Chemistry Laboratory Course Descriptions for Fall 2020

**CHM 111L Lab Course**

The CHM 111 lab course is designed as an introduction to basic laboratory skills; such as safe chemical handling, knowledge of basic glassware and equipment, making solutions, carrying qualitative and quantitative assessments, keeping a laboratory notebook, and writing a lab report. Such skills serve as the foundation for laboratory techniques that are taught in higher level courses in the chemistry major, but are also applicable to laboratory work in other disciplines, such as biology, geology and engineering.

We have chosen to focus on a combination of videos, simulations, written resources and small group activities, with the lab instructor moderating as a means of delivering the intended content. One of the planned activities is a hands on experiment designed for students to conduct in their own homes using a cell phone and a mailed kit. The kit will most likely contain some plastic glassware, some food-grade solutions and a molecular model set. Since a big benefit of in-person labs was the social interaction, we plan on time built in at the start and throughout the semester for social interactions with peers to foster a sense of community within each lab section.

Lab meetings will occur synchronously during the approximately three hour period (with multiple breaks) on schedule, but each session will also be recorded on Zoom to allow as much flexibility as possible for students who need to participate asynchronously. We are designing the course material with both types of students in mind. We will encourage all students, but particularly those who need to participate asynchronously to check in frequently for one on one student hours with their instructor.

We look forward to sharing with you this learning experience and getting to know you over the course of the semester!

**CHM 114L Lab Course**

The CHM 114 lab course is designed for students with strong high school preparation in chemistry topics (often an AP Chemistry score of 4 or 5, or equivalent) and provides an introduction to basic laboratory skills such as safe chemical handling, knowledge of basic glassware and equipment, making solutions, making qualitative and quantitative lab observations, and keeping a lab notebook. Such skills serve as the foundation for laboratory techniques that are taught in higher level courses in the chemistry major, but are also applicable to laboratory work in other disciplines, such as biology, geology and engineering. Students will also have a chance to practice scientific communication skills by learning how to write a chemistry lab report and give a scientific presentation.

The corresponding lecture will be taught later (in the January interterm), so the CHM 114L course will be primarily a standalone lab, but nevertheless we will explore topics that you will see again in the later CHM 114 lecture, so students are highly recommended to enroll in both.
Each week in lab, students will review materials posted online beforehand to prepare for the upcoming lab procedure. Then, during the scheduled class time, students will join a video call with the instructor, who will be present in the Smith lab room to conduct the experiment - directed primarily by the students! - with plenty of time for explanations and questions. Afterward, you will have opportunities to connect with fellow students in small group work on writing and presentation assignments.

The video call portion of class will have breaks and will likely not last the entire period to minimize “Zoom fatigue.” For students for whom real-time participation might be difficult, each live session will also be recorded and made available on the course website. Students are free to schedule meetings with the instructor, and with their partners in group work, at any times that are mutually convenient. We encourage all students, but particularly those who need to participate asynchronously, to check in frequently with the instructor to keep communication open so the course can be as successful as possible for everyone.

You are encouraged to contact the instructor (Joe Yeager, jyeager@smith.edu) if you have questions about the level of prior chemistry experience recommended or any other aspects of the course. Hope to see you in CHM 114L this fall!

**CHM 223L Lab Course**

The CHM 223 lab course is the lab associated with the Organic 2 lecture. This lab is designed to introduce and develop concepts and skills important for conducting organic chemistry research. Many of the exercises and assignments actively reinforce or complement content from lecture. The following list is not exhaustive, but students will learn skills for safely navigating an organic chemistry laboratory, making predictions about experimental outcomes, interpreting data (especially NMR!) to draw conclusions about organic chemistry experiments, and effectively communicating research results and analysis orally and in writing.

Lab meetings will occur synchronously on zoom during the approximately three hour scheduled period. While we will record the zoom sessions and meet with students who miss individual lab sessions so that they can catch up, regular attendance and participation in the synchronous sessions is expected. The lab sessions will be interactive, regularly featuring group work in break out rooms, and there will be breaks - none of us can stare at a zoom screen for 3 hours straight!