panelists are found. At the worst case, when there is no faculty with the domain of the project as his specialization, we select them randomly from the available faculties in the department.

Then the panel in charge is selected from the identified reviewers that too with the faculty having most experience. He will be allowed to enter the consolidated marks for the project and also he is in charge of the panel. Finally timings are allotted for every project. The panel in charge enters the consolidated

marks for the project and finally the total mark is calculated and the grade is awarded.

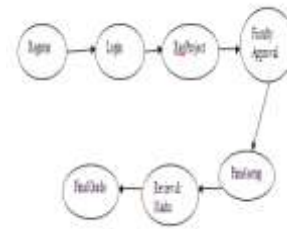The project module can be depicted as shown in figure below.

Fig. 2. Project Module

Quiz Module

In quiz examination module, for every faculty, when they login into the system, their domain of specializations is found, and they are allowed to enter questions only in their domain of specialization. The faculty must select the domain for the question and enter the question with three possible answers and the correct option. These details are stored in the database with a unique id automatically generated for every question entry. When the student login to the system he can take the test by selecting a subject.

As soon as he starts the test, the countdown starts automatically for the specified time limit. If the time exceeds or the user submits or if the user tries to refresh the page, the test will be submitted automatically and the marks will displayed to the user. The same will be update in the database also. It also includes a simple file uploading and downloading system. In this faculties can upload their file into the system for academic purposes. The same can be downloaded by the user with the special link given in his login.

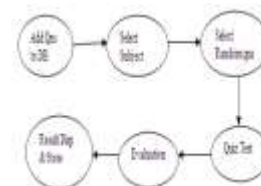The activities involved in quiz module are shown in figure below.

Fig .3 .Quiz module

Timetable - Slot allotment Module

Initially, clean data of the faculties with the subjects they are handling and the class names are entered in the database. The admin can login into the system and choose the particular branch and year to view. As he selects the faculty or class view, the slots are allocated and the list is displayed. The admin can view the time table for every faculty or the every class.The students are then allowed to login into the system and he/she can select faculties and slots for every subjects. As he submits his wish, the corresponding entries are stored in the system and the no of students for the corresponding faculty and slot is incremented. Each slot is fixed a maximum of 60 students, if the no of students in a slot reaches 60, then that particular faculty and slot will not appear in the student choice selection form.
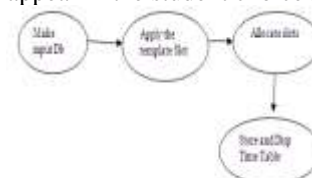

Fig.4. Timetable Slots Module

Result and Discussion

The process involved in each module is shown briefly here with corresponding screens.

Project Registration form

Fig.5. Project Registration

Project Request in faculty Login:

Fig.6. Faculty Approval Form

Admin's Home Page:

The review panel allocation for every review and allocating time for each project is given in the admin login.

Fig.7. Admin Page

A sample of the review panel is generated and shown in the figure.

Fig.8. Sample Review Panel

Quiz Module:

Provision for adding question to the database is given in faculty login.

The add question form is:

Fig.9. Faculty page for Question Entry

Then the student login, he can choose a subject and take the test.

Fig.10. Student Form for taking Quiz

The quiz examination runs for the specified time and gets auto submitted as then the timer expires.

Fig.11.Question Display Menu

Timetable – slot Allocation Module

A sample of clean data for a section in a branch which is given as input is shown here.

Fig.12.Faculty Data Entry

The students are then allowed select the faculty and slot for each and every subject.

Fig.13. Timetable Slot Allotment

Sample of the time table generated of the student is shown as follows.

Fig.14. Student Timetable

Conclusion

The aim of this project is to develop a complete automated solution to all the academic activities involved in an institution. Even though every institution follows their own method and approach for doing these academic activities, they all aim towards a common objective.As these academic processes have very wide range, everyone have their own views in approaching towards a problem. We tried to combine all the best features and provide a quality product. This project mainly aims at providing major functionalities; we took less care on the front end designation of the system, as it is much difficult to make a full featured front end system for all these modules at a short span.

Future Work

A simple and attractive front end design needs to be developed for good looking of the system and make it appealing to the users. Direct link to help section which guides the beginners in getting started with the system and to make quality interactions can be added. A well enhanced and advanced provisions for admin, providing him all the controls like when to enable a link and disable a link.etc.More no of classes, faculties can be included in the system so that it could allocate slots for almost all courses in the institute and for all semester. Another important module can be included, which helps the faculties in getting their preferred slot based on his experience and other qualities. Also allocating the faculties to invigilate classes during examination with proportionate allocation of hours from asst professor junior grade to senior professor based on their designation can be done.As our system is developed with code igniter framework, we recommend the use of same code igniter framework in future development for better compatibility with our system.

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