



ABET Program Educational Objectives Proposed Assessment Method

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Abstract: One of the foundations for ABET accreditation process is that the program seeking accreditation establishes the program educational objectives. Those objectives are what the program graduate is expected to demonstrate after graduation in the industry and in the field of graduate education. The program must establish a process for the evaluation of the program educational objectives. This is an essential part of the continuous improvement process required by ABET. Once the program educational objectives are established in consultation with the program constituencies and the advisory board, they will be mapped to the program student outcomes and the institution mission statement. In this paper we will show a sample process of how this mechanism works.

Keywords: ABET, Engineering Curriculum, Assessment, Course Outcomes Portfolio, Course Outcomes, Program Outcomes, Program Educational Objectives, Student Outcomes, Student Learning Outcomes

1. INTRODUCTION AND LITERATURE REVIEW

ABET accreditation is very important award that every institution in the USA and abroad would love to seek and the program educational objectives continuous improvement plan should be carefully constructed and executed [1, 2, 3].

Mapping the student learning outcomes to the program educational objectives is a complex process [4, 5, and 6]. To improve the process of program educational objective assessment the idea of student portfolio has emerged [7, 8, 9, and 10].

In this paper, a new approach to program educational objectives assessment will be presented. This approach will establish a strong mapping between the program educational objectives and the student learning outcomes; it is an improvement on previous processes that were discussed in literature on this topic [11, 12, 13, 14, and 15].

2. THE PROCESS

2.1. Terms Used

CO	Course Outcomes
CACIC	Curriculum assessment and Continuous Improvement Committee
SO	Student Outcomes
SOP	Student Outcomes Portfolio
PEO	Program Educational Objectives
AB	Advisory Board
GSS	Graduating Senior Survey
WSS	Working Student Survey
ES	Employer Survey
SGSS	Student Graduate School Survey
PGSS	Post Graduate Student Survey

PEO are those objectives that are derived from the mission statement of the program by the Program constituencies and AB. PEO are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve.

2.2. Rules

All graduating seniors must fill a GSS

CACIC must send out two years after graduating our first batch of engineers the WSS, ES, SGSS, PGSS, then every year after.

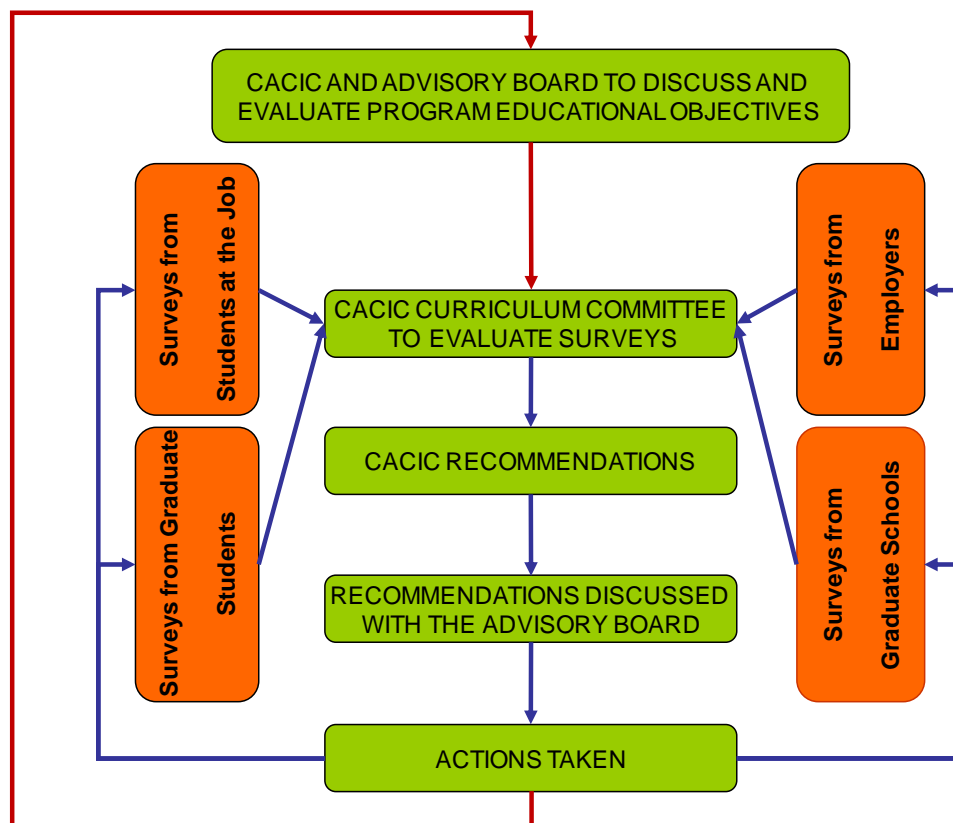
2.3. Steps

Steps 2 to 7 are done every year, while steps 1 to 7 are done every four years.

- CACIC meets and discusses with AB the PEO and its relationship with SO and makes recommendations
- WSS, ES, SGSS, PGSS are gathered every year, starting 2 years after the graduation of the first batch
- GSS are gathered every semester
- The CACIC consults with AB and makes its recommendation to the chairperson
- The chairperson recommends to the dean any proposed changes
- The Dean decides on proposed changes
- Proposed changes implemented

2.4. PEO Evaluation Diagram

The evaluation process is given in Figure 1.



BLUE INNER LOOP EVALUATED ANNUALLY
RED OUTER LOOP EVALUATED EVERY 4 YEARS

Figure1

2.5. Sample Relation between Program Educational Objectives and Curricular Components

This is shown in table 1.

Table1

Objective	Principal Relevant Curricular Components
<i>Technically competent graduates for a successful and productive career in the engineering profession</i>	Balanced selection of basic and advanced courses in hardware and software, significant mathematics/science requirements.
<i>Graduates who are capable of pursuing postgraduate studies and research</i>	Balance of application and theory courses, independent learning in projects and outside the classroom.
<i>Graduates who can demonstrate their effective communications and teamwork skills in a diverse environment</i>	Major written documentation and oral presentation of project; teamwork experience in projects; strong educational component in communication skills.
<i>Graduates with the desire for life-long learning for the purpose of continuous improvement</i>	Major project-based curriculum component that stimulates inquiry and research supported by a strong set of common basic engineering courses from different engineering disciplines

2.6. Sample Employer Survey

The faculty and staff in the xx program at xx university would like to get your input regarding _____. We appreciate your time for this will help us to improve our program and to produce graduates that you and us will be proud of.

Please fill in the following information electronically and return to xxxxx@xxxxx.edu. We appreciate your time and effort. Many thanks in advance.

Date: _____

Your name: _____

Company name: _____

Company address:

Do you think that the employee has adequate preparation for this job? (Yes/No) _____. If no, do you have any suggestions that will allow us to improve our program? Please list them below:

How long has the employee been working at your firm? _____

Has the employee been promoted? (Yes/No) _____

	Disagree or Agree Strongly				
	1	2	3	4	5
The electrical engineering program at xxx was able					
To produce graduates with the necessary background and technical knowledge for a successful career in xxx engineering.					
To produce graduates who are able to compete and earn graduate degrees.					
To produce graduates who have developed effective communication and teamwork skills.					
To produce graduates who have developed commitment to the ethical, professional, and social responsibilities.					
To produce graduates who are well prepared at the fundamental level for life-long learning in their xxx engineering career.					

Any other comments or suggestions?

2.7. Sample Graduate School Survey

The faculty and staff in the xxx Program at xx university are very interested to know about the progress of our graduate student, _____. We appreciate your time for this will help us to improve our xxx program and to produce graduates that you and us will be proud of.

Please fill in the following information electronically and return to xxxxx@xxx.edu

We appreciate your time and effort. Many thanks in advance.

Date: _____

Your Name: _____

Position: _____

Name of graduate school _____

Address:

Is the student making satisfactory progress toward graduation? Explain?

Is the student graduating as planned? (Yes/No) _____

How do you rank the student performance with other graduate students from different graduate schools?

Do you think the xxx program at xxx provided our student with adequate educational background for graduate studies? (Yes/No) _____

If no, what improvements do you suggest? Please list below:

Do you have any suggestions that will allow us to improve our program? Please list below:

The xxx program at xxx was able	Disagree or Agree Strongly				
	Disagree (1)		Strongly Agree (5)		
	1	2	3	4	5
To produce graduates with the necessary background and technical knowledge for a successful career in xxx engineering.					
To produce graduates who are able to compete and earn graduate degrees.					
To produce graduates who have developed effective communication and teamwork skills.					

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To produce graduates who have developed commitment to the ethical, professional, and social responsibilities.					
To produce graduates who are well prepared at the fundamental level for life-long learning in their xxx engineering career.					

Any other comments or suggestions?

2.8. Sample Graduate Student Industry Survey

The faculty, staff, and students in the xxx Program at xxx are very interested to know what are you currently doing and how the xxx Engineering degree from xxx has helped you to prepare for your current career.

Please fill in the following information electronically and return to xxx@xxx.edu We appreciate your time and effort. Many thanks in advance.

Date: _____

Your name: _____

Graduating date: _____

What is your title? _____ Years in this position: _____

Did you get any promotions? (Yes/No) _____ If yes, please explain

Are you involved in attending professional conferences? (Yes/No) _____ If yes, how many in the last 2 years? _____

Do you have any suggestions that will allow us to improve our xxx engineering program? (Yes/No) _____, If yes, please list them below:

The xxx program at xxx was able	Disagree or Agree Strongly				
	1	2	3	4	5
To produce graduates with the necessary background and technical knowledge for a successful career in xxx.					
To produce graduates who are able to compete and earn graduate degrees.					
To produce graduates who have developed effective communication and teamwork skills.					
To produce graduates who have developed commitment to the ethical, professional, and social responsibilities.					
To produce graduates who are well prepared at the fundamental level for life-long learning in their xxx engineering career.					

Any other comments or suggestions?

2.9. Sample Graduate Student University Survey

The faculty, staff, and students in the xxx Engineering Program at xxx university are very interested to know what are you currently doing and how the xxx Engineering degree from xxx has helped you to prepare for your current career.

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Please fill in the following information electronically and return to xxxxx@xxx.edu. We appreciate your time and effort. Many thanks in advance.

Date: _____

Your name: _____

Graduating date: _____

Graduate school you're attending _____

Address:

How is your progress toward graduation? Explain

Are you graduating as planned? (Yes/No) _____

Do you think the xxx engineering program at xxx provided you with adequate educational background for graduate studies? (Yes/No) _____

If not, what improvements do you suggest? Please list below:

Do you have any suggestions that will allow us to improve our electrical engineering program? Please list below:

How do you rank your performance with other graduate students from different graduate schools?

Are you involved in attending professional conferences? (Yes/No) _____ If yes, how many in the last 3 years? _____

The xxx engineering program at xxx was able	Disagree or Agree Strongly				
	1	2	3	4	5
To produce graduates with the necessary background and technical knowledge for a successful career in xxx engineering.					
To produce graduates who are able to compete and earn graduate degrees.					
To produce graduates who have developed effective communication and teamwork skills.					
To produce graduates who have developed commitment to the ethical, professional, and social responsibilities.					
To produce graduates who are well prepared at the fundamental level for life-long learning in their xxx engineering career.					

Any other comments or suggestions?

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Citation: Taan ElAli, “ABET Program Educational Objectives Proposed Assessment Method.” *International Journal of Innovative Research in Electronics and Communications (IJIREC)*, 7(1), pp.1-7. <http://dx.doi.org/10.20431/2349-4050.0701001>

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