

**Departmental and Program Teaching and Learning Mini-Grant Application**  
**Brenda Kelly, Chemistry department chair**  
**July 2, 2014**

**What are the basic pedagogical ideas, problems, or questions you will examine during the grant period?**

Over the past ~six years, the Chemistry department faculty have been making modest within our curriculum to give our students more research-like experiences in our laboratories, to develop and utilize more active learning strategies in our classrooms, and to make more transparent the student learning outcomes (content and skills) associated with our courses. Within this work and associated discussions, we realized that the CHE-107 laboratory has not received very much attention at a department-wide level. Through resources garnered from this mini-grant, we wish to invest time and energy toward this course laboratory, which is the ONLY lab that some Gustavus students experience.

**Please describe the course that you will focus on during the grant period.**

CHE-107 (Principles of Chemistry) is the introductory chemistry course at Gustavus and is enrolled by potential physical science majors, life science majors, students interested in a health profession, and a myriad of other students. Changes were made to the laboratory experiments in 2008-2011 that were in alignment with the HHMI and NSF-TUES grant proposals and a department goal to introduce CHE-107 students to all of the subdisciplines of chemistry, however, the department has never (to my knowledge) had a deep and thorough discussion about student learning outcomes (*i.e.* practical skills, thinking about data). This lack of discussion makes assessment of the laboratory, the changes to the curriculum, and student learning associated with the laboratory very difficult.

**What work will be accomplished during the grant period?**

Through this grant, we propose to identify CHE-107 learning outcomes and think about how the current lab and lab support meets these outcomes. For any outcomes that are not being met or are not adequately met, we will discuss experiments, assignments, or other tactics to meet said outcome/s. Then, we will discuss the changes that we wish to make for the fall 2014, changes for the near to mid-future, and identify topics that need further discussion before change is implemented.

**Project Timeline**

Summer 2014—Summer departmental retreat focused on CHE-107 laboratory learning outcomes and curriculum.

Late summer 2014—work on changes for the fall 2014 course (*i.e.* lab manual, assignment descriptions, etc)

Fall 2014—Run the CHE-107 lab course with the aforementioned changes and collect data for assessment.

Jan 2015 or summer 2015—Summer departmental retreat to discuss outcomes from the fall 2014 course and to discuss how to proceed in the fall 2015.

**How will you measure the outcomes and impact?**

Faculty anecdotal evidence: CHE-107 faculty will meet on a weekly basis to discuss the laboratory of the previous week and in anticipation of the next week. We will discuss the impact (from a faculty perspective) of the incorporated changes at our weekly meetings.

Student perception evidence: We conduct a SALG-like (student assessment of their learning gains) survey at the end of the semester in CHE-107. We will add several questions to the survey that relate to the changes made in CHE-107.

Student direct evidence: We will collect student assignments and/or grading rubrics associated with the new or altered assignments as direct pieces of evidence for achievement (or not) of the learning gains/goals. We will ask the experienced laboratory teaching assistants to complete a perception survey about their experience with the CHE-107 students in the fall 2014 relative to previous years.

**Anticipated completion date:**

This will be an on-going project. However, we should be able to report on the 2014-2015 efforts by August 1, 2015.

**Explanation of the budgeted items:**

**Materials:** We anticipate that some of the changes to CHE-107 will involve tutor and TA training and materials that will assist 107 students in achieving the outcomes associated with the lab. The \$200 is an estimate for paper costs for snazzy flyers promoting lab tutoring and training materials for our lab TAs/tutors.

**Food:** We will need food/refreshments for the two faculty retreats (2 x \$100). We anticipate food costs for students during training events and potential group grading events that are estimated at \$400 for the semester.

**Student labor:** We anticipate that we will need a student worker to scan CHE107 student lab notebooks and other assignments that are associated with the established student learning outcomes. We estimate that this student would work two hours/week for the fall 2014 semester and approximately ten hours in Jan 2015 for a total of 38 hours. If we decide to have a CHE-107 specific laboratory tutor, then this person would work two hours/week for 14 weeks. See see pr

**Budget Proposal Form for Mini-grants: Individual and Departmental/Program**

**Individual(s) or Department/ Program Name(s)**

**1. Chemistry department--**

**CHE-107 project** \_\_\_\_\_

**2** \_\_\_\_\_

**3** \_\_\_\_\_

**3** \_\_\_\_\_

Item		Cost	
<b>Equipment</b> (not to include computer hardware)			
1		\$0.00	Fill in items and amounts.
2		\$0.00	
3		\$0.00	
4		\$0.00	
5		\$0.00	
Subtotal A		\$0.00	
<b>Materials</b>			
1	flyers and training materials	\$200.00	see proposal for explanation
2			
3		\$0.00	
Subtotal B		\$200.00	
<b>Registration</b>			
1		\$0.00	Fill in items and

2		\$0.00	amounts.
Subtotal C		\$0.00	
<b>Travel Costs</b>			
Airfare		\$0.00	Fill in items and amounts.
Car rental		\$0.00	
Taxi/shuttle		\$0.00	

Mileage (Reimbursements for mileage are capped at \$350.)	0		\$0.565		
	# of miles	x	per mile	\$0.00	auto-calc
Lodging	0		\$0.00		
	# of nights	x	cost per night	\$0.00	auto-calc
Food (Food costs will be reimbursed provided itemized and reasonable receipts are submitted.)	1		\$600.00		
	# of days	x	cost per day	\$600.00	auto-calc
Subtotal D				\$600.00	
<b>Student Labor</b> (Please make sure your proposal explains the need for student labor and the precise duties that will be expected.)					
Academic Year	66	x	\$7.25	\$478.50	auto-calc
	# of hours		pay per hour		
Summer (auto-calc total includes 8.77% benefits)	0	x	\$0.00	\$0.00	auto-calc
	# of hours		pay per hour		
Subtotal E				\$478.50	
<b>Total Expenses</b>				<b>\$1,278.50</b>	auto-calc
<b>Amount Requested (cannot exceed \$1500)</b>				<b>\$0.00</b>	fill in