

- **IPEDS enrollment, Fall 2010:** 8,410
- **Type of community:** Small city
- **Number of campuses:** 3 campuses and 3 centers. (General, organic, and fundamental-level chemistry are taught at the Prescott campus. General and fundamental chemistry are taught on the Clarkdale campus. Fundamental chemistry is offered at the Chino Valley center.)
- **Number of chemistry students, Fall 2011:** 200
- **Number of full-time chemistry faculty:** 3
- **Number of adjunct chemistry instructors:** 1
- **Structure:** Chemistry is part of the Science and Health Division
- **Focus of chemistry program:** Transfer and allied health technician education
- **Sections of the Guidelines used:** 3.2, 4.2

Paul E. Smolenyak, a chemistry professor at Yavapai College, has used the *American Chemical Society (ACS) Guidelines for Chemistry in Two-Year College Programs* to

- Review programs
- Justify equipment requests
- Advocate in favor of one-for-one recognition for instructional time during lab sections

Administrators at Yavapai College accept chemistry faculty members' use of the Guidelines when they review the chemistry program's content and purchase equipment. Efforts to implement the recommendations in the Guidelines regarding teaching hours are still ongoing.

Guiding the Chemistry Program

The Guidelines serve as an authoritative reference for the chemistry faculty during the college's periodic review of its programs. The internal institutional process requires each discipline to run enrollment numbers and check other data to make sure that there is sufficient student interest to justify expenses. Accreditation agencies expect periodic program reviews, and institutions that do not routinely review their programs can jeopardize their accreditation.

The most recent review, completed by the chemistry faculty in 2011, included a question that asked whether there is any advisory agency or other organization associated with the program. Smolenyak said his answer was, "Yes," and he noted that he and his colleagues try whenever possible to follow the American Chemical Society's recommendations as contained in the Guidelines.

Justifying Instrumentation Purchases

Smolenyak cited the recommendations in the Guidelines that "programs should have a suite of modern chemical instrumentation and specialized laboratory apparatus" in his formal requests for equipment purchases exceeding \$1,000. The college has a chemistry supply budget for chemicals and other supplies routinely used in labs. In 2011–2012, \$13,600 was allocated for chemical supplies.

Since 2004, the college has purchased an FTIR, a proton probe, a computer control unit for a donated NMR, and three gas chromatographs.

"I'm not sure how much the ACS Guidelines made a difference, but I was at least able to cite them when I wrote up my rationale for capital equipment outlays," Smolenyak said, adding that the college has historically been supportive of equipment that provides students with hands-on science experiences.

Ongoing Effort to Gain Full Compensation for Lab Time

Several times with different administrators during the 12 years he has worked at Yavapai College, and speaking as the most senior member of the chemistry faculty, Smolenyak has used the Guidelines to request equal teaching credit or load hours for laboratory and lecture sections. Currently, Yavapai College counts an hour of lab as 0.7 load hours; a three-hour lab section equals 2.1 load hours.

To fulfill their contractually required 15-unit teaching load per semester, chemistry faculty usually

end up spending more than 15 hours per week in classrooms and labs. In practical terms, Smolenyak said, calculating an hour in the lab with students as less than an hour of teaching means that science faculty spend more time in actual instruction than faculty in other departments, such as English and math. “From our perspective, it is not equal pay for equal time spent,” he said. The counterargument he has heard from English and math faculty members is that the disparity is a “wash” because they invest more time in grading assignments. He, however, insists, “That’s not necessarily the case.” For example, chemistry laboratory sections can require extensive preparation in terms of checking equipment, preparing solutions, cleaning up afterward, and grading laboratory reports.

College administrators have acknowledged Smolenyak’s point during face-to-face conversations without agreeing to the recommendation contained in the Guidelines. “On several occasions I’ve brought up the fact that one-to-one lab loading is mentioned in the ACS literature, and ... they just nod their heads and say, ‘OK.’ That’s about as far as that argument ever goes,” he said. Smolenyak is past president of the Yavapai College Faculty Association, but Arizona is a right-to-work state. Consequently, there is not a faculty union at the college.

In discussions with the administration about one-to-one lab loading, it has been noted both that calculating hours this way is not the nationwide standard (despite the ACS recommendation) and that it would be quite expensive to implement. Smolenyak explains that administrators have said, “‘Well, you know we could fund one-to-one lab loading, but how are we going to pay for it?’ And basically the argument dies at that level because nobody is ever willing to commit the extra dollars that would be involved, because ultimately you would have to hire additional staff people.” Smolenyak is not giv-

ing up, but given the current economic situation he is not aggressively pressing the issue.

The content of this case study was provided by Paul E. Smolenyak. He earned an associate degree from Yavapai College, then transferred to Northern Arizona University, where he earned a bachelor’s degree in biology and chemistry. He taught at the secondary school level before earning a Ph.D. in analytical chemistry from the University of Arizona. He has been a full-time chemistry professor at Yavapai College since 2000.