Statement of Teaching Philosophy

The most important learning outcome I pursue in the classroom is the development of the critical thinking skills necessary for students to grow into exceptional scientists and informed citizens. In the geosciences, we seek to understand broad-scale, almost infinitely complex systems and processes, many of which occur in spaces and timeframes that are not directly accessible to our research efforts. The primary challenge of geoscience instructors is therefore to shape curricula and frame coursework such that students develop a simultaneously comprehensive and precise understanding of geologic processes, without overwhelming the student or resorting to rote memorization of complex concepts. With five years' experience instructing interactive lab sections for undergraduate geology major courses, I have had the opportunity to develop as an educator and refine my teaching style and techniques to maximize student comprehension and engagement. My experience teaching students from a variety of socioeconomic, ethnic, and educational backgrounds has prepared me to recruit, retain, and empower geoscience students from traditionally underrepresented backgrounds, promoting excellence and inclusivity at Mines and beyond.

My primary goal for students in my classroom is to develop the toolbox of practical and intellectual skills required to tackle complex geological problems. I believe in minimizing assessment based on rote memorization (quizzes, closed-book exams), as I have observed holistically improved learning outcomes from interactive, collaborative, and inquiry-based activities. I always encourage students to be actively engaged with the material, their classmates, and me. From 2015 to 2020, I taught lab sections for two courses required for UCLA geology majors: EPSS 51: Mineralogy in fall quarter, and EPSS 103A: Igneous Petrology in the following quarter. Teaching both courses subsequently allowed me to become more familiar with the students I have two quarters in a row, as well as assess students' Mineralogy learning outcomes when they returned to my classroom for their first upper division lab class, Igneous Petrology. I used that information as an additional tool to refine and reinforce particular skills and concepts in both courses. I make a continuous effort to improve my teaching and assessment techniques according to my personal experience, as well as evidence-based practices from education research.

As a teaching assistant I was afforded latitude to modify the delivery of laboratory curricula. **One of the ways I have modernized my classroom is to implement research-based learning modules**. In Igneous Petrology, for example, I implemented a quarter-length research project. This project was designed to mimic the process of scientific research and emphasize the skills I believe are most valuable: scientific curiosity, critical thinking and data interpretation, and communication of scientific results. Students formulated their own research question and wrote a proposal, which I evaluated for background research, feasibility, and scientific merit. I worked with students to refine their hypotheses, locate and prepare specimens for analysis, and introduced them to new analytical methods and data sources as needed for their project. At the end of the quarter, students presented their results to their classmates in conference-style 15-minute talks and wrote letter-style articles for the fictive "UCLA Journal of Igneous Petrology". Inquiry-based modules such as this, that mimic scientific research, give students the opportunity to feel greater ownership and a sense of accomplishment in their learning. It also allows more flexibility for students who may not perform to the best of their ability in traditional exams. I have additionally observed, in recent years, a need for greater scaffolding of study skills and encouragement towards critical thinking than is typically incorporated into traditional lecture-laboratory courses. I incorporate this philosophy into my pedagogy using structured notetaking

and problem-solving assignments that encourage students' accountability and progressive independence throughout the term.

I have experience creating modules that utilize virtual instruction tools, including an Igneous Petrology laboratory exercise I designed using the ZirChron virtual zircon analysis app (created by the Isotope Geology Laboratory at Boise State). Students succeeded in learning the basics of petrochronology outside of the classroom using an interactive activity that is well-suited to virtual learning. I additionally transferred most of the Mineralogy laboratory assignments to the UCLA LMS in Fall quarter 2019 in order to streamline classroom logistics and improve turnaround on grading. Adapting the curriculum to online tools has improved the versatility of my curricula for in-person instruction as well as prepared me for the opportunities and unique requirements of remote learning circumstances. The development and application of creative, effective teaching tools is one of my core pedagogical goals; in the future I look forward to continuing to incorporate alternative teaching methods.

In accordance with my commitment to developing students' learning skills in addition to topic-specific proficiency, **I believe an accommodating classroom is an effective classroom**. I believe I have a fundamental duty to help students succeed in my classes and learn important skills, even if that means making accommodations or being flexible in the way I present material. Students are a lot like the minerals and rocks I teach them about: they come from a wide variety of settings, have varied ages and histories, and each require a somewhat different environment to develop and grow. A student who starts a four-year degree at 18 years old and lives on campus will likely have different needs than a commuter student who transferred from community college. First-generation college students will adapt to and experience university life differently than students coming from families for whom terminal degrees are the norm. Students may face learning obstacles due to personal circumstances such as children, athletic commitments, financial hardship, or disability status. Not everyone will find success in a one-size-fits-all learning environment, regardless of their academic potential. I balance flexibility and accommodation with an uncompromising standard of excellence for students' work.

The corollary to an accommodating classroom is a classroom which accepts and uplifts students of all identities. Science fields face a serious challenge to improve diversity and inclusion along the axes of gender expression, ethnicity, sexuality, and socioeconomic circumstance. As an early career educator working to develop the next generation of geoscientists, I feel it is fundamental to my teaching mission to bring access and success to students from all walks of life, not just those who have been historically represented in science. At UCLA I had a special opportunity to work with one of the most diverse student bodies in the country. Teaching this unique population of motivated students has not only given me experience with a wide range of individuals, it has also given experience in uplifting and encouraging students who may not feel traditionally welcomed by academia. I prioritize an open an accepting classroom where everyone can achieve, regardless of identity. It has been especially rewarding to me as a woman scientist to help educate and inspire other young women to develop their skills and pursue their goals in the classroom and beyond.

I believe my role as a teacher and mentor is one of the most important ways I can promote science. Through innovative teaching tools, flexibility in the classroom, and a high standard of excellence, I bring students of all backgrounds together with a shared enthusiasm for Earth science and the natural world. In my future teaching endeavors, I look forward to expanding upon the experience and creativity in the classroom that I have developed, and continue to inspire excellence and a love for the geosciences in my students.