Problems, Solutions, and Resources in Integrating Ethics-Across-the-Curriculum

Problem	Description	Solution		Resources	
Time	How can an engineering professor find time to integrate ethical issues into an already crowded course?	1.	An ethical issue can be raised in a in class using only a couple of minutes.	a.	Textbooks (adopt and adapt new textbooks around ethical issues)
		2.	When a lot of small events are combined, the impact can be large.	b.	Interview Co-Op Students and engineers in private practice. (This was a driving force at Drexel.)
		3.	Rewrite textbook exercises.	c.	CEPHIF web page on the Internet.
		4.	Discuss cases, scenarios, newspaper articles, and movies that raise ethical issues in the context of engineering practice.	d.	See Michael Davis, Thinking Like An Engineer and Ethics and the University for more resources.
Assessment	Assessing student participation in ethics integration exercise. (Grading)	1.	Use grading rubrics to clarify criteria used in grading.	a.	Cruz and Frey have been experimenting with grading rubrics. (See DOLCE website for sample rubrics)
		2.	Hold workshops where participants discuss grading student essays.	b.	Modify and adapt student assessment forms developed in Learning Factory project.
		3.	Adopt evaluation forms to grading oral presentations. (These are available.)	c.	Consult Pritchard et al, Engineering Ethics: Concepts and Cases for sample student case study analyses.
		4.	Use informal as well as formal exercises.		
		5.	Use default grading. Have students grade themselves.	d.	For a discussion of cooperative learning strategies and grading

		6.	Use cooperative learning strategies.		strategies and grading, see Joseph R. Herkert, "Collaborative Learning in Engineering Ethics," in Science and Engineering Ethics, Vol. 3, no. 4.
	Assessing ethics integration exercises such as pre-test and decision making activities.	1.	Identify objectives of exercises.	a.	DIT (Defining Issues Test) developed by Neo-Kohlbergians.
		2.	Assess outcomes by comparing pre- and post-test activities.	b.	Perry scale of moral development.
		3.	Use forms to elicit student responses to the exercise.	c.	"Teaching Ethics in Engineering and Computer Science: A Panel Discussion," in Science and Engineering Ethics, Vol. 3, no. 4, Oct 1997.
		4.	Have other faculty visit your class and discuss the results of the exercise with you.	d.	Sample assessment forms modified by Frey from Learning Factory project.
	Assessing total impact of courses and ethics integration exercises on students.	1.	Identify ethical activities carried out at RUM in the past.	a.	Sample forms in Decision Making Instructor Manual.
		2.	Survey students to see how many of them have been exposed to these activities.	b.	Use DIT (it can be obtained from the University of Minnesota)
		3.	Develop form that identifies possible ethics integration activities and survey student exposure.		
		4.	Use standard moral development tool such as DIT or Perry's scale of moral development.	c.	Develop a pre and post-test, both based on scenarios.

		5.	Administer at beginning and end of student's undergraduate career.	d.	(CEPHIF could develop such a form.)
Documentation	How to document for ABET the ethics integration activities we plan to carry out.	1.	Syllabi (include ethical issues in objectives, assignments, exams).	a.	Engineering faculty.
		2.	Case studies/scenarios developed by professors individually or written in workshops. (Post on Internet or in instructor's manuals).	b.	CEPHIF staff.
				c.	Syllabus templates.
		3.	Use CEPHIF newsletter to discuss.	d.	Videos of students' ethics