

## STATEMENT OF TEACHING

### Teaching Philosophy and Objectives

I believe there are two main objectives an instructor has when teaching a class: **(1)** present the core concepts of the course in a clear and comprehensible fashion, ensuring that the students are understanding and synthesizing the material, and **(2)** demonstrate strategies that will allow the students to not only learn the course material, but allow them to better observe and understand the world around them. In my teaching, I try to establish or reinforce critical thinking and problem-solving skills in both exercises and discussion. When possible, I ask my students to relate the ideas we have talked about in the course to examples from their own life experience. I want my students to recognize the growing challenges of living in an increasingly connected world, where the pressing environmental challenges of our time can be easily misunderstood due to confirmation bias.

I also recognize that every student is different and has a unique background. I try to be approachable and accessible as some students feel more comfortable asking questions once lecture has ended. I have found that once a wary student has developed a rapport with the instructor, either by asking questions after lecture or by attending office hours, they become more active in classroom discussions. Instilling confidence in students leads to a more productive learning environment and better outcomes. I believe that the students I teach will be on the front lines of attacking our world's greatest problems, and I encourage and expect them to do so.

### Teaching and Mentoring Experience

I had the opportunity to serve as the lead instructor for three upper division undergraduate courses while I was completing my Ph.D. I have received excellent evaluations from my students, which were substantially higher than the departmental and campus averages for all courses I taught. Some student comments include: *"Tom was a great professor! I enjoyed his class and the material was always interesting. He did a great job getting the material across, and his enthusiasm for the class was awesome."* and *"Really interesting content and good class structure. One of the classes I learned the most in."* I invite you to review my course evaluations in the links below.

### Remote Sensing Techniques (Spring 2015)

Examined data extraction and radiative transfer relevant to remote sensing, focusing on applications for environmental monitoring and natural resource management. Lab exercises developed skills for advanced processing of satellite data, including linear transforms, image correction, and change detection. I implemented independent projects where groups formed a research question and analyzed a time series of imagery to reach a conclusion. Results were presented in class as well as a poster session which was open to the public.

[Quantitative Evaluations](#)

[Qualitative Evaluations](#)

### Introduction to Marine Resources (Fall 2015)

An overview of the marine resources of the California coast, addressing the interplay of oceanographic, climatic, biogeochemical, and geologic factors as well as the influences of humankind. Topics included climate, circulation, biogeography, fisheries, marine mammals, petroleum, pollution, and exploration history. The course included a project where student groups research different marine stakeholders (fisherman, environmental advocates, Native Americans, recreation, etc.) and came to a consensus on a design for a system of marine protected areas along California.

[Quantitative Evaluations](#)

[Qualitative Evaluations](#)

### Biogeography (Summer 2016)

Processes governing geographic distribution patterns of biota, including migration, evolution, isolation, and endemism, including an introduction to island biogeography. I designed the entire course structure including all lectures and discussion sections. The course included a three-day field trip to the California central coast.

[Website](#)

[Quantitative Evaluations](#)

[Qualitative Evaluations](#)

I have also had the opportunity to mentor 21 undergraduate and nine graduate students on a variety of projects involving population dynamics, physiology, and remote sensing methods. Through this experience I have learned how to help students plan a project and set goals. Every mentee responds to a different amount of independence. I start with regular meetings with new mentees and then scale back if it is clear they are making progress on their own, however I try to be as available as possible for questions and discussion. I believe that this experience has prepared me to advise graduate students of my own and has taught me the importance of modeling professional responsibility, encouraging the effective use of time, and fostering independence.

### **Teaching Approach**

My general approach for teaching is based on four aspects, which I believe help students with the conceptual understanding and retention of the course material and create a positive learning environment. These aspects are: **(1)** keeping a focus on the ‘big picture’, **(2)** understanding the progression of the field and giving historical context, **(3)** encouraging and allowing time for feedback and discussion, and **(4)** real world experiences through data collection and field trips. I have had the opportunity to instruct several courses which focused on a varied range of topics from technical courses such as Remote Sensing Techniques to broad overviews such as Biogeography. I have found success in implementing these four aspects into every course I have taught.

*Focusing on the ‘Big Picture’* – Over the past few decades, there has been an increasing focus on interdisciplinary studies in the natural sciences. While it will always be important to specialize in a particular field of study, today’s environmental challenges require an understanding of many interconnected parts, which may span several fields. Teaching a course that moves between disciplines can lead to a scattered series of lectures where students can get lost in the details. In my lectures, I immediately relate a new idea back to the overall theme and explain why this is important to the overall field. It is important to keep in mind that learning comes not from merely knowing a series of facts or ideas, but from understanding how they are connected and form an overall concept.

*Understanding Context* – I find that students gain perspective on how and why a subject exists by providing historical context. I do this in two ways: first by identifying and giving brief biographical details of the scientist who developed a particular concept, and second, by assigning digestible and formative primary literature which introduces or summarizes said concept. I find that this historical context provides students with an understanding of the intellectual and technological advances that developed the field. It is important to realize that our current state of understanding was mostly incremental and that many theories we take for granted were fiercely opposed and took many years to gain acceptance, like plate tectonics. Finally, I try to link in recent, popular scientific discoveries that are relevant to the subject matter, both in the lecture and as an evolving list of optional readings on my course websites. The addition of these materials not only attracts the students’ attention, but also links the sometimes seemingly esoteric concepts to interesting applications.

*Encouraging Feedback and Discussion* – I have a high expectation of classroom participation for my students. I reserve time at the end of each lecture to discuss how the ideas and themes from the course relate to the students’ experiences. I invite the students to find examples from their own lives where the concepts from the course may help explain a process or pattern they have observed. I also take regular breaks during the lecture to explain concepts on the white board. This gives the students the opportunity to ask questions, so I can take their feedback and adjust my figures to better explain the concept at hand.

*Importance of Experiences in the Field* – Earlier this year I was invited by the Dean of Undergraduate Education at UC Santa Barbara (Dr. Jeffrey Stoppie) to give a lecture to the incoming freshman honors students. I was asked to speak on a topic I was passionate about, which would also serve as a valuable lesson for new undergraduates. I told them to take full advantage of courses that include some type of field experience. I try to include a field component in every course I teach, whether it is a multiday camping trip to observe biogeographical patterns, or a single laboratory period to collect unmanned aerial system (drone) imagery or validate satellite retrievals.