

## New Course Application

**Course Title:** CHEM 3700 – Peer Learning Assistants in Chemistry

**Computer Title:** Peer Assistant

### Course Description:

Students will serve as Peer Learning Assistants (PLAs) in a General Chemistry laboratory course. Working alongside the graduate laboratory assistant in charge of the laboratory section, PLAs will serve as a resource to help students answer questions about experimental design and measurements, and ensure that students follow safe laboratory practices.

**Required Prerequisites:** CHEM 1212 and CHEM 1212L or CHEM 1312H/1412 and CHEM 1312L/1412L

**Prerequisite or Co-requisite Courses:** FCID 3100 (currently under review as a new course)

### Course Objectives or Expected Learning Outcomes:

1. Demonstrate strong theoretical and practical knowledge of the topics and techniques addressed in each laboratory experiment
2. Deliver an effective pre-lab presentation on the experiment to be performed that day
3. Develop proficiency in evaluating students lab reports and exams
4. Employ effective listening, questioning, and formative feedback techniques
5. Demonstrate good teamwork skills in interactions with the graduate laboratory assistant and other PLAs

### Topical Outline:

Duties:

1. Co-teach one laboratory session each week. Prepare for teaching activities in consultation with the faculty instructor and the assigned TA.
2. Present the pre-lab lecture 3-4 times during the course.
3. Assist the instructor and graduate assistants in evaluating laboratory assignments and written examinations following a detailed rubric.
4. Attend the weekly laboratory pedagogical content session conducted by the faculty instructor.

Representative Example of Experiments (CHEM 1312L):

1. Macromolecule Synthesis & Characterization (1 week)
2. Nanoparticle Synthesis & Characterization (1 week)
3. Coordination Compound Synthesis & Characterization (2 weeks)
4. Reaction Kinetics, Determination of Rate Law and Activation Energy (2 weeks)
5. Equilibrium Constant Determination & Ionic Strength Dependence (1 week)
6. Qualitative Analysis of Multi-component Unknown Sample (1 week)
7. Determination of Acid Dissociation Constants (1 week)
8. Self-directed experiment (2-3 weeks)

### **University Honor Code and Academic Honesty Policy:**

This course is governed by the UGA Academic Honesty policy (<http://www.uga.edu/honesty/>) Questions related to course assignments and the UGA Academic Honesty Policy should be directed to the instructors.

### **Comments:**

More UGA students start as STEM majors than graduate with STEM (Science, Technology, Engineering, Mathematics) degrees. Typically, 10-30% of students pursuing a B.S. degree receive grades of D, F, W in introductory STEM courses. This high percentage of unsuccessful student performance leads to the term “gatekeeper” courses - a handful of courses that end many STEM careers. With assistance from the Office of STEM Education and funding from the Board of Regents, several UGA STEM departments will directly address this problem in a program that features the involvement of Peer Learning Assistants (PLAs) in many of these gatekeeper courses. Peer assisted learning generally describes a system in which undergraduate students who previously succeeded in the gatekeeper course are provided training and guidance, both in subject content and pedagogy, and then become involved in various ways in helping current students to succeed.

Involving PLAs in introductory courses has been demonstrated to be a highly effective strategy for increasing student retention and success in introductory STEM courses, especially for students from traditionally underrepresented groups. The nationally recognized program pioneered at the University of Colorado (<https://laprogram.colorado.edu/>) identifies three key components of a PLA experience: **content**, **practice**, and **pedagogy**. PLAs will have demonstrated content mastery by their previous performance in the course and, in addition, will meet with the instructor periodically to review current material presented in class. PLAs will receive practice through the course described in this application, which is specific to the chemistry discipline. The third component, pedagogy, will be provided in a one-hour pre- or co-requisite course (FCID 3100, which is currently under review as a new course) that will introduce PLAs to current research findings on how people learn, review proven strategies for engaging undergraduates in active learning in introductory STEM courses, and offer opportunities to model effective teaching practices with in-class group activities.