

Auto Advisement

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Abstract:- An Academic advising is an important task in Student progression in an academic setup particularly in higher educational scenario, where Students are free to choose course from list of courses from student's specialization course list.

Aim of the proposed system is to automate the process of academic advisement so that advisors can be relieved of providing information's required for creating next semesters academic requirements like timetabling,. Thus reducing the man-hour requirement for Academic advisement.

Keywords—Academic advisement, Auto advisement,

I. INTRODUCTION

An academic advisor will guide students to make the best decisions based on their majors and provide information as well as options to help them fulfil their degree requirements. A Lecturer will be playing the role of Academic advisor and student advocate.

After the results of foundation program, the list of students who will be moving to post foundation will be prepared by Admissions and registration department.

Academic advisement is a process where advisees are given courses to study in each semester based on their eligibility criteria. The courses are chosen from a set (predefined approved course catalogue called audit degree). Advisement makes use of pre-requisite conditions for selecting a course (for example, the student needs to pass technical writing I, if technical writing II needs to be advised). Also, the minimum number of credit hours is also a major criterion for each semester. In addition, if the student wants to improve the grade or repeating courses that are failed, academic advisement will be customised to fulfil such requirements.

A. Difference between academic advisement and counselling

Academic advisement and counselling are two different entities with respect to the process but many a time both needs to go hand in hand for advisement to happen smoothly and successfully.

Academic advisement is strictly based on a said template called audit degree. It details how many credit hours, contact hours, the pre-requisite condition, the type of course etc. So, advisement is done within the framework of audit degree. Here the advisor has only a role to choose the courses which best help the student in a given situation.

Counselling on the other hand is a process that let advisees understand where exactly they need to focus, the fall pits are discovered and remedial measures are made known. Also, it is a kind of motivation for the student not to get disappointed on failures and reinforcing him/her to succeed with a better plan.

B. How Advising help student progression in graduation process

If advisors strictly follow the audit degree, the advisees will complete all requirements, subsequently getting eligible for graduation, within the shortest span of time. But there are always exemptions based on the academic endurance of advisees. If a student goes under probation or if a student fails a particular course and not eligible to take subsequent course because of pre-requisite conditions or some courses, which are not offered in a particular semester, in such cases, the role of advisors is particularly important in decision making. Right type of advising will really help the student to feel comfortable to sail through with minimum number of extra semesters.

So also, for advisees moving to next level, the decision to take the number of courses and kind of courses to be selected in the higher level is also extremely critical.

Advisors how well he/she coordinate with counselling department to bring up the less motivated, failed or probation student is also extremely critical in the academic advancement.

In the beginning of each semester of an academic year, advisors will provide the data projecting the seats required by their advisees before result(normal projection) and after results(actuals) of current semester required number of seats for each course depending on advisee level and specialization to timetable team. courses are allotted to Students by Advisors , who will be acting as both advisors and Lecturers also.

In the academic scenario where Students studies different programs which are offered under various specializations., Students are allotted courses according to a predefined sequence called as Audit degree . Audit degree is a master plan for Studying different specializations. Courses can be divided in to prerequisite and requisite courses. and depending on prerequisite courses studied in the sequence.

. In this scenario, Advisors will be asked by the timetable team of the department to submit the required number of seats for their advisee in each course of the program. This data should be submitted after each midterm exam, called prediction or before result projections, assuming all concerned advisees will pass all the course allotted to them. and later, after result is announced “actuals” or after result projection should be submitted to timetable team, so that they can decide the courses to be offered and number of sections of the course.

As advisor is playing role of Lecture also and occupied with other administrative duties including committee head/member, to reduce the burden of Advisor, the proposed system will automate the prediction and actuals submission of required number of seats in various courses under different program levels.

II. LITERATURE REVIEW

The academic advisement is the key process of every Universities in the beginning of every Semester. This becomes the major and primary part of the academic activities to select the courses for the Semester by an Individual student according to his / her Marks scored in the previous semester, remaining courses, following the sequence according to the degree audit, any courses whether he/ she has dropped or has been debarred and finally the probation status of the student. The process is quite tedious for the Advisors' to keep track of the courses to be advised to their respective advisee. An automated academic advisement system could solve the purpose of proper advisement, advantageous over the traditional method which naturally reduces the burden of the Advisors'. Though the review on this title are scarce, the researcher for this purpose has reviewed various reviews authored by various researchers on automated academic advisement system, here are few of them discussed in this paper.

According to Reference [1] The researcher focusses on the online academic advising system which could be utilized by advisors, time-table planners and students. This system guides the students to register their courses for the ensuing semester and gives an informative advice on their remaining courses and graduation requirements. This system will be useful for time-table planners to decide on the sections to be opened and courses to be offered based on the information provided to the system. The major challenge faced by this system is availability of students' current grade and simplified process for offering courses and closure of section.

According to reference [2] the researcher emphasized on the basic study plan which is grouped with subsystems and identifying them with key. The author in his study observes that there are basic queries to be answered to execute the system such as availability of course, degree graduation requirement, credit transfer and availability of time.

Reference [3] The research highlighted the importance of Academic advising and designed a Web based advising system to handle the advising process more efficiently and effectively. The major objective of this system is to reduce the burden of advisors from the repetitious work, encouraging students to take an active role in advising, concentrating advising-related information for remote students in an electronic format, and reducing advising inconsistencies. The users supported by the system includes Students, advisers, and secretaries, each of them has their own set of privileges and functions to perform. The students mainly use the system for course descriptions and advice by asking frequent questions about their graduation requirements. They can also ask the system, based on the classes they've already completed, which course(s) to take next.

According to Reference [4], the author emphasized that during the term of four-years of study in Universities, less than three by fourth of freshers return for a second year; at two-year Institutions, the ratio is significantly lower. There are many factors that contribute to attrition one of the significant factors is advisement. An expert system was created several years ago for advising freshmen which is a key aspect in counseling students but that did not handle schedule. The issue of scheduling is addressed in this revised version of the application, and the re-engineered system is specified. The authors also discussed the design of a general model that may be adjusted for the needs of other schools, as well as two variants developed to suit the advising criteria of two separate undergraduate colleges.

The reference [5], The author in his study revealed that the heterogeneity of the class's skill levels of the students who are entering fresh are normally expected to be given counselling regardless of their desired major, still the difference in basic curriculum requirements makes the advising of freshers to be difficult, which results in delay in their registration. An Expert system was created which is a software programs that attempt to replicate human expertise judgment. FROSH2 is a rule-based expert system that assists the course schedule for the first semester. It makes use of student data and information from the advisor's handbook as well as the university's course calendar. FROSH2 then places students in classes that are appropriate for their placement scores, major, degree requirements, and academic preparation, thereby resolving the concerns outlined above. Finally, it allows the student to select one or more additional classes to fulfill general degree requirements that are compatible with their chosen major. FROSH2's algorithms, rules, and design are presented, along with samples of class programs created by it.

Reference [6] in this research Course recommender System was developed for online enrollment application for University College Dublin. This module is a collaborative course recommender system where it recommends elective modules to students. It is based on the core modules, electives are recommended. Thus, it offers solution to the time table clashes.

Reference [7] in this study, the researcher proposed to develop InVESTa—Interactive Virtual Expert System for Advising. The proposed system assists the students and advisors in preparing accurate, timely and schedule without clashes. The Database Layer, Transaction Layer, Scheduler, and the web-based Front-End are all built using Java and object-relational database technology. The client's interface is handled by the front-end. The structure and functionality of the system are discussed in this paper, with a particular focus on database design and the scheduling algorithm's features. The study also addresses concerns such as advising students who have double or multiple majors, as well as auditing students who alter or add majors while in Universities.

Reference [8] This paper introduces Web-based interactive Student Registration and Advising system using Java framework. They make use of open source framework, where the student advisor and email interfaces sending the registration code to the students for approval of the course plan. One of the major issues that was challenging to the developers are to integrate and configure the tools according to their requirements.

III. DATA DESCRIPTION

Some of the reports are generated from Registration software, which are used as input to our proposed auto advisement system. Reports includes

- A. Remaining Courses Report (RCR)
- B. Prerequisite Courses Reports (PCR)
- C. Audit degree (Master Plan)

Any university, in the given scenario have a registration system, managed and maintained by Admissions and registration Department (ARD). Which is responsible for maintains student's information, their transcripts, and different audit degrees. Each program may have different audit degree and can have versions also.

A. Remaining Courses Report (RCR):

This file is generated through registration system, which contain information regarding the remaining courses of a student according to his/her program(identified by Program ID), major and version of audit degree. Normally version of audit degree depends on admission semester of the student. Program ID describes the program level and department of the course.

RCR Table (from Registration system)

Sl. No	Program ID	Advisor Name	Student ID	Student Name	Course ID	Course Name	Major

B. Prerequisite Courses Reports (PCR)

Prerequisite Courses Reports (PCR) file, which is output of registration system contain information about courses and their prerequisites. A Student without studying prerequisite cannot study the course.

PCR Table (from Registration system)

Sl. No	Course Code	Course Name	Prerequisite Courses code	Pre-requisite Course Name

C. Audit degree (Master Plan)

Audit degree is the sequence of courses listed based on each specialization. The courses are listed against credit hours, contact hours (theory and practical) and the kind of requirements (major or elective).

Audit degree is the one, which determines the condition of eligibility or fulfilment of requirement of a student to successfully complete a program level like Diploma, Advance diploma etc.

Advisors make use of audit degree for advisement. Even though audit degree follows an order, it is advisor's discretion to change the order of course for advisement in the best interest of advisee's progress and success but making sure of pre-requisite conditions.

Sl. No	Academic Year	Semester Name	Audit Type	Department Name	Level	Specialization Name	Cr. Hours	Course No	Course Name	Course Type Name

D. Sequence file (SQ): This file is based on the Audit degree (Master Plan) and it is not part of registration system reports. This is a file maintained by timetable team, which is distributed to all advisors of the department, so that seat requirements of all advisors can be collected.

ProgramID will identify the program and the level.

ProgramID	Course ID	Course name	Major

E. Advisement file(AF):

This is output file, Which will be having details like Student id, Student Name, Advisor name, Course id, Course name

STUDENT ID	STUDENT NAME	ADVISOR NAME	COURSE ID	COURSE NAME

IV. PSEUDO CODE

- Step 1: Open remaining courses file
- Step 2 A: Read the remaining courses file record wise until end of the file
- Step 2 B: While (Counter<5)
- Step 3: Open Sequence file (SQ) for reading
- Step 4: Read the Sequence file (SQ) depending on the program ID of the student
- Step 5: Check the s the course for the student found in remaining course file
- Step 6: Open Prerequisite Courses Reports (PCR) file for reading
- Step 7: Read Prerequisite Courses Reports (PCR) file to find whether required course is having any prerequisite.
- Step 8: If found prerequisite course is part of remaining courses file against studentId
- Go to step 3
- Step 9: Else open Advisement file for writing
- Step 10: Write(Student id, Student Name, Advisor name, Course id, Course name) to Advisement file
- Step 11: Counter=counter+1
- Step 12: While End

Implementation of the proposed system can be done through Python easily using SQLite as back end.

V. CONCLUSION

Advisors will be relieved of providing data for projections before and after results. The resultant file can be used for auto advisement purpose, which can further connected to Registration System and timetable system as input.

VI. LIMITATION:

For this system to work, remaining courses files should available from registration system. That mean's start of each semester this system can be utilized.

VII. FUTURE WORK:

The proposed system can be further utilized for extracting registration patterns of students using appropriate machine learning algorithms, which can be utilized in generating clash free automated time table.

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