



# Department of Chemistry

University of Central Florida  
Department of Chemistry Seminar Series – Fall Semester 2023  
Friday, September 22, 9:00 AM, Location CB2 105

## Developing Guided-Inquiry Labs for General Chemistry that Incorporate Inclusivity and Engaged Student Learning



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Host: Dr. Julie Donnelly

General Chemistry labs are a requirement for many STEM majors and are often the only chemistry experience students will have. This in turn means the large number of students required to register for general chemistry labs include a diverse range of interests, previous chemistry experience, and majors. In addition, these courses are often taught by multiple instructors and graduate teaching assistants often with high turn-overs. Together, these factors make it challenging to adopt active learning strategies. Reformed Experimental Activities (REActivities) were developed for the undergraduate organic chemistry lab curriculum; we are expanding on this work to general chemistry. REActivity laboratory courses provide students the opportunity to perform the chemistry that is discussed in lecture, engage in peer collaboration, and fun, low-risk practice time to develop learning lab skills and transferable skills. It is important that these courses also help improve student confidence in the laboratory and student attitudes towards chemistry. These experiments will be designed to be easily adopted with minimal training, use equipment common to general chemistry labs, and eliminate the need for pre-lab lectures. Using an iterative design process, new laboratory experiments are being created for General Chemistry labs. Topics include chromatography, titrations, electrochemistry, equilibrium, kinetics, buffers, crystal structure, and solubility. These experiments are being written and tested to ensure transferability across a variety of lab instructors and transportability of materials among diverse sites.

### **Bio:**

Courtney earned her PhD in Chemistry Education from the University of Iowa, on examining the role that the instructor and course materials have on student engagement in active learning classrooms and how to design educational innovations for sustained adoption. She did her post-doc at Virginia Commonwealth University, where she focused on the incorporating and assessing professional skills in STEM classrooms. She has spent 10 years working with faculty to integrate evidence-based teaching practices into their classrooms and assess curricular materials. Currently she is an Assistant Professor of Teaching at the University of Rochester teaching the general and organic chemistry labs. Here she has been busy converting their traditional laboratory courses into guided inquiry labs that can be facilitated with minimal TA training.