Photo: Bonnie Robinson

Michael Davis and Kathryn Riley of the "Ethics in the Details" project

Introducing Ethics, Word-by-Word

An interdisciplinary team of IIT faculty members is giving the terms "low-dose" and "micro-insertion," already familiar to scientists and engineers, expanded meaning as a way to more effectively bring ethics into the graduate classroom. Michael Davis, senior fellow at the Center for the Study of Ethics in the Professions and professor of philosophy, along with Kathryn Riley, chair of the Department of Humanities and professor of English, and CSEP Director Vivian Weil are implementing their concept "Ethics in the Details," funded through a $238,663 grant from the National Science Foundation.

The project integrates ethics into the graduate engineering curriculum through low-dose mini-lessons rather than through freestanding courses or modules. The heart of this integration lies in technical word problems or exercises, which comprise a large part of graduate engineering education. At one-day workshops, faculty and graduate-student teaching assistants are taught how to identify the ethical core of the problem and rewrite the problem to include that aspect. Something as simple as adding a human dimension to the problem—using the second-person "you" narrative form, for example—can make the subject more real and personal to the student. Participants also learn how to design a problem to measure the aspect of ethics being addressed and how to select problem formats appropriate for the class.

"During the early '90s, we trained about 20 percent of IIT faculty in how to integrate professional ethics into their technical courses," says Davis. "IIT was a world leader then. Since that time, we have been helping other universities do the same."

The low-dose approach to ethics education offers several advantages. It takes far less time for instructors to revise technical problems than to prepare an entire course or large-scale module. Also, micro-insertions, continuously applied, allow students to view ethics more as a routine part of engineering and science, not as an event labeled "ethics." According to Davis and Riley, early findings on the effectiveness of micro-insertions indicate that most students notice the presence of even a small amount and respond positively. An important aspect of the grant will allow for a further assessment of project effectiveness beyond what was done through self-reporting.

For the current project, the IIT team is collaborating with engineering faculty and engineering graduate students at IIT, Howard University in Washington, D.C., and the University of Illinois at Chicago, where a nanotechnology research laboratory is being utilized. Examples of ethical issues covered include whistleblowing, national security concerns, conflicts of interest, and cross-cultural differences in ethics.

In addition to assessment testing, the grant also supports the creation of an online database of engineering micro-insertion problems that will expand to include other science and technology disciplines. Coined "Ethics In-Basket," the database is a continually evolving resource, providing the opportunity for anyone with a suggested micro-insertion problem to submit their good example for review by the site's coordinators. The archive of posted problems will be available to faculty around the world.

"Even the choice of screw threads often has consequences for safety, economy, reliability, and disposability, and are all, in part, ethical issues," Davis says, about how ethics decisions are fundamental to engineering. "As engineering projects get ever bigger and their impact on the future ever more long-term, the significance of those issues may be even greater."

"Ethics in the Details" builds upon IIT's longstanding success in undergraduate ethics education. NSF awarded three grants to CSEP from 1990–2005 for summer workshops attended by more than 160 faculty members. The center is also known for the Ethics Bowl, a nationwide intercollegiate competition that poses questions on a wide variety of ethics issues. Now in its 16th year, the Ethics Bowl was conceived by Robert Ladenson, IIT professor of philosophy.

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Center for the Study of Ethics in the Professions: **http://ethics.iit.edu**
Online Ethics Center of the National Academy of Engineering: **www.onlineethics.org**