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**CQI OF INFORMATION SYSTEMS PROGRAM:
MEETING ABET REQUIREMENT**

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CQI of Information Systems Program: Meeting ABET Requirement

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Abstract – Continuous quality improvement (CQI) is a key component in the quality system of any organizations striving for quality and a competitive edge. Realizing this, ABET necessitates the practice of continuous improvement (CI) in educational programs which includes Input of constituencies, Process reliability & sustainability, Outcomes, Objectives, and Assessment. This paper discusses the continuous improvement strategy employed by the Information Systems Program of King Abdulaziz University, Saudi Arabia and describes how the process could be improved as an ongoing process by exemplifying the transcript evaluation of graduating students.

Keywords: Continuous Improvement, Academic Accreditation, Abet

1. INTRODUCTION

Accreditation is a process by which educational programs or institutions are reviewed to determine if they meet certain standards of quality. Accreditation Board of Engineering Technology (ABET) is one such international organization, which has been providing academic accreditation services for technical education programs for nearly 80 years. ABET is a federation of 28 member professional and technical societies [1]. These societies and their individual members collaborate through ABET to develop quality standards, known as ABET criteria, on which ABET review-teams base their evaluations of applied science, computing, engineering, and engineering technology programs. ABET accredits over 3,400 programs at nearly 700 colleges and universities in 28 countries. ABET provides specialized, programmatic accreditation that evaluates an individual program of study, rather than evaluating an institution as a whole.

The expectations of a graduate program are adequate preparation of graduates for careers in the disciplines of technology and engineering while effective continuous quality improvement (CQI) processes should be in place. The role of ABET accreditation is to provide periodic external assessment in support of the continuous quality improvement program of the institution.

The Philosophy of ABET accreditation entails that Institutions & programs define missions and objectives and while doing so the focus should be on the needs of their constituents, program differentiation should be

enabled and creativity in curricula should be encouraged. The program should emphasize on the achievement of student outcomes and should clearly demonstrate that it is meeting the desired objectives and also satisfying the accreditation criteria. ABET necessitates the practice of continuous improvement (CI) which includes Input of constituencies, Process reliability & sustainability, Outcomes, Objectives, and Assessment.

In this paper, one aspect of CQI which is related to process reliability & sustainability has been described. Transcript Analysis of graduating students is performed to trace any violation of pre-defined criteria and figure out the reasons for any such violations. The findings of this analysis are helpful in initiating remedial actions to ensure no such aberrations occur in future, which in turn helps in improving the quality of the process.

2. CONTINUOUS IMPROVEMENT STRATEGY

The general strategy of Information System (IS) Program for continuous evaluation and improvement can be described by the illustration shown in **Figure 1**.

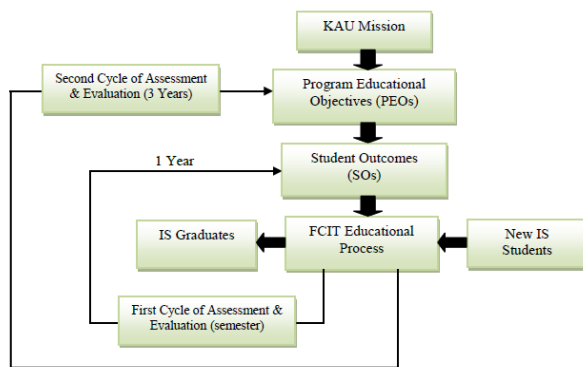


Fig.1: Process for continuous improvement

The IS objectives and outcomes are driven mainly by the ABET criteria and the input of its constituencies, and are aligned with the KAU mission. The program objectives set a guideline for program curriculum development and teaching procedure. To ensure achievement of the program educational objectives and student outcomes, a variety of assessment tools are used. As shown in **Figure 1**, the assessment process consists of two levels. The *first level* of assessment and evaluation process is conducted at the end of every semester, and the results from this assessment process are used to improve the educational process to achieve the targeted student outcomes. The IS improvement strategy includes the assessment of course related data to assess the achievement of SOs and for this we include direct assessment as well as indirect assessments. The *second level* of assessment and evaluation process is conducted every 3 years (or when deemed necessary) through acquiring external input from IS constituencies. The results from this second level of assessment and evaluation process are used to refine the program educational objectives and/or program student outcomes. In the meantime, the IS program faculty keep their eyes open on the field developments and optimally use this latest information in their courses, thereby contributing towards a dynamic curriculum.

The Deanship of Admission and Registration, King Abdulaziz University (KAU) has developed a sophisticated online electronic system called “On Demand University Service” (ODUS), which is available for all students to register, drop, add, and monitor their progress, etc [2]. For teachers, ODUS provides a lot of features like managing advisees, monitor transcript of students, courses, schedules, etc.

3. TRANSCRIPT ANALYSIS REPORT

Transcript validation and evaluation is one of the key aspects of ABET accreditation process. The transcripts of 23 graduating students (Fall-2011/2012) were evaluated to figure out any violation with respect to pre-requisite, specialization track, credit hour, regular graduation time period. Also, a detail analysis was performed to find out the reasons for violations, so that remedial measures may be taken to ensure no

aberrations in future. In this report the problems observed in the current system are highlighted and based on that some recommendations are given for the purpose of continuous improvement.

The observations are listed below.

- **Pre-requisite violation**

“Pre-requisite violation” means to check that either a student followed the pre-requisites as per curriculum design of the program or he studied any course before passing its pre-requisite course. In our evaluation we found that 3 out of 23 students studied a course without passing its pre-requisite. “*This was a serious violation.*”

Possible reasons:

First student advising process was not very effective. Second the student registration system (i.e. ODUS) considers that the student has covered the pre-requisite even if student failed in the pre-requisite course.

Recommendations:

- Advisors should go through the scheduled curriculum plan before approving the course for registration.
- Student registration system (ODUS) should be modified and updated to check if a student has failed in the pre-requisite course then system should not allow the student to register for the next course.

- **Track violation**

“Track violation” is about checking either a student studied all courses from same specialization track or he mixed courses from two different specialization tracks. In our final transcript analysis we found that 12 out of 23 graduating students selected their courses from two different specialization tracks.

Possible reasons:

Less effective advising and no restriction in ODUS on registering courses from two different tracks may be attributed for this violation.

Recommendations:

- Advisors should guide students about the specialization tracks and associated courses and tell them the benefits of specialization tracks.
- Student course registration system (ODUS) be modified so that it does not allow a student

to register courses from two different specialization tracks.

- **Exceeded 10 semester**

The regular duration of a graduating students in KAU is 10 semester. In graduating student analysis report we found that 9 students out of 23, spent more than regular time period (i.e. more than 10 semesters).

Possible reasons:

The first reason is that most of these students (i.e. 7 students) who spent more than regular time period got F grade in one or more courses. Getting F grade is the main reason of not graduating in regular time period. We also found 2 students did not get F grade but they graduated in more than 10 semester time. The reason is not attending the minimum credit hour load in a semester or they dropped the semester.

Recommendations:

i) In case if a student gets F grade, the advisor should judiciously advise student considering the capability of the student to cover this course in the next semester or in a semester in which student has comparatively easy courses.

- **Credit hours violation**

In KAU a graduating student has to study 140 credit hours in his graduation and he cannot take less than 12 credit hour and more than 18 credit hours in one semester. In our analysis we found that about 85% of graduating students did the credit hour violation in on or another way.

Possible reasons:

Sometimes students attended less credit hours than the minimum credit hour limit per semester (i.e. less than 12 credit hours). Sometimes students attended more credit hours than the maximum credit hours limit per semester (i.e. more than 18 credit hours).

Recommendations:

- i) Advisor should not allow the student to take more or less than the maximum or minimum credit hour limit per semester
- ii) The student registration system (ODUS) should not enroll a student until and unless he don't register between minimum and maximum credit hour limit per semester.

- **Course Level Violation**

The Information Systems Department at KAU has designed a semester plan (consisting of 5-7 courses per semester) for students to follow. The course level violation is about those students who followed and who did not follow the semester plan and adopted courses from levels other than the scheduled plan. We found that 8 students out of 23 did not follow the semester level schedule and adopted course out of level.

Possible reasons:

This is possible due to the lack of any check and balance in the ODUS system and poor advisement process.

Recommendations:

Advisement process should be strengthened and proper check and balance should be incorporated in ODUS system.

- **Grade F**

This criteria is about finding out that how much student got F during their graduation (either in one course or multiple courses). In our final transcript analysis we noticed that 9 students out of 24 graduating students got one or more F grades during their graduation. We also found that most of these students got F grade in a semester where they have regular course load (i.e. between 12 to 18 credit hours). Another interesting thing is that these students passed their courses in which they got F grade in their next semesters when they again have the regular course load.

Possible reasons:

It is either due to the lack of interest of student in the course or less devotion to the course.

Recommendations:

The student should have continuous interaction with their advisors during the semester and show their performance to their advisors. The student advisor based on the poor performance of a student in any course should motivate the student catch up that course. This may help in minimizing the Failure rate of students in different courses during their graduation.

4. CONCLUSIONS

It is obvious from the activities outlined above that there are already many important improvement initiatives put in place by the IS department at KAU. The CI is not only concerned with quality

improvement measures related to students performances and outcomes but continuous improvement in process reliability and sustainability is of vital importance. This effort results in a much improved and reliable process, which in turn contributes to the overall quality of the educational program. The transcript analysis has pointed out certain deficiency in the advising process and students' registration system. Based on these observations, it has been suggested to improve the advisement process and the ODUS system as a recommendation for CI.

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