

**COURSE SLO ASSESSMENT REPORT, SCC**Department: Earth, Space, and Physical Science Course: Chem 219Year: 2012 Semester: Fall

1) Outcome to be assessed	SLO 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	As a method of assessment, we used a common final exam as 25 multiple choice questions to give to all four sections assessed. The exam had some concept questions and some calculation based problems.
3) Summary of data collected	Number of students assessed: 44 Number of sections: 2 Average correct answers for each section: 13.9(55.6%), 15.25(61.0%) Average answers for all sections combined: 14.55(58.2%)

4) Analysis of data	<p>From the data, some of these questions had a lower correct(less than 50%) answers. This includes:</p> <p>Question #4(Stoichiometry:Empirical formula from combustion of an unknown) 41.9% correct  Question #10(Thermodynamics) 46.5% correct  Question #12(Atomic Structure:Quantum numbers) 48.8% correct  Question #15(Bonding:Lewis structure) 46.5% correct  Question #16(Bonding:Molecular polarity) 37.2% correct  Question #19(Attractive Forces:Ordering subst. in order of mp) 44.2% correct  Question #20(Colligative Properties:Freezing point depression) 20.9% correct  Question #22(Atomic Structure:Ionic radius) 30.2% corrects  Question #23(Phases of Matter) 27.9%</p>
5) Plan of action/what to do next	<p>Unlike the previous years assessment, the poor scoring questions seem to be evenly distributed throughout the exam. By changing the length of the assessment, test fatigue has been minimized.</p> <p>There were only 4 questions(16, 20, 22, &amp; 23) that had low correct response rates. Question #16 is often a problem for students due to the fact the question involves so many concepts(Lewis structures, VSEPR, bonding polarity, &amp; molecular polarity). If one mistake in any of these concepts is made by the student, their answer will be wrong. The other poor scoring questions is hard to guess what students are misinterpreting. To get a better understanding of the students' "disconnect" and analysis must be made of what the students answered incorrectly with.</p>

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1) Outcome to be assessed	SLO B: "Write in scientific terms and explain observed scientific phenomenon using the language of Chemistry" SLO C: "Perform experiments with the given directions, collect valid scientific data, analyze the data and interpret laboratory results"
2) Means of assessment and criteria of success	As a method of assessment, we used laboratory reports as a way to assess both B and C in SLOs. A full laboratory report of Experiment #9 (Determination of the Concentration of Vinegar and the Molar Mass of an Unknown) will be used to assess these SLOs. A rubric will be used to standardize grading of the lab report and help identify the features we are looking for in students' performance. The students are asked to perform the volumetric analysis experiment over 3 laboratory periods. Directions to perform the experiment are given in the laboratory manual. The students will be evaluated on their ability to follow procedure, collect their data and perform the necessary calculations.

3) Summary of data collected	<p>Number of students assessed: 44 Number of sections: 2</p> <table border="1" data-bbox="548 280 1562 841"> <thead> <tr> <th></th> <th>Beginning 1</th> <th>Developing 2</th> <th>Accomplished 3</th> <th>Exemplary 4</th> </tr> </thead> <tbody> <tr> <td><b>Purpose</b></td> <td>1(2.2%)</td> <td>0(0%)</td> <td>2(4.5%)</td> <td>39(88.6%)</td> </tr> <tr> <td><b>Procedure</b></td> <td>0(0%)</td> <td>0(0%)</td> <td>0(0%)</td> <td>43(97.7%)</td> </tr> <tr> <td><b>Data and Results</b></td> <td>1(2.2%)</td> <td>2(4.5%)</td> <td>0(0%)</td> <td>39(88.6%)</td> </tr> <tr> <td><b>Calculations</b></td> <td>1(2.2%)</td> <td>1(2.2%)</td> <td>1(2.2%)</td> <td>38(86.4%)</td> </tr> <tr> <td><b>Accuracy (% acetic acid)</b></td> <td>2(4.5%)</td> <td>5(11.4%)</td> <td>18(40.9%)</td> <td>12(27.3%)</td> </tr> <tr> <td><b>Accuracy (Molar Mass)</b></td> <td>4(3.6%)</td> <td>8(18.1%)</td> <td>10(22.7%)</td> <td>17(38.6%)</td> </tr> <tr> <td><b>Conclusion</b></td> <td>13(29.5%)</td> <td>3(6.8%)</td> <td>7(15.9%)</td> <td>18(40.9%)</td> </tr> </tbody> </table>		Beginning 1	Developing 2	Accomplished 3	Exemplary 4	<b>Purpose</b>	1(2.2%)	0(0%)	2(4.5%)	39(88.6%)	<b>Procedure</b>	0(0%)	0(0%)	0(0%)	43(97.7%)	<b>Data and Results</b>	1(2.2%)	2(4.5%)	0(0%)	39(88.6%)	<b>Calculations</b>	1(2.2%)	1(2.2%)	1(2.2%)	38(86.4%)	<b>Accuracy (% acetic acid)</b>	2(4.5%)	5(11.4%)	18(40.9%)	12(27.3%)	<b>Accuracy (Molar Mass)</b>	4(3.6%)	8(18.1%)	10(22.7%)	17(38.6%)	<b>Conclusion</b>	13(29.5%)	3(6.8%)	7(15.9%)	18(40.9%)
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4) Analysis of data	<p>The lowest scoring portion of the assessment is the conclusion. A stronger emphasis must be made toward writing an exemplary conclusion. After students take so much time to prepare their lab report, they may run out of energy to give the conclusion the attention it demands. There appears an increase in success for the students when comparing “Accuracy Acetic Acid % to the “Accuracy of Unknown Molar Mass”. Since the same techniques is used throughout the experiment, it would make sense that “Molar Mass” portion which is performed after the “Acetic Acid %” portion that the students would improve in technique and understanding. Students were quite strong in presenting data and calculations in a clear and logical manner.</p>																																								
5) Plan of action/what to do next	<p>Overall the students performed well concerning the SLOs assessed. The one area of improvement should be made towards the students’ effort given to writing a conclusion. A solution to this issue is when the students write their conclusion. After the student completes their data analysis in their duplicate notebook, they must write out a proper conclusion. Then the instructor should have to review the conclusion before the student can leave the lab room.</p>																																								