**Affordable Learning Georgia Affordable Materials Grants  
Continuous Improvement Grants Final Report**

*(or Mini-Grants, for R17 and earlier)*

# General Information

Date: 12/16/2025

Grant Round: 26

Grant Number: M299

Institution Name(s): University of Georgia

Team Members (Name, Title, Department, Institutions if different, and email address for each):

Jessica Jensen, Senior Lecturer, Chemistry, JMJensen@uga.edu

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Project Lead: Jessica Jensen

Course Name(s) and Course Numbers: General Chemistry for Scientists and Engineers I (CHEM 1411), Advanced General Chemistry I (CHEM 1311H)

Final Semester of Project: Fall 2025

***If applicable to your project:***

Average Number of Students Per Course Section: 35

Number of Course Sections Affected by Implementation of Revised Resources: 4

Total Number of Students Affected by Implementation of Revised Resources: 140

# Project Narrative

*Describe the course of your revision or ancillary creation project, including*

This project was intended to produce three case studies that could be used in advanced chemistry classes. This was meant to supplement the more straightforward recitation worksheets previously developed for the main sequence of the course (<https://oer.galileo.usg.edu/chemistry-ancillary/17/>). Case studies were intended to provide more difficult problems and better connection to real world concepts for the honors and majors classes. The plan was to have each team member research and write one case study over the course of the spring and summer, edit them during the summer, then trial the case studies in the fall classes of CHEM 1411 and CHEM 1311H. This plan was generally followed, with topics chosen in the spring semester based on student performance on exams. Topics that students generally performed poorly on were prioritized. 2 of the 3 case studies (electrolytes and bomb calorimetry) were trialed in fall classes. Student feedback was solicited and edits were made to the case studies based on comments in Fall 2025. Suggestions for implementation based on this feedback were incorporated into the keys.

In the future, we would implement case studies during a semester that classes are not undergoing a major revision. While the case studies were intended to help with this revision, one of them was not tested because of unforeseen time constraints in the new formats for both CHEM 1411 and CHEM 1311H. However, the two that were tested helped distinguish the advanced classes from the main sequence. Students seemed to like the case studies best that incorporated real-world data and problem-solving with the kind of problems that might be expected to solve on an exam. Future creation of cases studies will try to walk this line of real-world and exam relevance.

# Materials Description

*Describe all the materials you have created or revised as part of this project. These descriptions may be used in the* [OpenALG](https://alg.manifoldapp.org/) *repository description field. Include the* [*open license your materials will be shared under*](https://creativecommons.org/share-your-work/)*—for most materials, this will be an Attribution 4.0 License (CC BY) as required in the Grants Request for Proposals.*

A case study and key over electrolytes was created. This case study attempted to connect the concept of electrolytes to electrolyte drinks that are currently on the market. A case study and key over bomb calorimetry was created. This case study attempted to connect bomb calorimetry to biofuel development and environmental concerns. A case study and key over precipitation was created. This case study attempted to connect precipitation to water remediation, concentration units, and solution stoichiometry.

# Materials Links

*If you are hosting your materials in places other than OpenALG, please provide these links in this section. Otherwise, leave blank. Note: we cannot access D2L or Canvas links.*

# Future Plans

* *Describe any planned or actual papers, presentations, publications, or other professional activities that you expect to produce that reflect your work on this project.*
* *Describe any plans to revise or add to these materials in the future.*

These case studies will feature in Dr. Jensen’s poster presentation at the UGA Active Learning Summit. We plan to continue revising these case studies based on student feedback, especially the precipitation case study that could not be trialed. This includes revising instructions and content for greater student understanding.