Colorado State University – Pueblo Academic Program Assessment Report for AY 2016-2017 **Due: June 1, 2017**

Program:___ Engineering_____ **Date report completed:** ____2 June 2017_____

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In the Department of Engineering, we use ABET language. "Assessment is one or more processes that identify, collect, and prepare data to evaluate the attainment of student outcomes and program educational objectives. … "Evaluation is one or more processes for interpreting the data and evidence accumulated through assessment processes. Evaluation determines the extent to which student outcomes and program educational objectives are being attained. Evaluation results in decisions and actions regarding program improvement." (http://www.abet.org/network-of-experts/for-current-abet-experts/refresher-training/module-4-quality-improvement-of-student-learning/)

The results below are based on our evaluation of several assessments of that outcome that occurred over previous years.

All assessment data are kept in notebooks in Technology 274, with one notebook per outcome (outcomes a-k are specified by ABET). Each semester, faculty members complete a form reporting on the assessments done in the courses each taught that semester. The assessment data for each outcome are evaluated on a three year schedule. That evaluation and minutes from the department meeting with the discussion and conclusion are presented below the table.

PART I. Program student learning outcomes (SLOs) assessed in this cycle, processes, results, and recommendations for improved student learning.

A. Which of the program SLOs were assessed during this cycle? **Please include the outcome(s) verbatim from the assessment plan.**	B. When was this SLO last assessed? Please indicate the semester and year.	C. What method was used for assessing the SLO? **Please include a copy of any rubrics used in the assessment process.**	D. Who was assessed? Please fully describe the student group(s) and the number of students or artifacts involved.	E. What is the expected achievement level and how many or what proportion of students should be at that level?	F. What were the results of the assessment?	G. What were the department's conclusions about student performance?	H. What changes/improvements to the program are planned based on this assessment?
(g) an ability to communicate effectively	Spring 2017	The evaluation was based on assessments in EN 215, 430, 487, and 488.	In each class specific assignments were used to assess all students. In EN 487 and EN 488, senior project reports and presentation were used.	The goal varies, but is typically 80% of students achieve at least 80% or better.	The goals were met. See table below for more details.	The goal is well-met. In most of the lab courses, we still require students to write lab reports. As documented in the 487 and 488 reports, no difference was detected between BSE and BSIE students.	None.
(j) a knowledge of contemporary issues	Spring 2017	The evaluation was based on assessments in EN 343, 487, 488.	In each class specific assignments were used to assess all students. In EN 487 and EN 488, senior project reports and presentation were used.	The goal varies, but is typically 80% of students achieve at least 80% or better.	The goals were met. See table below for more details.	The assessments show that we are achieving this outcome, with no difference between BSE and BSIE students.	None.

Comments on part I:

Details of evaluation for outcome (g):

(g) an ability to communicate effectively

Outcome g: EN215, EN487/488: 2014 - 2016 and EN430: Fall 2016				
Course	Semester	Goal met?	Notes	
EN215	Fall 2014	Yes	Since 14 out of 17 students scored 80% or above, the goal was met.	IE
	Fall 2015	Yes	Assessment of this objective was not performed	IE
	Fall 2016	Yes	All students earned 80% or more	IE
EN 430	Fall 2016	Yes	All students reached the goal (80% or higher)	Both
EN487/488	Spring 2014	Yes	All students met the goal even though one of the final project reports was excessively long (over 150 pages)	Both
	Spring 2015	N/A	Assessment of this objective was not performed	Both
	Spring 2016	Yes	All students followed professional communication standards, both in written and oral communications (proposals, weekly progress reports, final reports, poster boards, and final project presentations).	Both

Analysis:		The goal was met in each reported instance. During this assessment period, faculty had opportunities to judge all senior project presentations for the ABET communications outcome.
Faculty Discussion:		The goal is well-met. In most of the lab courses, we still require students to write lab reports.
N. Jaksic 3/10/2017		

From 10 March 2017 department meeting minutes: *Many classes do presentations, lab reports, and other writing. EN 487 and 488 involve a lot of communication and a lot of growth. As documented in the 487 and 488 reports, no difference was detected between BSE and BSIE students.*

Details of evaluation for outcome (j):

(j) a knowledge of contemporary issues

	A	B	C	D	E
1	Outcome j: a knowledge of contemporary issues				
2	Course	Semester	Goal met?	Notes	
3	EN 343	Fa15	Yes	Buy auto insurance or self insure	
4	EN 343	Fa16	Yes	Buy auto insurance or self insure	
5	EN 487/488	Sp15	Weak yes	Thirty-two students working in teams completed nine senior design projects, seven with BSE students and two with BSIE students (one BSE student was on a primarily BSE team). The sustainability discussion in each report at least alluded to some contemporary issue, and for each report the goal was met, but only weakly. There was no difference between the BSE groups and the two BSIE groups.	
6	EN 487	Sp16	Yes	Seventeen students working in five teams (two IE and fifteen BSE students) completed five senior design projects. The goal was met since all five teams discussed contemporary issues (mostly sustainability) related to their projects in separate sections within the narrative of their final reports. There were no differences between the IE and the BSE-Mechatronics students with respect to this outcome.	
7	EN 488	Sp16	Yes	Five students working in teams completed two senior design projects: improvement of layout at pewag, and location for a new CT scanning device at Memorial Hospital. The pewag team discussed Pueblo employment and the Memorial Hospital team discussed the need to provide healthcare more efficiently.	
8	The assessments in courses show that we are achieving this outcome.				
9	In senior projects, is discussion of sustainability enough on contemporary issues? Or do we want teams to explicitly mention other contemporary issues?				
10	In December 2014 we said: Contemporary issues about which students should have knowledge: policy behavior; health care; how robotics and workers working together achieve high efficiency in US manufacturing; sustainability, which includes everything; energy and fracking; effects of cheap gasoline; AI is the death of humanity (Hawking); earthquake in China. Faculty should occasionally start class with "did you read about this in the news?" We should bring articles to class. Engineers need knowledge of contemporary issues, even those not directly related to engineering.				

From 3 March 2017 department meeting:

We used EN 343 as a place to assess this outcome because Prof Sarper was enthusiastic, but Ebisa is not sure it is good to do it in that class. In the senior projects, yes, the discussion of sustainability should mean that the report has discussed contemporary issues, but the report should also discuss other relevant contemporary issues. The professors who teach EN 487/488 call our students' attention to the requirements to include discussion of sustainability, contemporary issues, and lifelong learning, including grading and rubrics.
We confirmed our previous list of important contemporary issues, especially the role of engineering in putting people out of work. We need to help students learn critical thinking – how to understand news and information. We discussed examples of difficult topics we address in class – how someone's belief systems (including religion) can support sustainability, the implications of AI for free will and consciousness. We expressed some discomfort about the potential for a faculty member to be chastised for discussing some topics. If asked a direct question (e.g. who did you vote for?) it is ok to answer, but we cannot ever forget we have a power relationship with a student. We will ask our visiting ABET team for advice in the fall.

PART II. Follow-up (closing the loop) on results and activities from previous assessment cycles. In this section, please describe actions taken during this 2016-2017 cycle that were based on, or implemented to address, the results of assessment from previous cycles.

A. What SLO(s) did you address? Please include the outcome(s) verbatim from the assessment plan.	B. When was this SLO last assessed? Please indicate the semester and year.	C. What were the recommendations for change from the previous assessment?	D. Were the recommendations for change acted upon? If not, why?	E. What were the results of the changes? If the changes were not effective, what are the next steps or the new recommendations?

Comments on part II:

Because of our December 2014 evaluation of outcome (d), an ability to function on multi-disciplinary teams, we have embarked on a long process to change the program to improve the achievement of our students on this outcome. We identified concerns, discussed them with our Advisory Board, and created a new course, EN 286 Group Dynamics for Teams. . That course is not yet incorporated into the program, although we have plans to do so by getting the course approved as a General Education course and then requiring that Engineering students select that course to meet the Gen Ed requirement. We have also increased our coverage of teamwork topics and our use of group work in classes.