



جامعة الملك فهد للبترول والمعادن
King Fahd University of Petroleum & Minerals

COMPUTER ENGINEERING DEPARTMENT

Assessment and Evaluation Report for the Computer Engineering Program of Term 191

The Program Assessment Committee

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1. INTRODUCTION

Table 1 below show ABET activities planned for the current accreditation cycle semester wise. Following the new plan, the CIC was only supposed to oversee corrective actions for this semester, however, the CIC felt that it needed to assess SO3 (Communication skills) due to relative weakness in this SO as observed in the last assessment cycles of the same rubric. The CIC had recommended several corrective actions in the past to improve this SO which are summarized in section 2. As such, the CIC has arranged for the assessment of SO3 in 191 in COE 485 Senior Design Project to see if these corrective actions had improved this SO. The COE 485 instructor, who is also the chairman of the CIC conducted the assessment of SO3 at the end of T191 using SO3 rubrics (shown in Table 2). COE faculty were asked to fill these rubrics based on students' final reports, posters, and presentations. Instructors submitted their assessment results to the SO3 coordinators in the CIC, who in turn consolidated the assessment results. Section 2 of this report summarizes the assessment results and the suggested corrective actions that will be applied starting in T192.

Table 1: Planned CIC activities for the current ABET accreditation cycle (151-202).

Term	151	152	161	162	171	172	181	182	191	192	201	202
CIC Activity	Corrective Actions		SO b, c, k assessment	Curriculum revision		SO i, j, f, h assessment	SO 1,3, 5 assessment	SO 2,4,6,7 assessment	Corrective actions		SO 1,3,5 assessment	SO 2,4,6,7 assessment

2. CORRECTIVE ACTION(S)

As previous cycles have shown, SO3 has been consistently marginally achieved (i.e. students averaging ≈ 2.6 on the rubrics shown in Table 2). The COE department attempted to improve the students' communication skills by inviting an English instructor from ELS who sat in COE 300 course, and observed the students' communication skills. COE 300 was selected because students give several presentations and submit several reports in that course. All the ESL instructors' suggestions were implemented. Furthermore, the COE 300 instructor was giving the students very detailed feedback on their reports. Still, the communications skills of the students were not improving as evident from repeated SO3 assessments. The CIC has decided that the issue has to be tackled at the university level. The deans of the CCSE college and the Engineering College were informed of this issue so they can take appropriate actions. Dean of engineering was informed because he is the chairman of the university-wide ABET steering committee. As of this moment, the COE CIC was not informed of any university-level action to improve students' communication skills.

3. ASSESSED STUDENT OUTCOMES (SOs)

Table 2 shows the assessed student outcomes in T191. The COE department adopts the following criteria for judging a student's achievement of an outcome based on rubric scores (out of 4):

- Achieved (A): Score > 2.6
- Marginally Achieved (M): Score: □ 2.5-2.6
- Need Improvement (NI): Score < 2.5.

An important measure used to evaluate the overall achievement of a certain student outcome is the percentage of students who achieved 60% (i.e. 2.5/4) or more in the rubrics. This determines the urgency of corrective actions; any percentage less than 70% warrant corrective actions. We also keep an eye on the maximum and minimum rubric scores; larger spread is indicative of either an outcome delivery/injection problem, an assessment problem, or both.

Table 2: Assessed Student Outcomes

SO	Method of Assessment	Course No.	Course Title
SO 3 - Direct	Project	COE 485	Senior Design Project

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4. ASSESSMENT SUMMARY

Table 3 shows a summary of the assessment results of SO3 in T191.

Table 3: Assessment Summary per Student Outcome (SO)

SO	Achieved Score	Targeted Threshold Level	Result	Comments / Reasons
SO 3 - Direct	2.6	2.6	Pass	This outcome is marginally achieved. Students had serious problem organizing and communicating their thoughts, ideas, and efforts. This batch of students was a little bit better than the previous batch. However, the majority of students seem to lack various writing skills and tools.

5. ASSESSMENT RESULTS ANALYSIS

The assessment results in Table 3 above indicate the following: - The standard deviation of all performance indicators is normal (i.e. within 0.5 which is half the scale resolution). This gives the assessment data more statistical reliability, - Students are better in Oral communication than written communication, - They are better in organization and language proficiency (albeit not great) than actually communicating their ideas and work effectively.

Table 5: Assessment Analysis

SO	Method of Assessment	Course No.	Course Title	Sample Size	Score	Result
SO 3 - Direct	Project	COE 485	Senior Design Project	12	2.6	Pass

The CIC has further investigated the issue of poor written communication skills and had found the following: English language courses focus on linguistic abilities – students usually summarize others’ people idea rather than present their own, Lack of courses that teach students visual illustrations (like sketching, drawing, building models etc.), All freshman Math, Physics, and Chemistry courses (totaling 25% of the whole program credit hours) are entirely based on multiple choice exams. That mean students are never asked to write answers, illustrate solutions, or communicate in any written manner. This is a great travesty.

6. NECESSARY CORRECTIVE ACTIONS

The CIC chairman had briefed the COE council on the assessment results and had suggested the following corrective action aimed at improving students' written communication: "COE faculty should include questions in HWs, Quizzes, and Exams that require students to express their understanding, thoughts, design and illustrate these ideas graphically". Examples were provided to the faculty such as: "Explain why so and so", "illustrate how the architecture could be modified to improve so and so ...".

6.1. RUBRICS AND PIS TEMPLATES

Rubric for Evaluating Student Outcome

3. An ability to communicate effectively with a range of audiences.

Using the Course COE 485

Performance Indicator	Exemplary 4	Satisfactory 3	Developing 2	Unsatisfactory 1
I. Oral Communication: 1.Presentation skills: <ul style="list-style-type: none"> - clear voice and tone - interaction with audience - eye contact - body language 	Speaks fluently and effectively with excellent tone and pace, interacts with audience, and uses proper eye contact and body language.	Speaks clearly and effectively with proper tone and pace, interacts - at times - with audience, and uses moderate eye contact and body language.	Speaks fairly with moderate tone and pace, uses little interaction with audience, and uses little eye contact and body language.	Speaks poorly with improper tone and pace, doesn't interact with audience, and uses no eye contact or body language.
2.Presentation Material and Organization: <ul style="list-style-type: none"> - outline - structure - visual aids - transition - evidence and conclusion - questions 	Presents and follows an excellent outline and organization, makes smooth transitions, uses visual aids effectively, presents convincing evidences and conclusions, and answers questions effectively.	Presents and follows an satisfactory outline and organization, makes adequate transitions, uses visual aids reasonably, presents some convincing evidences and conclusions, and answers questions moderately.	Presents a fair outline and organization, makes uneven transitions, uses some visual aids improperly, presents few convincing evidences and conclusions, and answers questions barely.	Presents a poor outline and organization, makes rough transitions, uses visual aids poorly, presents no convincing evidences or conclusions, and answers questions poorly.
ii. Written Communications: 1. Language <ul style="list-style-type: none"> - spelling - grammar - punctuation - sentence structure 	Makes rare or no spelling and/or grammatical mistakes, excellent use of punctuation, and smooth and well-structured sentences.	Makes few spelling and/or grammatical mistakes, proper use of punctuation, and moderately smooth and	Makes noticeable mistakes in spelling, grammar and/or in the use of punctuation, and uses weakly structured sentences.	Makes substantial mistakes in spelling, grammar and/or in the use of punctuation, and uses poorly structured sentences.

		structured sentences.		
2. Organization <ul style="list-style-type: none"> - organization - abstract - visual aids - bibliography 	Follows a clear organization, uses an effective and accurate abstract, uses visual aids effectively, and cites all sources properly.	Follows an acceptable organization, uses a good abstract, uses visual aids with varying effectiveness, and cites most sources properly.	Follows a less than acceptable organization, uses an inaccurate abstract, uses visual aids barely, and cites some sources.	Follows a poor organization, uses an inaccurate or no abstract, uses visual aids ineffectively, and does not cite most sources.
3. Effectiveness <ul style="list-style-type: none"> - readability - motivation - problem description - rigor - documentation - conclusion 	Produced a smoothly readable document, with a catching motivation and problem description, rigorous use of scientific concepts and/or equations, a complete documentation, and sounding conclusions.	Produced a readable document, with adequate motivation and problem description, some rigorous use of scientific concepts and/or equations, adequate documentation, and fair conclusions.	Produced a partially readable document, with fair motivation and problem description, some mistakes in the use of scientific concepts and/or equations, partial documentation, and partially convincing conclusions.	Produced a barely readable document, with poor motivation and problem description, frequent mistakes in the use of scientific concepts and/or equations, poor documentation and poor conclusions.

6.2. DATA AND ANALYSIS SHEETS

All students are COE students. The rubrics assessment details are shown below.

Rubrics Assessment Score Sheet

Student ID	Oral Presentation skills	Presentation Organization	Written Language	Report Organization	Effectiveness	Avg.	Min.	Max.
201241300	3	3	3	2	2	2.60	2.00	3.00
201331690	3	3	3	2	2	2.60	2.00	3.00
201450340	3	3	3	2	2	2.60	2.00	3.00
201434020	3.3	2.5	2.3	2	2	2.42	2.00	3.30
201479780	2.5	2.5	2.3	2	2	2.26	2.00	2.50
201423640	1.5	2.5	2.3	2	2	2.06	1.50	2.50
201437860	2	3	3.3	3	3.5	2.96	2.00	3.50
201541890	2.3	2.3	2	2.7	2.7	2.40	2.00	2.70
201582510	2.3	2.3	2	2.7	2.7	2.40	2.00	2.70
201238740	3	3	3.5	2.9	2.5	2.98	2.50	3.50
201548610	3	3	3.5	2.9	2.5	2.98	2.50	3.50
Average	2.63	2.74	2.75	2.38	2.35	2.57	1.5	3.5
Std. Dev.	0.55	0.31	0.58	0.45	0.48	0.30	0.27	0.39