**UA Rich Mountain**
**Assessing Student Learning**
**Course Outcomes Report**
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## 1. Purpose

The Course Outcomes Report supplies information each semester regarding student learning on the course level. This report must be submitted to your division chair by the last day of the semester. Data from this report will be integrated into the annual Program Outcomes Report on Student Learning.

## 2. Background

Course Name: University Chemistry II Lab Course # CHEM1121L

## 3. Course Outcome(s) being assessed this semester

**Think of the evidence of student learning activity or project. Choose ONE outcome for this course.**

Perform experiments using technology and designed to reinforce the concepts studied in the lecture, analyze the results, and derive conclusions.

Prepare formal laboratory reports on the experiments performed, draw proper conclusions, analyze scientific error, and present graphs or charts on the findings.

Strategic Goals: Select the Goal(s) associated with the Course Outcomes(s) being assessed this semester.

☐Goal One: Mission Driven
☐Goal Two: Operate with Integrity
☒Goal Three: Provide High Quality Education
☒Goal Four: Continuous Quality Improvement
☐Goal Five: Effective & Efficient Operations

Related Program Outcome: Students will increase their technological and research skills.

Related GELO category: Choose as many as apply.
☒ Thinking critically
☒ Communicating effectively
☒ Using technology
☒ Conducting relevant research

## 4. Evidence of Student Learning

Describe the classroom activity/tools related to **course** objective (What did they do for the class which was tied to this objective? Was it a project? Discussion? Quiz?)

Describe Activity: This was a lab activity for students to plan and design Galvanic cells on their own using their knowledge in the lecture class and based on the standard reduction potential for the half electrodes. They need to design the cells to produce the desired positive voltage for each cell and measure the voltage of the constructed cell. The measured voltage would be compared to the expected voltage for the given cell under given conditions. While the procedures were explained to the students, the the combination of half cells to make a complete cell, finding their voltage, comparing to the standard potentials and finding the percentage error are the parts of the project they needed to figure out on their own. This is the work that involves thinking critically, use relavent technology, conducting research on how to combine the cells and how to get the positive voltage, and finally communicating by means of formal scientific report writing style.

**5. Reflection**

**A.** What was the result of this activity? (How do you know that students satisfied the course objective being measured?)

The students satisfied the project's objective by altering the provided technology. In this process they self-learned that the charge sensor was not stable in providing the accurate voltage of the cells and figured a galvanometric technique to measure the voltage consistently and with accuracy. This also helped them to think critically about why the voltage recorded in the charge sensor was relatively low and inconsistent and why the percentage error on the voltage measurement was so high. This was a good learning experience both for the students and the instructor. The modification will be implemented while revising the laboratory manual for the next semester.

**6. Enter course data**

Number of students in your course(s) who met course objectives: 4

Enter the number of students total in your course section(s): 4

Enter the percent (%) of students achieving this course objective. (Data will be used on Program Outcomes Report under Evidence of Student Learning.) 100%

**7. Response to data:** Will you change how you teach as a result of this assessment?

Choose only one of the narration options below. If curricular changes are needed, briefly explain any changes planned for course improvement. If no changes are needed, indicate the rationale in the space provided below.

☒Changes(s) needed. While overall experiment will remain mostly the same, the only portion that will be changed will be use of an alternative technology to get the data correctly. The objective of the project still remains the same with modification in the procedure.

☐No change(s) needed

***Attach anonymous student samples of each activity along with the grading rubric / scale.**
**** Attach any meeting minutes associated with this assessment**