

Texas A&M International University

Annual Institutional Effectiveness Review (AIER)

Date Submitted January 30, 2008

Assessment Period Covered (2007)

Academic Program/AES Unit Bachelor of Science with a major in Chemistry

Person(s) Preparing Review Dr. Eugenio Jaramillo, Dr. Sushma Krishnamurthy,

Provide summary of the last cycle's use of results and changes implemented

In Year 2005 1) embedded questions in examinations and 2) student research presentations were used in the assessment.

The overall results of subject specific embedded questions on examinations met our benchmark of 70%. Informing students about criteria for assessment as well as increasing feedback regarding their presentations, were as also identified as ways of addressing weaknesses in their research presentations. The need for more student hands-on laboratory experiences to facilitate learning was identified by the department assessment report. Additional funding for laboratory equipment and supplies is necessary to meet these goals.

In 2006, we decided to focus on critical thinking skills, an essential tool common to all the sciences instead, rather than subject specific assessment. A third indirect assessment was added to our student learning outcomes. The three student learning outcomes assessed were:

- 1) Critical thinking skills
- 2) Student research presentations, and
- 3) Student exit surveys (indirect measure)

Students presenting at the research seminars were made aware of the assessment criteria in advance. Student feedback was in the form of faculty comments and suggestions for improvement at the seminars. the department has also started collecting tabulating raw seminar scores for dissemination to the department faculty mentors. In the past, average scores were shared with the faculty. The third means of assessment was implemented for the first time in Fall 2006. The results of the Y2006 assessment are not statistically valid, given the small sample size.

The results of the Spring 2007 assessment in the three areas listed above , were shared at a department meeting held on September 14, 2007. The Department of Biology & Chemistry voted (September 25, 2007) to keep the same three student learning outcomes for year 2007 as the last year (2006), in order to have statistically valid data. Hence no changes to the existing student learning outcomes are being proposed.

Section I: Planning and Implementation

Institutional Mission

Texas A&M International University, a Member of The Texas A&M University System, prepares students for leadership roles in their chosen profession in an increasingly complex, culturally diverse state, national, and global society ... Through instruction, faculty and student research, and public service, Texas A&M International University embodies a strategic point of delivery for well-defined programs and services that improve the quality of life for citizens of the border region, the State of Texas, and national and international communities.

Academic Program or Administrative/Educational Support Unit Mission

The foremost mission of the department is to provide a high quality education for the students in Biology, Chemistry, Environmental Sciences and Geology. Upon completion of the program students will be prepared for employment in the private and public sectors as well as professional and graduate education. The department also strives to increase the body of scientific knowledge through research. We serve the university by providing General Education courses and service courses for students in Nursing, Kinesiology and Education.

Identify outcomes and the relationship to Strategic Plan

Outcome 1

Is this outcome related to writing (QEP)?

Students will apply critical thinking skills to solve problems in chemistry.

Identify Strategic Plan Goal related to Outcome 1

Goal 1 Academics

Identify Strategic Plan Objective related to Outcome 1

1.7 Establish and pursue student learning outcomes appropriate for each program with systematic assessment and use of results for continuous quality improvement.

Identify methods of assessment to be used

Embedded questions in examinations in required (core) upper division courses (Analytical Chemistry I & II, Biochemistry I, Physical Chemistry I & II and Inorganic Chemistry). The questions will be agreed upon by chemistry faculty in each of the fields listed.

Indicate when assessment will take place

Annual

Criteria/Benchmark

Seventy percent of the chemistry senior students will have applied critical thinking skills to solve problems in chemistry (70% of the embedded examination questions answered correctly).

Outcome 2

Is this outcome related to writing (QEP)?

Students will demonstrate the ability to plan and execute a research project then present the material in a logical manner.

Identify Strategic Plan Goal related to Outcome 2

Goal 2 Research

Identify Strategic Plan Objective related to Outcome 2

2.3 Broaden the educational experience for students through support of student research/scholarship and student participation in faculty research/scholarship

Identify methods of assessment to be used

Means of Assessment Students will present the results of their research projects to a combined group of their peers. Faculty panel of at least 3 will evaluate projects using a common rubric.

Indicate when assessment will take place

Annual

Criteria/Benchmark

Seventy percent of the (chemistry) senior students will demonstrate the ability to plan and execute a research project, then present the material in a logical manner.

Outcome 3

Is this outcome related to writing (QEP)?

Student will have utilized their undergraduate education to acquire employment in the degree field, create enterprise, get acceptance in professional graduate programs, or advance their employment outlook.

Identify Strategic Plan Goal related to Outcome 3

Goal 1 Academics

Identify Strategic Plan Objective related to Outcome 3

1.7 Establish and pursue student learning outcomes appropriate for each program with systematic assessment and use of results for continuous quality improvement.

Identify methods of assessment to be used

Exit survey for graduating seniors. Results of the survey will group students according to the following: employment resulting from the completion of the degree, graduate school placement, professional school placement, enterprise creation, employment not directly related to the degree, and undecided.

Indicate when assessment will take place

Annual

Criteria/Benchmark

No more than 30% of chemistry graduating seniors will be undecided in their career options on completion of their degrees.

Section II: Analysis of Results

When (term/date) was assessment conducted?

Outcome 1

The students were assessed through examinations (both final exams and class exams) throughout the semester.

Outcome 2

Spring 2007

Outcome 3

Spring 2007

What were the results attained (raw data)?

Outcome 1

CRITICAL THINKING SKILLS

CHEMISTRY SCORES

SPRING 2007

CLASS SIZE: 2

	Correct	Incorrect	
Question 1	2	0	100%
Question 2	0	2	0%
Question 3	2	0	100%
Question 4	1	1	50%
Question 5	2	0	100%
Total _____	7	3	70%

Overall correct answers 7 (70%)

Incorrect Answers 3 (30%)

FALL 2007

Class Size: 3

	Correct	Incorrect	
Question 6	3	0	100%
Question 7	3	0	100%
Question 8	3	0	100%
Question 9	2	1	67%
Question 10	2	1	67%
Total _____	13	2	87%

Overall correct answers 13 (87%)

Incorrect Answers 2 (13%)

The average score for critical thinking questions for the year 2007 is 80%. These results exceed our benchmark of 70%.

Outcome 2

No students presented research projects at this time.

Outcome 3

The only student that answered the survey, plans to find a job related to his/her degree.

Who (specify names) conducted analysis of data?

Outcome 1

Dr. Eugenio Jaramillo was responsible for data collection and compilation. A statistical analysis of the data can only be performed when there are multiple data sets for analysis. The sample size at this point is too small for a meaningful statistical analysis.

Outcome 2

N/A

Outcome 3

Enter text here

When were the results and analysis shared and with whom (department chair, supervisor, staff, external stakeholders)? Submit minutes with data analysis to assessment@tamiu.edu (Please use Minutes Template located on the **Project INTEGRATE web page.)**

Year 2007 data will be shared with the Department of Biology & Chemistry at the first department meeting in 2008 (sometime in February 2008).

NOTE: Submit all assessment documentation (i.e., surveys, rubrics, course exams with embedded questions, etc.) to the Office of Institutional Effectiveness and Planning.

Use of Results: Indicate whether criteria were met/not met and what changes, if any, have been identified based on the data collected?

Outcome 1

Met Not Met

Provide narrative: The results exceed our benchmark of 70%.

Outcome 2

Met Not Met

Provide narrative: Data is not available to quantify this outcome.

Outcome 3

Met **Not Met**

Provide narrative: The results exceed our benchmark of no more than 30% of graduating seniors being unsure about their career options.

How have these data-based changes improved your program/unit?

Enter text here

Section III: Programmatic Review

Are resources affected by the changes identified in Section II? Yes No

If so, specify the effect(s) using the chart below:

Funding	Physical	Other
<input type="checkbox"/> New resources required	<input type="checkbox"/> New or reallocated space	<input type="checkbox"/> Primarily faculty/staff time
<input type="checkbox"/> Reallocation of current funds		<input type="checkbox"/> University rule/procedure change only
		<input type="checkbox"/> Other: Enter text here

Provide a narrative description and justification for requested resources (include linkage to Strategic Plan)

Enter text here

Identify proposed outcomes for the next assessment cycle:
Continuation of present outcome(s) – (Indicate reason for continuation): The same size for each of the learning outcomes is very small, making the data statistically invalid.
New Outcome(s) – (List outcomes below): Enter text here
Modification of present outcome(s) – (Indicate reason for modification): Enter text here

**** This section to be completed by dean/director/vice-president ****

Are resources requested a priority for the academic program/AES unit?

Yes No

Comments:

Enter text here

If funding, physical or other resources were requested, what is the impact of the budget decisions on the academic program/AES unit?

Enter text here

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