Scheduling for the School of Technological Entrepreneurship

Design Team
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Abstract

The purpose of this project is to increase enrolment rates in the undergraduate minor offered by the School of Technological Entrepreneurship (STE). This report addresses the low enrollment issue facing STE. Research has led to categorizing the problem into three main factors, which are: students’ lack of awareness of the minor, a lack of effective communication between departments, and a lack of a good class scheduling process. In this report, the need for a more efficient methodology to increase enrollment rates is emphasized. It has been realized that student interest is the key to enrollment. Therefore, an awareness process has been designed to introduce the school and its offerings to students. A communication process has been developed to ensure an effective exchange of scheduling information between departments and the University registrar, as well. Furthermore, a scheduling process has been created to identify the best fitting time sequences to offer STE’s courses. These three processes when combined develop a system that will address the rate of effective enrollment in the STE minor.
**The Need for Project**

A more efficient method for increasing the number of students enrolled in the Technological Entrepreneurship minor. The marketing campaigns used for advertising the programs offered by STE are short reaching, expensive, and misdirected. The relationship between STE, the registrar, and the remainder of the university’s departments is not resourceful, and is poorly organized. The present method used by STE in scheduling courses is primitive, inefficient, and time consuming. Creating a strategic awareness advertisement campaign, improving the relationship between STE, the Registrar, and the other departments, and creating an electronic scheduling system that will locate the sequences to accommodate the scheduling conflicts between the eligible majors will ensure an increase in student enrollment.

**The Design Project Objectives and Requirements**

**The objective of this project is to provide STE with an effective, practical, and user-friendly system that will increase their undergraduate enrollment rates.**

**Design Objectives**

The objective of this project is to provide the administrative side of STE with an effective system to increase the school’s undergraduate enrollment rates. The system must be user friendly so that it will be considered as a reliable tool to reach a solution. The solution recommended by the system must be easy to implement to encourage STE to depend on it in scheduling their classes. The system must be dependable as well in terms of providing a logical solution each time it is used.

**Design Requirements**

In order for this project to be successful it must contain three main elements. The first element is an awareness package targeting students and advisors. The package includes an advertising campaign that targets candidate students by advertising the minor, and by introducing the minor and explaining its benefits during freshman seminars. It also includes a training program, which prepares advisors of various majors on how to assist students in obtaining a STE minor. The second element consists of a communications system that will link STE, the registrar, and the departments of the majors that are eligible to take the minor in an effort to make scheduling information available. The third
element is a scheduling methodology developed using Excel macros, which highlights the potential time sequences during which the STE classes may be offered with a minimum amount of conflict with other programs’ courses.

**Design Concepts considered**

In the process of solving this problem, some concepts were evaluated under the awareness, communication, and scheduling categories.

The solution concepts that were considered when trying to solve the low enrollment rate fall into three main categories: awareness, communication, and scheduling.

**Awareness concepts:**

In order to spread awareness towards the availability of this minor throughout the university, a few concepts were considered. The main concept was to conduct a one credit seminar to describe and advertise the minor, since seminars are a great way to expose STE. However, various factors led to this concept’s unpopularity.

**Communication concept:**

The communication concept evaluated was a university-wide database that would be accessible by all departments. This database would contain: the scheduling information of all departments at the University, the changes made to the schedules of these departments, and an open chat interface that allowed the departments to communicate instantly. However, due to financial issues and time constraints this concept was not pursued further.

**Scheduling concepts:**

Several potential solution concepts were evaluated in order to solve the Technological Entrepreneurship (TE) course-scheduling problem, which is to identify core sequences that accommodate a maximum number of students. One approach was to schedule TE classes during activities period, this way motivated students could sacrifice being part of a club or an organization for obtaining a TE minor. Another possible solution was to offer the TE courses only during the summer sessions; core courses are rarely offered in the summer, therefore conflicts with core courses during the Fall and Spring semesters can be avoided. A simulation of the scheduling process used at the University was considered as a possible solution. That way changes to the scheduling processes could be monitored and
evaluated. However, each of these concepts has problems limiting its effectiveness.

Recommended Design Concept

Fixing the communication problem will lead to more efficient STE course scheduling. However, without increasing student interest in the program, the scheduling process is ineffective.

The final recommended solution consists of three interrelated parts: an awareness process, a communication process, and a scheduling process. All three of these components are required in that they complement each other and result in a promising approach for solving the STE enrollment problem.

Design Descriptions

The design of the first part consists of two strategies; the first is a mandatory credit-less seminar that outlines and explains the possible minors offered by the university. Attending this seminar will be a requirement for a freshman. The second will be an advertisement displayed in Facebook, the social networking website. This advertisement will appear on the targeted student’s main page consisting of a marketing slogan highlighting the minor’s features to capture the potential student’s attention. By clicking this add it links the user to the program’s official website. The design of the second part is a communication process consisting of a staff member from STE that will be in charge of obtaining the schedules of the other departments from the registrar, providing the data to the Excel scheduling process, and tracking scheduling changes updated by the registrar. The design of the third part of the solution consists of representing the schedules of the eligible majors as excel spreadsheets in one workbook. Each spreadsheet contains the times course sequences are offered at the University throughout the week. The spreadsheet is broken up into grid sequences that represent a matrix of hours and days of the week. Each sequence eligible for scheduling STE courses can be represented in this matrix of grids. When a course is scheduled by a department, the sequence is labeled as occupied by placing ones in the appropriate excel grid square (matrix). Otherwise,
a zero is placed in the free excel grid squares. An excel macro has been designed using computing loops in order to compare these spreadsheets. Matrix elements that have no entry or a minimum number of entries present the least amount of opportunity for conflict and are recognized as good candidates for offering a STE course.

**Analytical Investigations**

The awareness process requires key factors that will ensure its success. First, student attendance at the seminars is mandatory. Second, a training course to enhance advisors’ expertise on various minors offered will be required to ensure that the student is guided in the right direction. Third, the advertisement on Facebook must target the right customers by detecting their majors. The assigned staff member in charge of the communication process must be aware of the registrar’s functionality and flexibility in order to ensure that STE will have the opportunity to schedule their classes after reviewing the schedules of the other departments. As for the scheduling process, it must be intuitive and user-friendly in order for STE to be comfortable with running it once each semester to schedule their undergraduate classes. Moreover, the process must be consistently dependable.

**Key Advantages of Recommended Concept**

Each process has its own advantages contributing to the main goal of increasing student enrollment in STE. The awareness process, is highly effective since it targets students at the freshman level, and it prepares the advisors to guide the students. The Facebook advertisement will reach the desired target market since it can be customized to target certain majors at Northeastern university. Utilizing a staff member that acts as a liaison between STE and the registrar will be beneficial in many ways. It will add certainty to the scheduling process, decrease the total system time, and increase the utilization of the other members of the department. The scheduling process is quick to provide the course sequences with the least time conflicts, and is easy to maintain. By ensuring that the students are aware of the minor, the communication process and the scheduling process go hand in hand to make this minor an opportunity for the student.
Financial Issues

The proposed solution is almost entirely costless. An attractive feature about our proposal and its processes is that it’s almost entirely costless. The only cost to consider is the cost associated with the advertising campaign. This cost is dependent on the marketing media used and the desired audience reach.

Recommended Improvements

It is important to implement procedures that will monitor the suggested solution processes’ performances. Monitoring procedures should be implemented to evaluate the performance of some of the suggested solution processes. A beta test should be implemented to enable some trouble shooting to find the potential problems with the three processes. A questionnaire should be created and given to the students that have just registered for the TE minor. The purpose of this questionnaire is to determine the effectiveness of the awareness methods. A process to monitor the effectiveness of the Facebook advertisement must be implemented. This process would monitor the dollars spent versus the number of students that have enrolled in the minor due to the Facebook advertisement.