

COURSE SLO ASSESSMENT REPORT, SCC

Department: Earth, Space, and Physical Science Course: Chem 229

Year: 2012 Semester: Fall

1) Outcome to be assessed	A - Identify the essential parts of a problem and apply known chemical concepts in solving the problem.												
2) Means of assessment and criteria of success	To assess SLO#1, we have administered the standardized exam for the year long course of general chemistry provided by the American Chemical Society. Criteria of success as stated by the American Chemical society has not yet been determined for this specific exam (2011). Historically a passing score is 36/70; and will therefore be considered meeting the standard.												
3) Summary of data collected	<p>At the end off the fall semester, the ACS standardized exam was administered for 2 sections of chemistry 229. The total number of students who took the exam was 46. The class averages were 42.1 (24 students) and 44.1 (22 students) of correct answers. 36 out of 46 students taking the exam met or exceeded the national average score. Based on this criteria 78% of the students completing Chem 229 successfully completed SLO#1.</p> <p>Break down of overall scores is as follows:</p> <table data-bbox="436 954 709 1169"><thead><tr><th><u>Score</u></th><th><u># students</u></th></tr></thead><tbody><tr><td>60-70</td><td>2</td></tr><tr><td>50-59</td><td>11</td></tr><tr><td>40-49</td><td>18</td></tr><tr><td>30-39</td><td>10</td></tr><tr><td>0-29</td><td>5</td></tr></tbody></table> <p>We ran the analysis of the answers of the individual exam questions; the data and analysis can be seen below.</p>	<u>Score</u>	<u># students</u>	60-70	2	50-59	11	40-49	18	30-39	10	0-29	5
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4) Analysis of data	From data analysis and looking at topics covered on the questions missed by the majority (over 50%) of the students taking the standardized ACS exam, 9 of 16 questions were from Chem 229, the others were topics covered in first semester general chemistry (Chem 219). Of the questions from topics covered in Chem 229, students appear to have deficiencies in entropy, enthalpy, solubility and electrochemistry (including oxidation-reduction reactions).
5) Plan of action/what to do next	Our class average in both sections is above the expected national average on the ACS exam and 78% of students passed SLO #1. This shows that we have a strong curriculum in the year-long sequence of general Chemistry (Chem 219 & 229). As a way to overcome some of the deficiencies in specific topics, we will review these topics more by writing DLAs (directed learning activities) on energy (entropy and enthalpy) ,as well as developing a lab to cover these topics “hands on”.

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*1) Outcome to be assessed	B - Write in scientific terms and explain observed scientific phenomenon using the language of chemistry. C - Act with experimental competency, collect and analyze data, identify sources of error and interpret laboratory result.												
2) Means of assessment and criteria of success	To assess SLOs #2 & 3 we assigned a lab final project consisting of the identification of 2 unknown inorganic samples, each containing 1 or 2 cations and 1 or 2 anions. The project is based on the experiments performed throughout the semester and uses the lab notes/observations they've taken. A score of 70% or better is considered meeting the standard.												
3) Summary of data collected	<p>The last 5 weeks of the semester was spent performing the final project in lab. The project was completed by 2 sections of Chem 229, a total of 46 students. The average score on the project was 73% (71% and 75%) with 18 out of the 46 students completing the project not passing the assessment with a grade of 70% or better. Based on this criterion, 61% of the students completing Chem 229 were successful in completing SLOs 2 & 3.</p> <p>Break down of overall scores is as follows:</p> <table data-bbox="436 964 709 1179"><thead><tr><th><u>Score</u></th><th><u># students</u></th></tr></thead><tbody><tr><td>90-100</td><td>14</td></tr><tr><td>80-89</td><td>6</td></tr><tr><td>70-79</td><td>8</td></tr><tr><td>60-69</td><td>8</td></tr><tr><td>0-59</td><td>10</td></tr></tbody></table>	<u>Score</u>	<u># students</u>	90-100	14	80-89	6	70-79	8	60-69	8	0-59	10
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4) Analysis of data	After looking at the break down of individual student scores it appears that the results are bimodal, with the students either being able to correctly identify their unknowns with little to no help, or doing very poorly in the task.
5) Plan of action/what to do next	From this data, it appears that some of our students are lacking in lab skills, being unable to interpret their observations and compare them to previous results with respect to identifying unknown ions in a solution. For future Chem 229 classes, we will emphasize detailed procedure writing and observation making during the determination of individual group unknowns in order to build confidence and self reliance in the final unknowns.