

## *Form for Evaluating ABET-2000 Ethics Integration Exercises*

Course and Section:

Purpose: To determine the number and types of exposure to ethical considerations.

Directions: Below are a series of activities in ethics that have been carried out in conjunction with ABET-2000, Criterion 3, (f, g and h) and Criterion 4. Assess your exposure to each activity using the following scale:

- |                       |   |           |
|-----------------------|---|-----------|
| 1 Poor or no exposure | 4 | Good      |
| 2 Less than adequate  | 5 | Excellent |
| 3 Adequate            |   |           |

Activity	1	2	3	4	5
Read parts of an engineering code of ethics (Examples: CIAPR, NSPE, ABET, ECPD, ASME, IEEE, ASCE, ASChE).					
Attended a special lecture or conference (outside of regular classes) with a major ethical component.					
Spent time identifying and addressing the ethical issues in a major design experience.					
Took a course in ethics (Introduction to Ethics, Business Ethics, Engineering Ethics, Bioethics, Modern and Contemporary Ethics).					
Discussed ethics study questions for Professional Certification Exams.					
An engineering instructor included an ethics module in one of his or her classes. (Example: case discussion)					
A guest lecturer came to one of your classes and discussed ethical issues in engineering.					
Participated in an ethics competition such as the ethics bowl.					
Participated in drafting a student code of conduct for my student association or for coop internship students.					

Statement of Ethics Requirements in ABET:

### *Criterion Three*

- f. an understanding of professional and ethical responsibility
- g. an ability to communicate effectively
- h. the broad education necessary to understand the impact of engineering solutions in a global and societal context.

### *Criterion Four*

"major design experience based on the knowledge and skills acquired in earlier coursework and incorporating engineering standards and realistic constraints that include most of the following considerations:

economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political"

## *General Strategic Response*

### *Ethics-Across-the-Curriculum*

#### *Definition:*

A series of interdisciplinary pedagogical strategies that present ethical issues as they arise in everyday life, that is, embedded in practical and occupational decision-making.

## *Skills Promoted in EAC*

- Evaluative:*** The ability to evaluate something by applying to it different ethical approaches.
- Preventive:*** The ability to uncover ethical surprises and design preventive measures to prevent them from becoming full-blown dilemmas.
- Integrative:*** The ability to integrate (not just apply) ethical considerations into an activity so that these considerations play essential and constitutive roles in the formation of this activity.

***Good Works:***

Literally doing good, it is the ability to recognize opportunities for using one's professional or occupational skills and knowledge to improve the world.

## ***Achievements of Ethics Integration Exercise***

Students learn to recognize ethical problems in real world contexts.

Students discover that they are already thinking ethically.

Students gain practice and confidence in formulating ethical arguments.

*One doesn't have to be an expert in ethics to use this exercise in the classroom.*

*Excites student interest and leads to follow-up activities.*

## ***EAC is Interdisciplinary***

It is not the exclusive province of the "ethics specialist."

You do not have to be an expert to have an impact on moral development.

Many Engineering professors have already designed successful ethics integration activities that they use in their courses.

## ***EAC is holistic***

The best results come from exposing students to ethical issues in all areas of the curriculum.

EAC proceeds by way of "ethics integration projects." These are activities integrated into courses throughout the curriculum that expose students to ethical issues from a variety of perspectives and in different contexts.

## ***Moral Development Studies and EAC***

"not to isolate ethics in one concentrated course, but to distribute ethics among many components of an educational program." (Rest, 74-75)

"The type of intervention having consistently the greatest pre/post effect is the 'dilemma discussion' intervention." (Rest, 74-75)

"It is not the case that morals are fixed by adolescence." "[D]ramatic and extensive changes occur in young adulthood....[T]he basic assumptions and perspectives by which people define what is morally right or wrong change in this period, and the change is just as dramatic and fundamental as change in the years before puberty." (Werhane, 23; REst, 74-75)

## *Five Strategies*

- Recognize:** We are already doing a great deal. Hence we need to do an audit of activities in current courses that promote objective 14.
- Assess:** We need to assess what we are already doing. Pre and Post tests can measure the impact we are having on our students.
- Refine:** We can fine tune what we are already doing to have an even greater impact.
- Coordinate:** We can let one another know what we are doing, i.e., what works, what doesn't work, what compliments what.
- Innovate:** New ideas. What others are doing that we could adopt here?

## *Means Toward EAC:*

Freestanding course in Practical and Professional Ethics (Medical Ethics, Business Ethics, Engineering Ethics)

Special Events: A representative of the CIAPR comes to campus to talk about the CIAPR's code of ethics.

Guest Lectures: The ethics professor goes to the mechanical engineering capstone designing course to lecture on ethics.

Team Teaching Projects: Engineer and Philosopher team-teach an engineering ethics course.

Competitions: Send student teams to APPE Ethics Bowl.

Integration Projects: BSE faculty develop special exercises that they can use to integrate ethics in their classes. For example: rewriting numerical problems in engineering, medical ethics students going on clinical rounds.

Student Initiatives: student groups write code of ethics for engineering co-op students.

Teacher Certificate Program: Develop retreats devoted to training faculty in professional and occupational areas in EAC.

Form partnerships with other universities

## *Decision Making in Engineering Ethics*

Introduction of decision making scenarios in engineering ethics.

Solution proposals that accompany the scenarios.

Group activity: Divide participants into groups and have each discuss a scenario and evaluate the proposed solutions.

1. Read your scenario.
2. Read and discuss the proposed solutions.
3. Which is the Worst Solution? Why?
4. Which is the best solution? Why?
5. Can you think of a better solution?
6. Is the best solution reversible, publicizable, or harm minimizing?
7. Is the best solution feasible?