

## Appendix #4.2

### Faculty Report on Evidence of ASNS Degree Program Learning Outcome (PLO) Achievement

Course & Title: Chemistry 161L - General Chemistry I Laboratory

Semester: Fall 2012

- Select two samples of student learning evidence that demonstrate exit-level achievement of PLOs, one at the exemplary level and another at the minimal level. Choose evidence from embedded assignments, projects, or exams that are normally included as part of the class with an appropriate degree of independence.
- PLO being assessed this semester:  
Upon successful completion of the ASNS Degree Program, students will be able to explain the natural and technological world using reflection and quantitative analysis including preparation of a plan to collect, process, and interpret data; evaluation of the plan, procedures, and findings; and communication of the conclusions.
- Hallmarks that this course PLO supports  
To satisfy the **Physical Science (DP)** area requirement, at least two thirds of a course will
  - Use the terminology of the physical sciences.
  - Involve knowledge and theories relating to processes in the physical sciences.
  - Demonstrate inquiry that is guided by observation/experimentation and reasoning and mathematics.

*Briefly describe coursework designed to prepare students to demonstrate this PLO - Cyanotype Photography as an Example of a Photochemical Redox Reaction is a very good example of an experiment that demonstrates the effects of chemical and physical effects on the natural world and technological applications that are related. This activity involves making blueprints of objects and requires a background in the concepts of oxidation and reduction. Students need to discuss the environmental variables, such as the effects of ambient light, variations in wavelength, and length of exposure. The nature of sunscreens is an excellent application of the concepts explored in this experiment. All activities require a series of pre-laboratory exercises that incorporate a review of the technical and scientific background, practical questions that relate to the topic, and a concise summary of procedures that will be carried out. During the experiments, predictions are made, observations are recorded, data are collected, and calculations are carried out. Results are analyzed, summarized, and a standard laboratory report is submitted. This evaluator notes that the laboratory report format has been added to the Chemistry 161L/162L series.*

This evidence is rated exemplary - *Briefly describe your assessment evidence as it correlates with the PLO hallmarks and identify qualities in the student work that establish exit-level quality appropriate for the ASNS degree.*

All the hallmarks are clearly covered by this course and support the PLOs for the ASNS degree. This student's work thorough and well explained indicating a good background in the concepts being explored.

This evidence is rated minimal - *Briefly describe your assessment evidence as it correlates with the PLO hallmarks and identify qualities in the student work that establish exit-level quality appropriate for the ASNS degree.*

All the hallmarks are clearly covered by this course and support the PLOs for the ASNS degree. This student's work was brief but not incorrect and in some instances incomplete. No data table was included and the standard laboratory was submitted.

*Briefly describe other coursework through which students demonstrate achievement of the hallmarks for this PLO - All the experimental activities in CHEM 161 lab are inquiry-based and demonstrate that students use the terminology, knowledge, and theories of the physical sciences. The experimental process requires that students record observations, process data, and summarize results.*