

This one-page column will present practical teaching tips in sufficient detail that ChE educators can adopt the tip. The focus should be on the teaching method, not content. With no tables or figures the column should be approximately 450 words. If graphics are included, the length needs to be reduced. Tips that are too long will be edited to fit on one page. Please submit a Word file to Phil Wankat <wankat@ecn.purdue.edu>, subject: CEE Teaching Tip.

# MAKE YOUR TEACHING ASSISTANT A CO-INSTRUCTOR

BARATH BABURAO, SARAVANAN SWAMINATHAN, AND DONALD P. VISCO, JR.  
*Tennessee Technological University • Cookeville, TN 38505*

Most engineering graduate students across the country are not trained in teaching. When training occurs, one of three models is normally used<sup>[1]</sup>:

- 1) *Enrollment in formal degree or certificate engineering education programs*
- 2) *Formalized future faculty preparatory programs such as the Preparing Future Faculty (PFF) program*
- 3) *Informal (share a course with a graduate student) or formal (with course credit) training in pedagogy*

The Department of Chemical Engineering at Tennessee Technological University recently adopted a procedure similar to the third type that fully integrates a teaching assistant (TA) into a senior-level Process Dynamics and Control course. Training occurs throughout the semester and the TA is involved in a meaningful way in *all* aspects of the course. Implementation was done with two graduate students as co-instructors (CI) supervised by a full-time faculty member (FM). In presenting this model below, however, we use just a single CI for clarity.

## PROCEDURE

The CI was chosen based on interest in an academic career and past experience with the course material. Prior to the beginning of the semester, the FM discussed the CI's involvement with the course from developing the syllabus and delivering the material, to preparing and grading homework and examinations. The FM also provided reading materials on important pedagogy tentatively planned for the class, such as active learning or team-based approaches. A weekly meeting was arranged to discuss all relevant aspects of the course, such as feedback on the previous week's class, plans for the upcoming week, etc. In addition, the FM and the CI met 10 minutes prior to each class in order to briefly review

the day's plan as well as discuss any unforeseen issues that have arisen.

During the first few class periods the FM provided a course overview and discussed the role of the CI. The CI was trained to design the teaching methods, homework questions, quizzes, laboratory, examinations, and the evaluation of the final project and presentation. The CI was given the freedom to use the previous year's course material or design new material. When the CI taught the class (which happened more than half the time), the FM observed the CI's performance and vice-versa.

## RESULTS

An individual assessment form for the CI was developed under the supervision of the FM. This 18-question form covered six areas: lectures, labs, organization, student interaction, in-class activities, and assignments/testing. Overall, the students rated the CI as "above average." The best area was "Student Interaction." Student comments indicated that it was easier to approach a graduate student than a faculty member. Additionally, graduate students are likely to keep similar hours to that of undergraduate students, making them more accessible.

Overall, the CI's involvement in every aspect of the course proved to be effective training. The FM often had an advisory role. Based on the feedback, the students generally agreed that the CI's involvement was a positive experience for all involved.

## REFERENCE

1. Wankat, P.C., and F.S. Oreovicz, "Teaching Prospective Engineering Faculty How To Teach," *Intl. J. Engr. Educ.*, **21**(5), 925 (2005) □