



COE ABET COMMITTEE

Activity Report

Terms T092 and T101

COMPUTER ENGINEERING

Program

at

King Fahd University of Petroleum & Minerals
DHAHRAN, SAUDI ARABIA

March 2011

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Table of Contents

TERM T092: PREPARATION OF THE DUE PROCESS RESPONSE REPORT TO THE ABET DRAFT STATEMENT	3
Pre-Visit Program Educational Objectives.....	3
ABET Draft Statement and COE Department Response	3
ABET Draft Statement: Program Weakness	3
Conclusion.....	5
TERM T101: PLANNING AND ASSESSMENT FOR NEXT TWO YEARS.....	6
Framework for Implementing Continuous Improvement (CI).....	7
Addressing the PEV Comments	10
Continuous Improvement: The Writing Skills (g-W)	11
Appendix A: Consultation Results	14
Consulting the Industrial Advisory Board.....	15
Consulting the Students.....	19
Appendix B : Surveys.....	20

TERM T092: PREPARATION OF THE DUE PROCESS RESPONSE REPORT TO THE ABET DRAFT STATEMENT

Pre-Visit Program Educational Objectives

In consistency with the missions of the University, the CCSE and the COE department, the following Educational Objectives were adopted for the Computer Engineering Program prior to ABET visit:

The current objectives of the Computer Engineering Program (COE) are to produce computer engineering graduates who are prepared to:

- 1. Practice their profession with confidence and global competitiveness and make intellectual contributions to it;**
- 2. Pursue a life-long career of personal and professional growth with superior work ethics and character, and**
- 3. Pursue advanced study and research at the graduate level.**

ABET Draft Statement and COE Department Response

The ABET draft statement was received on the 9th of February, 2010. The COE department actions in response to each item in the draft statement are outlined below.

ABET Draft Statement: Program Weakness

“1. Criterion 2. Program Educational Objectives Criterion 2 requires that each engineering program have in place detailed published educational objectives that are consistent with the mission of the institution and the engineering criteria. Program educational objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve. The educational objectives of the program do not appear to be entirely consistent with this definition. Many of the educational objectives are expressed using language typical of program outcomes such as “to produce computer engineering graduates who are prepared to practice their profession...,” and “to produce computer engineering graduates who are prepared to pursue a life-long career...” These relate to the skills, knowledge, and behaviors that graduates are to acquire as the result of their matriculation through the program. Objectives stated in this manner do not allow the program to assess and evaluate the accomplishments of program graduates as intended by this criterion.”

Corrective actions taken by the COE department:

In accordance with the COE department internal assessment/review processes and after wide consultations with all program constituents (faculty, students, alumni, employers, and industrial advisory board) the following new wording of the PEOs was adopted:

“The objective of the COE program is to produce graduates who, after few years from graduation, will have:

- 1. Established themselves as successful professional computer engineers with demonstrated leadership capabilities,**
- 2. Demonstrated an ability to pursue a successful professional and career growth, and**
- 3. Enrolled and Succeeded in graduate and professional studies/programs if they chose to do so.”**

Also the COE department has adopted the following understanding and assessment methods for these PEOs, again in accordance with the departmental internal procedures:

PEO-1: This PEO would be manifested in the COE graduates through their technical competence in their jobs and competitiveness with graduates from other parts in the world. Also their attainment of leading technical and/or management positions in their respective organizations and/or involvement in innovations and entrepreneurial activities will be used as another indicator of the successful achievement of this objective. This PEO will be assessed using surveys addressed to the alumni, employers, and industrial advisory board.

PEO-2: Assessment: The progress of the alumni in their jobs will be used as an indicator. % of alumni who are involved in professional societies, licensing boards, and activities that leads to establishing themselves will be used as indicator.

PEO-3: Assessment: % of students who got admission and % of those who successfully completed their post graduate studies .

Results of consulting the constituents are provided in Appendix-A. Surveys used in consultation process are provided in Appendix-B.

II. ABET Draft Statement: Students Consultations

“In addition, the program educational objectives should be based on the needs of the constituents. The program constituents are stated to be students, faculty, alumni and employers. There is evidence that faculty, alumni and employers were involved in the formulation of the program objectives. However, the involvement of students in the formulation of the educational objectives was not evident. The current program educational objectives therefore do no consider the needs of all the constituents of the program.”

Corrective actions taken by the COE department:

All the COE students were briefed and surveyed about the newly developed PEOs. Survey results and students' comments were taken into account in the final formulation of the PEOs.

Conclusion

The process of revising the PEOs has been carried out based on (a) the University, College, and Department missions, (b) the ABET Draft Statement, and (c) the feedback received from all the constituents (COE faculty, current students, Alumni, Employers of COE alumni, and the department's Industry Advisory Committee). As a result a new set of PEOs have been adopted.

TERM T101: PLANNING AND ASSESSMENT FOR NEXT TWO YEARS

The ABET Program Assessment Committee approved the following Action Plan for the next two academic years.

Action Plan

First Year 2010-2011:

1. Addressing the comments raised by ABET in the Final Statement as well as those that were verbally formulated:
 1. Proposing some revisions,
 2. Seeking approval by COE faculty,
 3. Revising the COE the assessment system (rubrics and surveys) based on potential revisions.
2. Develop a policy for the effective implementation of Continuous improvements:
 1. Proposing a policy,
 2. Approval by COE faculty, and
 3. Implementation.
3. Continuous improvement of the COE program, identify programs outcomes that have weak performance indicator using available assessment data, selection of some outcome for improvement, carry out improvement, and documenting.

Second Year 2011-2012:

1. Continuous improvement of the COE program, identify programs outcomes that have weak performance indicator using available assessment data, selection of some outcome for improvement, carry out improvement, and documenting.
2. Develop logistic to address all program outcomes. Provide supporting material.

Framework for Implementing Continuous Improvement (CI)

Continuous improvement (CI) is the process of devising and implementing effective corrective actions (CAs) on COE courses and labs to improve on the fulfillment of program outcomes in response to shortcomings detected through ABET assessments.

According to the COE ABET Committee Action Plan for 2010-2011, the ABET Committee should develop a framework for integrating Continuous Improvement into the teaching process. This document outlines the proposed framework for discussion by COE faculty and final approval by the COE Council.

1. Assessment Plan:

As per the COE ABET Assuagement Plan, regular CI processes will be initiated, where required, following each direct (rubric-based) program outcome assessment by the ABET Committee.

2 Scope:

The CI process aims at improving the fulfillment of any program outcome of the COE program that needs improvement and its scope covers all courses and labs that contribute to such outcome (See the Rubrics Assessment Table).

3 Procedure:

1. Based on the latest assessment data, the ABET Committee will identify weaknesses in the fulfillment of program outcomes as outlined in Section 1 and initiate a CI process for program outcomes that need improvement according to the assessment plan.
2. For each program outcome that needs improvement, the ABET Committee will nominate a COE faculty (Faculty-in-Charge) to study the problem and prepare a proposal for a remedial action plan within 4 weeks in consultation with the ABET Committee. The proposal will outline and schedule corrective actions to be executed over a period of 1 to 2 academic years for addressing the observed shortcomings.
3. The Faculty-in-Charge will present his proposed action plan for discussion, and possible amendment, by the COE Council.
4. Following approval of the corrective action plan by the COE Council, the nominated Faculty-in-Charge will be responsible for coordinating the execution of the action plan with all Faculty and lab instructors involved for the intended duration. The ABET Committee recommends that such an assignment should count as one Committee load for the designated faculty for as long as the CI process remains active.
5. A CI process may cover one or more courses that contribute to the program outcome that need improvement.

6. Where required, course descriptions and syllabi will be revised to reflect the approved CAs. To facilitate the revision, each COE core courses should have web-based Standard Detailed Syllabus (SDS) with a breakdown of the number of classes allocated to each topic. Such recommended changes or revision will be discussed and approved within the course specialization area before final approval by the COE Council.
7. The COE Webmaster will implement an access policy that ensures secure access to modify the contents of the web-based SDSs by concerned faculty.
8. Implementation of the agreed corrective action plan will be the responsibility of concerned faculty members teaching such courses.
9. A maximum of two CI processes will be active at any given time.

4 Scope of the Corrective Actions (CAs):

Depending on the level of improvement required, CI action plan can cover any subset of the following range of actions:

1. Posting of reading material for students.
2. Introducing additional graded assignments e.g. report writing, etc.
3. Additional presentations by the course instructor on case studies, etc. which are examinable and subject to rubric assessment.
4. Improvements on how an outcome, e.g. team work skills, is addressed and/or assessed in courses/labs.

5. Time Scope and Follow-up:

A CI process initiated for improving performance on a given program outcome will remain active until the next scheduled program outcome assessment by the ABET Committee. During this time, the Faculty-In-Charge continues to provide assistance and support to faculty implementing the approved CA plan.

6. Evaluation:

At the next scheduled program outcome evaluation, improvements on the program outcome(s) targeted by the CI process will be evaluated. The ABET Committee will study the results of the CI process and decide if further action is still required and whether the changes introduced by the CAs will be integrated permanently in the courses/labs involved.

7. Duties of the Faculty-in-Charge:

1. Study the problem associated with CI process and research/bench mark for solutions.
2. Meet with stakeholders, including the course coordinators and teaching faculty, lab instructors, and students of the courses covered by the CI process. The objective is to

- identify means to remedy the detected shortcoming which can be effectively implemented without undue overhead.
3. Prepare proposal for an integrated corrective action plan for remedial actions regarding the teaching material and methods, lab work organization, and equipment (if any).
 4. Get the approval and support of faculty involved (those teaching the courses and members of the specialization area of the course) on the proposed CA plan as well as any modifications to the course SDSs.
 5. Discuss the proposed plan with the COE ABET Committee for refinements.
 6. Present and defend the CA plan at the COE Council for approval.
 7. Upon approval of the COE Council and assignment by the COE Chairman, implement changes in the SDS syllabus (if applicable) and communicate to faculty members involved approved CAs and SDSs.
 8. Follow up of execution of the CA plan until the next scheduled outcome assessment.
 9. Coordinate with the COE ABET Committee on the evaluation of the outcome of the CI process at the next scheduled outcome assessment.

8. Development of Framework for Implementing Continuous Improvement

The COE ABET Committee Action Plan for 2010-2011 included the development of a framework for integrating Continuous Improvement (CI) into the teaching process at the department. The Committee prepared a framework proposal that was circulated to the COE faculty and then presented and discussed at the COE council. Later, the proposed framework was discussed and approved by the COE Strategic Committee. Finally, the COE Council approved the proposed framework in its meeting #15 held on 9 January 2011:

Resolution #: COE/1/15/1431-1432H (2010-2011)

"Based on recommendations of the COE Strategic Committee and discussion held, the COE Council unanimously recommends approval of the proposal entitled "Framework for Implementing Continuous Improvement (CI) at the Computer Engineering Department" proposed by the COE ABET Committee, for Implementation."

The approved framework defines the scope of the CI process and lays out the procedure for implementing it where needed based on assessment data.

The framework calls for developing a Standard Detailed Syllabus (SDS) for each of the 13 COE courses, including a weekly schedule of course material. A template SDS for the COE 305

course was prepared by the ABET Committee. COE faculty were assigned for preparing the required SDSs, a task that should be completed before 6 April 2011.

Addressing the PEV Comments

Below is a list of comments that were received from the PEV towards improving the COE Assessment System. The PEV comments are:

1. The achievement of the program outcomes and the way these outcomes are to be addressed by the students in their course project report. The students need to be informed about the meaning of all course outcomes and some class discussion, relating each course outcome to the term project, needs to be carried out in the class in order to enable the students addressing these outcomes in their reports. This process facilitates the checking for the achievement of the outcomes.
2. The process of assigning rubrics for assessing the program POs seems to be quite unbalanced with respect to the COE courses. It needs to show a balanced distribution so that a course will not be required to assess more than 5 POs.
3. Course grade should not be used in the assessment of the achievement of the outcomes. The POs cannot be assessed based on course grades even if these courses are not within the COE and there is control on the way they are delivered. Assessment should solely be based on designed rubrics.
4. Courses having some pre-requisite must show that these pre-requisites are being used in the course. Therefore, a course having a program outcome must assess the outcome based on direct and indirect student work. Some outcomes have been assessed using the rubrics based on inspection only. There must be written evidence extracted from student work on each outcome.
5. Soft POs must be introduced somewhere in the program and must be assessed in connection with student work through rubrics or otherwise. Areas of pre-requisite (like STAT 319) for some courses should be addressed in the course and a rubric assessment for the related outcomes is encouraged.
6. Some extra (beyond the a to k POs) are to be removed if they cannot be directly assessed in the program. The COE has three extra Pos: (1) use of Boolean Algebra, (2) use of probability and statistics, and (3) the integration of Hardware and software.

Please see the MINUTES OF THE COE DEPARTMENT COUNCIL MEETING # 11/1430-1431H (2009-2010), HELD ON SUNDAY, JANUARY 03, 2010 for more details.

The above feedback is addressed in Terms 101 and 102. The ABET committee is still working on the above issues. The main objectives are:

- Revise the COE Assessment system to provide some balanced distribution of the program outcomes while minimizing overall overheads. The main point is that the Pos needs to be progressively introduced in the courses but will be assessed in a small number of relevant courses, e.g. a course outcome will be addressed in a number of courses and assessed in only three courses.
- Soft POs need to be introduced in the program within some courses or labs, e.g. Eng. Ethics, Awareness of Eng. the impact of Solutions, and Contemporary Issues.
- It is the committee opinion to cancel two extra POs: (1) use of Boolean Algebra, and (2) use of probability and statistics and to keep only the PO on the integration of Hardware and software.

Completion of the above task is expected to be done at end of T101.

Continuous Improvement: The Writing Skills (g-W)

There is a need for applying continuous improvement within COE course outlines of those found to be lacking in one or more program outcomes, as documented through analysis of the rubrics assessment data for terms T062, T071, T072, T081, T082. An implementation of corrective actions during the terms T081, helped improve the level of achievement of some of these lacking program outcomes in terms T081 and T082. A further analysis of rubrics data from T082 helped the ABET committee sort all program outcomes found to fall short of expected scores. As a result, it was agreed by the committee to improve two lowest scoring program outcomes, namely, written communication skills (g-W), and Engineering design (*e*). The communication skills-writing outcome (g-W) had a score of 2.29 for the term T081, whereas Outcome *e* – ‘Identifying, formulating, and Solving Engineering problems’ had secured a score of 2.71 for T082 (marginally above target score).

The COE ABET committee assigned one of its members which is Dr. Zubair Baig as the “Faculty In Charge” for carrying out continuous improvement for Terms T101 and T102. Dr. Baig did some analysis using the previous assessment data and suggested to address the outcome g-W, and its shortcomings. He performed a thorough investigation into the reasons behind the low quality of technical reports submitted by students as part of course projects. The following points summarize his findings which were discussed and approved by the committee:

- a. Students did not follow a strict format for their technical reports.
- b. Grammar and vocabulary fell short of expectations for a standard technical report.
- c. Plagiarism was commonly noticed, especially instances of direct copy-pasting of articles from the Internet.

- d. A standard writing template and a mechanism for rating of student writing was not available.

In light of the above shortcomings, the ABET committee agreed that the department needs to take effective measures to address this important requirement that must be possessed by all our graduating students. The following corrective actions were proposed by the committee based on deliberations and analysis.

- a. Assign (if not done yet) a 20% weight to laboratory reports submitted by the students.
- b. A 20% or higher weight of each course must be assigned for the course term project (if a course project is part of the syllabus).
- c. Advance-level courses may have a higher weight assigned to writing components, based on the discretion of the instructor.
- d. A writing guide (similar to a research paper) is to be drafted by the ABET committee, to be adhered to by all course instructors for student report evaluation, and by all students for technical report writing. The guide (template) will consist of the following sections, the contents of which will be duly explained within the template, to be followed for each course
 - 1. Abstract
 - 2. Introduction
 - 3. Background
 - 4. Statement of Problem
 - 5. Design and Analysis of the Solution
 - 6. Implementation
 - 7. Experiments and Results (including snapshots of simulations)
 - 8. Conclusions
 - 9. References
- e. Encourage students to use built-in tools such as Microsoft spell-checker to ensure that the spelling mistakes are avoided.
- f. Provide students with regular reading assignments, to help improve their awareness of the quality of published articles. Such assignments can be evaluated through a review or a summary of the article to be provided by the student.
- g. It is suggested to have a short writing assignment for COE 3xx and above courses, to be blind assessed by peer students, wherein the students will gain a strong feel of their level of competence for technical writing within a given class. Such an assignment will also provide the instructors with a general opinion on how a student rates himself, to help make students aware of their level of skill for writing.
- h. It is suggested to complement writing skills with oral communication through video recordings of project demos by peer students, and subsequent presentation of the video in class for critical review by other students.

The ABET committee is currently in the process of preparing a questionnaire for all faculty involved in teaching core courses that may affect the program outcomes. Through this exercise, a rigorous insight into procedures used by the faculty for assigning and evaluating writing work for the students will be obtained. This survey will be conducted for all core COE courses, inclusive of labs. Based on the results of the survey, a further analysis will be conducted, and thorough measures will be recommended for faculty to incorporate within the course outlines, for improving this important program outcome. Such recommendations will also depend on the level of the courses. For instance, as mentioned in corrective action (*a*) above, advance courses (400 level) will have a much higher weight placed on writing assignments, whereas lesser level courses (300 or below), will accordingly have writing weights reduced.

In addition, the ABET committee will formulate a standard template for students as well as faculty members to adhere to, for all writing assignments. As a result, a strong baseline will be created, and will provide the necessary writing skill injection into students, consistently across the entire program.

Appendix A: Consultation Results

Using the newly developed PEOs, the ABET committee developed surveys for (1) exposing the new PEOs to all program constituents, and (2) offer them the opportunity for reformulating the PEOs. The results of these surveys are presented next.

Consulting the Industrial Advisory Board

The following table shows the response to the questions “to what extent you are satisfied with the formulation of the revised PEOs”

Revised PEO	TO WHAT EXTENT YOU ARE SATISFIED WITH THE FORMULATION OF THE REVISED PEOs:					
	Very Satisfied (4)	Satisfied (3)	Neutral (2)	Dissatisfied (1)	Very Dissatisfied (0)	Result
PEO-1	1	4				3.2
PEO-2	2	2	1			3.2
PEO-3	1	3	1			3

Feedback on the PEOs

The following are the responses of the advisory board to three questions to offer the opportunity for reformulating the PEOs.

Q1. Please propose any addition, modification, or reformulation of any of the three PEOs above.

Responses:

“The COE program seeks to prepare graduates who, after few years from graduation, will have *succeeded in acquiring the right technical skills that enable them to make a difference in their organizations and helps them in making the right decision.*” – Khaled Al-Biyari, AEC

“It will be good if something about innovation is mentioned given that the challenges ahead are how new innovation will change the way we compute.” – Alaa Abunijem, Intel

“I think stating “*after few years from graduation, will have ...*” may be improved because the achievements after this period may not be a direct result of the program, and would arguably be a result of working environment, and other factors etc.” – Masud Al-Amiri, SABIC

“will have successfully established themselves in their profession with *high technical skills*, leadership capabilities and global competitiveness while making intellectual contributions to their field.” – Ali Al-Masari, Saudi Aramco

Q2. Please propose any other educational objectives that you believe should be added.

Responses:

“I believe that nurturing the culture of innovation across the different courses given to students is very important element. “ – Khaled Al-Biyari, AEC

“I propose this in the 2nd objective: *To lead with innovation, think creatively and be able to create new solutions to existing problems or new and innovative ways to deal with new problems.* “ – Alaa Abunijem, Intel

“CEO graduates should have the right skills to design and handle their work using innovative framework. They should have the full believe on the role of innovation and its capability to sharpen their skills.” – Ayman Mufti, Saudi Aramco

Q3. Please include any other opinion you may have about the proposed PEOs.

Responses:

“Although important, PEO-3 looks to me as a very limited one especially when focused on graduate programs as the percentage of students going into graduate programs is small.” – Khaled Al-Biyari, AEC

“Another issue I have not notice is entrepreneurship, the focus in the goals was mainly create good employee not entrepreneurs. I think KFUPM need to give area some focus in the objectives here.” – Alaa Abunijem, Intel

“It might be necessary to introduce ways to measure the above mentioned objectives. How can we assess the objectives and make sure our graduates are achieving satisfactory results?” – Ahmad Ashadawi, Al-Falak

CONSULTING THE ALUMNI

In order to obtain the input of COE Alumni on the revised Program Educational Objectives (PEOs), an Alumni survey was designed and COE Alumni were requested to fill the survey. The survey (as listed in Appendix B) includes an explanation of the purpose of the survey, a list of the revised PEOs, a questionnaire to assess the satisfaction level of the COE alumni with the formulation of the revised PEOs, and a request of suggestions on any addition, modification, or reformulation the Alumni propose to be made to the PEOs. The survey was filled by 46 COE Alumni and a summary of the results is given below for each of the PEOs.

PEO	Alumni Survey Results				
	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
PEO-1	33%	35%	13%	17%	2%
PEO-2	37%	39%	17%	7%	0%
PEO-3	35%	46%	11%	4%	4%

Analysis

PEO-1: 67% of COE Alumni are either satisfied or very satisfied with PEO-1. only 20% are dissatisfied with this PEO. An overall rating of **3.35 out of 5** was obtained for this PEO, indicating an acceptable satisfaction level.

PEO-2: 76% of COE Alumni are either satisfied or very satisfied with PEO-2 while only 7% are dissatisfied. An overall rating of **3.8 out of 5** was obtained for this PEO, indicating an acceptable satisfaction level.

PEO-3: 80% of COE Alumni are either satisfied or very satisfied with PEO-3 while only 9% of Alumni are dissatisfied with the objective. An overall rating of **4.02 out of 5** was obtained for this PEO, indicating an acceptable satisfaction level.

Observations

Examining the Alumni feedback it was noticed that most of the feedback is focused on what should be done in the COE program towards achieving the PEOs. The Alumni's comments and feedback will be considered in the COE curriculum revision currently undertaken by the department. Some of the suggested comments such as focusing on management and soft skills are already being considered in the planned curriculum revision. Other comments require more focus on the practical aspects and more collaboration with the local industry to better prepare COE graduates for the market.

CONSULTING THE EMPLOYERS

A survey similar to the alumni survey was sent to all the major employers of COE graduates. Four major employers have responded. The results are summarized below.

PEO	Employers Survey Results				
	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
PEO-1	25%	75%	0%	0%	0%
PEO-2	0%	100%	0%	0%	0%
PEO-3	0%	100%	0%	0%	0%

Analysis

100% of COE employers are either satisfied or very satisfied with all the PEOs, giving an overall rating of **5 out of 5**.

Observations

Examining the detailed employers' feedback it was noticed that most of the feedback is focused on putting emphasis on some of the program outcomes such as communication skills, life-long learning, and solution optimization. This should help COE students in achieving the desired objectives.

Consulting the Students

A total of 25 students (mostly seniors) responded to the survey out of the 99 that were contacted. These 99 students are all the students in the COE department who are in classes that above freshman. Students were presented with the newly re-worded PEOs along with a brief explanation of each PEO. The results and analysis of the survey are shown below.

PEO	Students Survey Results				
	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
PEO-1	20%	48%	32%	0%	0%
PEO-2	36%	28%	28%	8%	0%
PEO-3	48%	32%	20%	0%	0%

Analysis

PEO-1: 68% of the surveyed COE students are either satisfied or very satisfied with PEO-1 while 32% are neutral. An overall rating of **3.88 out of 5** was obtained for this PEO, indicating an acceptable satisfaction level.

PEO-2: 64% of the surveyed COE students are either satisfied or very satisfied with PEO-2 while 28% were neutral and only 8% are dissatisfied. An overall rating of **3.92 out of 5** was obtained for this PEO, indicating an acceptable satisfaction level.

PEO-3: 80% of COE Alumni are either satisfied or very satisfied with PEO-3 while only 9% of Alumni are dissatisfied with the objective. An overall rating of **4.28 out of 5** was obtained for this PEO, indicating an acceptable satisfaction level.

Appendix B : Surveys

COE Industrial Advisory Committee (IAC) Survey

Dear Industrial Advisory Committee Member:

The Department of Computer Engineering (COE) at King Fahd University of Petroleum and Minerals is continuously improving its program to meet the local and international needs. Your feedback will help us revising the Program Educational Objectives (PEOs) which will enhance the COE program and facilitate its accreditation by the American Board for Engineering and Technology (ABET).

I- Purpose of this Survey

ABET defines the program educational objectives (PEOs) as “broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve”. The PEOs are measures of the graduates’ performance 3 to 5 years after completing graduation.

In 2006, the PEOs were set as follows:

The objectives of the Computer Engineering Program (COE) are to produce computer engineering graduates who are prepared to:

1. Practice their profession with confidence and global competitiveness and make intellectual contributions to it;
2. Pursue a life-long career of personal and professional growth with superior work ethics and character, and
3. Pursue advanced study and research at the graduate level.

In 2009, ABET evaluated the COE program and provided the following comments:

“The educational objectives of the computer engineering program do not appear to be entirely consistent with this definition. A few of the educational objectives are expressed using language typical of program outcomes such as: "to produce computer engineering graduates who are prepared to practice their profession...", "to produce computer engineering graduates who are prepared to pursue a life-long career..." These relate to the skills, knowledge, and behaviors that graduates are to acquire as the result of their matriculation through the program. Objectives stated in this manner do not allow the program to assess and evaluate the accomplishments of program graduates as intended by this criterion.”

Hence, the computer engineering department has revised the program educational objectives to be consistent with the ABET definition and would like to seek your opinion on the revised PEOs.

The Revised Program Educational Objectives (PEOs) are:

The Computer Engineering Program (COE) program seeks to prepare graduates who, after few years from graduation, will have:

1. **Successfully established themselves in their profession with leadership capabilities and global competitiveness while making intellectual contributions to their field;**

2. **Demonstrated an ability for a life-long professional and career growth with high ethical standards, and**
3. **Succeeded when enrolled in graduate and professional studies/programs.**

II- Surveying the Revised Program Educational Objectives

The following questionnaire is sought to find out how you perceive the Revised PEOs.

Revised Program Educational Objectives of the COE Program at KFUPM		TO WHAT EXTENT YOU ARE SATISFIED WITH THE FORMULATION OF THE REVISED PEOs:				
		Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
PEO -1	The COE program seeks to prepare graduates who, after few years from graduation, will have successfully established themselves in their profession with leadership capabilities and global competitiveness while making intellectual contributions to their field.					
PEO -2	The COE program seeks to prepare graduates who, after few years from graduation, will have demonstrated an ability for a life-long professional and career growth with high ethical standards.					
PEO -3	The COE program seeks to prepare graduates who, after few years from graduation, will have succeeded when enrolled in graduate and professional studies/programs.					

III- Feedback on the PEOs

- A Please propose any addition, modification, or reformulation of any of the three PEOs above.
- B Please propose any other educational objectives that you believe should be added.
- C Please include any other opinion you may have about the proposed PEOs.

COE Alumni, Students & Employers Survey

Dear COE Employer (Student, or Employer):

The Department of Computer Engineering (COE) at King Fahd University of Petroleum and Minerals is continuously improving its program to meet the local and international needs. Your feedback will help us revising the **Program Educational Objectives (PEOs)** which will enhance the COE program and facilitate its accreditation by the American Board for Engineering and Technology (ABET).

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The objectives of the Computer Engineering Program (COE) are to produce computer engineering graduates who are prepared to:

4. Practice their profession with confidence and global competitiveness and make intellectual contributions to it;
5. Pursue a life-long career of personal and professional growth with superior work ethics and character, and
6. Pursue advanced study and research at the graduate level.

In 2009, ABET evaluated the COE program and provided us the following comments:

“The educational objectives of the computer engineering program do not appear to be entirely consistent with this definition. A few of the educational objectives are expressed using language typical of program outcomes such as: "to produce computer engineering graduates who are prepared to practice their profession...", "to produce computer engineering graduates who are prepared to pursue a life-long career..." These relate to the skills, knowledge, and behaviors that graduates are to acquire as the result of their matriculation through the program. Objectives stated in this manner do not allow the program to assess and evaluate the accomplishments of program graduates as intended by this criterion.”

Hence, the computer engineering department has revised the program educational objectives to be consistent with the ABET definition and would like to seek your opinion on the revised PEOs.

The Revised Program Educational Objectives (PEOs) are:

The COE program seeks to prepare graduates who, after few years from graduation, will have:

1. **Successfully established themselves as globally competitive professionals with demonstrated leadership capabilities, innovative solutions or entrepreneurship;**
2. **Demonstrated an ability to pursue a life-long professional and career growth with high ethical standards, and**

3. Succeeded when enrolled in graduate and professional studies/programs.

II- Surveying the Revised Program Educational Objectives

The following questionnaire is sought to find out how you perceive the Revised PEOs.

Revised Program Educational Objectives of the COE Program at KFUPM		TO WHAT EXTENT YOU ARE SATISFIED WITH THE FORMULATION OF THE REVISED PEOs:				
		Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
PEO -1	The COE program seeks to prepare graduates who, after few years from graduation, will have successfully established themselves as globally competitive professionals with demonstrated leadership capabilities, innovative solutions or entrepreneurship;					
PEO -2	The COE program seeks to prepare graduates who, after few years from graduation, will have demonstrated an ability to pursue a life-long professional and career growth with high ethical standards,					
PEO -3	The COE program seeks to prepare graduates who, after few years from graduation, will have succeeded when enrolled in graduate and professional studies/programs.					

III- Feedback on the PEOs

A Please propose any addition, modification, or reformulation of any of the three PEOs above.

B Please propose any other educational objectives that you believe should be added.

C Please include any other opinion you may have about the proposed PEOs.