

Statement of Teaching Philosophy

My goal in teaching is to help students become independent learners, capable of seeking out new information, critically assessing and integrating this information with their current knowledge, and effectively communicating what they have learned to others. In my teaching, I seek to encourage a sense of curiosity, responsibility, and independence in my students. I provide students with clear goals and expectations and frequent opportunities for feedback that allow me to assess student progress in learning and effectiveness of my teaching. Below, I highlight several of my approaches to teaching that address my overall goal of helping students become independent learners.

1) Bringing active learning and alternative teaching methods to large lecture courses.

I participated in a semester-long upper level graduate course at the University of Washington, where I learned a number of alternative methods for teaching and assessment of student learning that can be applied in all teaching environments. As part of the workshop, I designed a teachable unit on Conservation Genetics for a large lecture course that integrated active learning through small group discussions, case studies of real-life applications, and periodic assessments of student learning.

In a position at UC Riverside, I would use these methods in teaching undergraduate courses (such as animal physiology or animal behavior). For example, I would use frequent graded quizzes (perhaps with clickers) to encourage attendance and to allow ongoing assessment of student learning. I would engage students in the classroom using Socratic teaching, random-call questioning, small group discussions, and presentation of case studies of pathophysiology. I would use readings from a text and the primary literature to complement in-class lectures and discussion. If possible, I would also seek to incorporate a group assignment involving conducting an independent research project to provide the students hands-on experience in testing a hypothesis relevant to the course material. In some courses, I would incorporate self-guided field trips to areas on campus and in the local area, to encourage the students to take the abstract concepts they are learning in the classroom outside and apply them to their observations of nature.

2) Active discovery and a holistic approach to teaching physiology.

Physiology is often taught in a reductionist manner that strips the subject matter from its evolutionary, and even organismal, context. While this approach may be appropriate for certain teaching goals, I aim to provide a more holistic view of physiology that offers an accurate and complete picture of physiological systems within organisms, while actively engaging students' curiosities. For example, I designed and taught an introduction to physiology course for veterinary technicians, where I used veterinary case studies to illustrate the importance and applicability of the concepts of physiology to veterinary medicine. I also presented physiological systems from the perspective of evolutionary problem-solving. In this way, the students became actively engaged in the discovery of physiological systems, recognizing both the evolutionary context of each system and its role within the organism. In a position at UC Riverside, I would use a similar approach in teaching physiology, drawing on examples from the primary literature and explaining physiology within a holistic, evolutionary framework.

3) Independent research and small group discussions.

One of the best means of introducing students to science is through hands-on experience with the scientific process. Throughout my academic career, I have mentored students in hands-on learning through direct involvement in research. In such opportunities, I encourage students to devise and conduct independent projects while contributing to a larger research program, providing them with first-hand experience in science, from the creative task of forming a research question all the way through to publishing their findings. I also emphasize collaboration in learning and in research in part through lab meetings that involve readings and discussions of fundamental topics in science, including study design and strong inference method, the basics of communicating scientific findings, and ethics in science. I find that discussion of these fundamental topics is incredibly valuable for scientists and students at all stages of their careers. In a position at UC Riverside, I would enthusiastically continue to offer such opportunities to students through independent projects, field courses, lab meetings, and opportunities to participate in research in my lab.

4) Mentoring independent learners.

Over the past 4 years at Queen's University, I have supervised 6 undergraduate honors students as they completed an independent fourth year research project and presented results of that project orally, in a poster presentation, and in a written thesis (all requirements of the program). This experience has helped me develop my skills as a mentor and shaped my philosophy of student supervision and teaching. One of the central lessons that I have learned from this experience is that no two students are the same, and so, no one approach to mentoring will perfectly suit every student. Just as we expect students to adapt and learn as they progress through their academic careers, so too should mentors adapt and learn as they discover their students' strengths, weaknesses, and needs. I am building on my repertoire as a mentor – developing my ability to know when to provide more structure and guidance, and when to step back and allow a student freedom and space to find their own learning path. My goals in mentoring are similar to my teaching goals – I hope to help students to become independent learners and effective communicators. My strategy with student mentoring is to start with clear goals, defined both by me and by the student. Initially, I offer limited structure and direction, allowing students the freedom to formulate research questions that they find compelling and design projects to address those questions. I step in if I see the student struggling, to provide clear and focused guidance, and then step back again to allow the student room for growth. I think this approach has been very successful – students working with me have achieved their goals, from earning high marks for their theses, to going on to graduate school or securing a professional position. I look forward to continuing to learn how to be an effective mentor while guiding the talented undergraduate and graduate students at UC Riverside.