

## **Making Environmental Science Relevant to a Diverse Student Body at ASU West**

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The School of Mathematical & Natural Sciences at the West Campus of Arizona State University serves a very diverse population of students, with ~40% of our majors from Hispanic, Asian-American, American Indian, and African American ethnicities, and half female. Most of our students come from the local Phoenix area, and their urban background may influence their perception of the relevance of environmental science to their every-day lives. Environmental science courses can maintain their relevance to students that do not feel a strong connection with their natural world by being taught from a human-oriented perspective. In many of our courses, we highlight the relationship between the environment and human well-being. For example, one upper-level course in the Environmental Science concentration is called The Human Environment (LSC 362), which explores human beings' interactions with the biophysical world, particularly how we are changing our world and our world is changing us. Earth system and environmental science topics, such as climate, biogeochemical cycles, and water, are covered by explaining how humans rely upon and influence these environmental properties, and therefore how environmental science shapes humans' past and future.

To maintain societal importance, we leverage our place in the Sonoran Desert, focusing often on local environmental issues and involving students more in the meaning of socioenvironmental issues in their Sonoran Desert home. For example, in the Fundamentals of Ecology laboratory (LSC 322), many of our lab exercises study the impacts of urbanization and human management decisions on environmental properties (e.g., soils). We aim to have students investigate the impacts of human activity on ecological interactions in the Sonoran Desert beyond basic natural history of the geology, plants, and animals.

Beyond the overall "slant" of our courses, several other methods are used within many of our courses. Many of our faculty use recent news articles and main-stream media clips in lecture to engage students in the societal relevance of environmental issues to economics, public policy, and current political issues. Our classes are relatively small in size (ranging from 10-50 students in our environmental science courses), so seminar-style discussions further are feasible to develop the students' understanding of the material as well as its societal relevance.

We also emphasize excellence in undergraduate research in environmental science. Science is inherently a hypothesis-inspired, research-driven field, but students often have little or no experience with generating their own hypotheses and conducting question-based research beyond formulaic classroom activities (Nilson, 2010). This is particularly true in classroom settings if they lack a forum to discuss student ideas and questions (Mazur, 2009). Students learn and retain more when they are given the opportunity to conduct hands-on, impactful research (Hofstein *et al.*, 2005, Kuh *et al.*, 2008). Incorporating environmental science research, rather than just state-of-knowledge, in our curriculum builds a population of students that are connected with the environmental science of their region. Our faculty actively mentor undergraduates in our research labs. These students have completed meaningful research, with their data being presented at professional meetings and published in peer-reviewed manuscripts. They graduate with a much more in-depth understanding of the principles and relevance of environmental science.

## References

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