



## Scottsdale Community College

Scottsdale, AZ

- **IPEDS Enrollment, Fall 2010:** 11,257
- **Type of community:** Suburban, contiguous to a Native American reservation
- **Number of campuses:** 3
- **Number of chemistry students, Fall 2011:** 630
- **Number of full-time chemistry faculty:** 4
- **Number of adjunct chemistry instructors:** 11
- **Structure:** Chemistry is included in the Physical Sciences Department within the Division of Mathematics and Science
- **Focus of chemistry program:** Transfer
- **Sections of the Guidelines used:** 4.1, 4.2

**Doug Sawyer**, chair of the Math and Science Division of Scottsdale Community College (SCC) and a chemistry faculty member, used the *American Chemical Society (ACS) Guidelines for Chemistry in Two-Year College Programs* to

- Set the square footage, bench space, and fume hoods of three new chemistry labs
- Influence the design of the organic chemistry lab
- Allot space for instruments

The building on SCC's main campus that had been used for science classes since 1972 was too small and had outdated safety systems. Demand for chemistry classes was so high and space so limited that general chemistry courses typically had 32 students. When the college obtained funding for a new Natural Sciences Building, faculty hoped it would be a state-of-the-art building powered by geothermal energy.

### Planning the New Natural Sciences Building

In 2006, Carl Couch, the vice president of administrative services, invited Sawyer to serve as the chemistry faculty representative on the Natural Science Building planning committee. Sawyer's task was to write the specifications for the new chemistry labs and interact nearly weekly with architects in advance of the start of construction.

Sawyer said he particularly relied on the Guidelines for the design of the organic chemistry lab. The infrastructure for the 13 fume hoods in this lab made it the most expensive of 16 laboratories in

the building. The 46,000 square foot building also includes an aquarium, herbarium, microbiology preparation room, and planetarium.

The design of the entire building included some negotiations because of costs. The chemistry faculty had wanted four labs but had to settle for three because of budget limitations. The main items on the science faculty's wish list for the entire building were to use foam construction, rather than cement block, and to rely exclusively on geothermal energy so the building would operate off the power grid. The upfront costs of this ambitious plan, however, exceeded the budget.

### Integrating the ACS Guidelines

There was never any debate among planners and lab designer, however, about following the recommendations in the Guidelines to provide at least 50 square feet of net space per student in the chemistry labs, according to Sawyer. It was also readily agreed to limit enrollment in Organic Chemistry I and II to 20 students and in General Chemistry I and II to 24. The other big item the Physical Science Department received was a 1,300 square foot instrument room, which was several times larger than the tiny closet in which the department had previously stored instruments.

"Construction is remarkably complicated," Sawyer said, explaining that neither he nor any of the faculty grasped—until they were in the midst of the project—the detailed regulations that must be followed to comply with the Americans with Disabilities Act, OSHA, and fire code regulations. "There are

five different kinds of water in the lab,” Sawyer said, noting the many details that have to be attended to just to make sure the water line for the eye wash is set at 80 degrees.

Budget limitations did require the chemistry faculty to pare its equipment requests and drop its plan to have an instrumentation assistant. Throughout the entire planning and construction process though, discussions were always “very collegial,” Sawyer concluded.

*The content of this case study was provided by Doug Sawyer. Doug Sawyer has served as the chairman of the Math and Science Division of Scottsdale Community College since 2004. He has been on SCC's faculty since 1992. Sawyer earned a bachelor's degree from Coe College and a Ph.D. in chemistry from Iowa State University. Sawyer coauthored Laboratory Inquiry in Chemistry, Third Edition. He won the SCC Faculty of the Year Award for 2008–2009, and in 2009 the Scottsdale Charros, a nonprofit organization, selected him as Professor of the Year. He was part of a team that in 1999 discovered the first chemical evidence of an ancient ocean on Mars by analyzing rocks from the 1.2 billion-year-old Nakhla Meteorite.*