

A Web-Assisted Graduate Course in Cyber and Professional Ethics

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Abstract

The importance of an ethics component in the undergraduate education of computing professionals is well established. However, the inclusion of computer and professional ethics in a graduate IS curriculum has not been so well defined. This paper describes an elective graduate course in computer and professional ethics developed by the author during 2004 and taught for the first time in the Spring 2005. The course was taught in a hybrid format consisting of some face-to-face class time and an online component. The author believes that some ethical decisions made by computing professionals will be made by a group aided by communication technology. To simulate this environment, students collaborated on several cases using the group communication facilities in Blackboard (an online courseware tool) rather than meeting face-to-face to discuss the issues. This paper discusses the course structure, grading policy, cases, and several study aids developed for the course. In addition, the results of an online survey are discussed. Finally, we consider some possible changes to the course and further research.

Keywords: ethics, cyberethics, curriculum, online education, case study, rubric

1. INTRODUCTION

The importance of an ethics component in the education of computing professionals is well established. The ACM in conjunction with other computing organizations has developed curriculum guidelines for computer science (www.acm.org/sigcse/cc2001/) and information systems (www.acm.org/education/IS2002.pdf) that include components in the ethical use of computing and technology. For more than a decade, scholars have discussed the role of ethics and professional codes in the education of computing students and professionals. See the work of Anderson et al. (1993), Gotterbarn (1998 and 1999), Martin et al. (1996), Martin (1999), Grodzinsky (2000), and Tavani (2001).

Most CS and IS undergraduate curricula include ethical issues as modules in many courses, or have a single course in computer

ethics or computers and society. However, the inclusion of computer and professional ethics in a graduate IS curriculum has not been so well defined.

This paper describes an elective graduate course in computer and professional ethics (Cyber and Professional Ethics – IS 660X) developed by the author during 2004, and taught for the first time to IS graduate students at Pace University in Spring 2005. Pace University is a multi-campus school. The course was offered at the New York City's main campus in downtown Manhattan. Most of Pace's IS students are part-time. They usually are working either in the IS field or are transitioning to a new career.

Pace graduate courses can be offered on-site in the usual face-to-face format, completely online with no face-to-face class time, or in a hybrid format consisting of some face-to-face class time and an online component.

Such hybrid courses are referred to as Web Assisted (WA) courses. I chose to offer IS 660X as a WA course for several reasons. Since many of the students taking the class would probably be working full-time (in fact, it turned out that all the students in the class had full-time jobs), students would need the time to do the readings and assignments. The author believes that some ethical decisions made by computing professionals will be group decisions aided by communication technology. To simulate this environment, I wanted the students to collaborate on several cases using the group communication facilities in Blackboard (the online courseware tool used by Pace) rather than meeting face-to-face to discuss the issues. Since the students did not have time to meet face-to-face to discuss the cases, a hybrid format seemed reasonable. I did not feel that an online format was appropriate because I wanted students to present case resolutions to the class and have some feeling that they "knew" the other class members, especially those who were in their group. See Coldwell (2001) for a discussion of a purely online course in computer ethics.

In the following, I will discuss the course structure, grading policy, cases, and several study aids developed for the course. In addition, I discuss the results of an online survey that I administered to the class. Finally, I discuss some possible changes to the course and further research.

2. COURSE DESCRIPTION

The course, entitled "Cyber and Professional Ethics" (IS 660X), has the following catalog description.

The pervasiveness of computers, technology, and the Web have made it imperative that we be aware of and understand the ethical and legal implications of these forces on our personal and professional lives. Through readings, discussions and case studies, this course examines the ethical and legal issues involved in computing by investigating such questions as free speech, privacy, and intellectual property on the Internet, cybercrimes, employer/employee is-

sues, and professional codes of ethics.

Textbooks

Halbert and Ingulli (2005) and Spinello (2003) were the required texts for the course. Although the books cover many of the same topics, I liked Spinello's book for its coverage of the ethical side of each issue, and the Halbert and Ingulli text for its currency and case-like approach.

Course Structure

The class was what we call at Pace a Web-Assisted (WA) class. WA classes do not meet face-to-face for the usual number of meetings. Some portion of the class (depending on the particular course) is conducted online. For this course, I decided that the class would meet the first week for an orientation to the course and a general introduction to ethics and professional codes of ethics. The class was given two cases to work on individually for the first two weeks to allow the students to become accustomed to the cases and various ethical theories. The cases were discussed in class at the next class meeting. Subsequently, the course met every other week. Each two-week period comprised a module. For each module, students were assigned readings from the textbooks and other sources. Each group was given a case that involved issues related to the module. Each case involved an ethical problem. For each module, the group's task was to develop a resolution of the ethical problem. The topics covered in the modules were: Intellectual Property in Cyberspace, Internet Regulation, Free Speech in Cyberspace, Privacy, Security and Cybercrime. These topics were chosen by the class according to their interests during the first two weeks of the course.

I divided the class (19 students) into three groups of five and one group of 4. I took care to ensure that each group was ethnic and gender diverse. The membership in the groups did not change during the semester.

Blackboard

The online components of the course were supported by Blackboard. Students were expected to spend at least two hours each week online. Blackboard enables the instructor to create groups of students. Each group has its own private Discussion Board,

Chat Room, File Exchange and Group E-mail areas. The Discussion Boards and Chat Rooms were used by each group to discuss the case for each module. The File Exchange and Group E-mail areas were used to collaborate on the resolution paper that the group facilitator had to present in class.

For the first four modules, one member of the group was the facilitator. The facilitator was responsible for organizing and writing a resolution of the case. The position of facilitator was rotated through the group. Every member of the group was required to be the group's facilitator at least once. When we met in class at the end of the two-week period, the facilitator was required to present the case resolution to the class using PowerPoint. Each presentation (usually from ten to twenty minutes long) was followed by a discussion of the case and proposed resolution. The written resolution was submitted to the instructor at the time of the presentation.

Students were somewhat concerned over the group grading procedures – see the Case Grading section that follows. Therefore, for the remaining two modules, students were required to write individual papers to resolve the ethical problems. The three students who were not facilitators in the first four modules were required to present their individual papers during the last two.

Case Grading

In the first four modules, the group received a grade for the case resolution. The case resolution was graded according to the rubric shown in Table 1 in Appendix C. The rubric is based on Moskal et al. (2002) and Stevens, D. and Levi, A. (2005).

Each member of the group also received a grade based on their participation in the group discussion in Blackboard. The facilitator also received an individual grade for the write-up and presentation. The presentation and written resolution were graded based on the Writing and Presentation Rubric of Table 2 in Appendix C, which is based on Moskal et al. (2002). For an alternative grading method see Sanders (2005).

The Cases

In the first four modules, each group was required to come to a collective resolution of the case. How they came to a common de-

cision was up to the group. If one or more people disagreed with the group's decision, they were able to present a dissenting opinion during the discussion of the case. (A dissenting opinion was filed once during the first four modules.)

During the first two weeks of the course, the class was assigned readings that discussed common ethical theories. They were then given a practice case to consider. The practice case was discussed in the second class meeting. Because there are many ways to analyze an ethical problem (depending on which ethical theory you use to analyze the case), I provided the students with outlines of several "ethics tests" and procedures that were culled from many sources. See Appendix A - Ethics Tests and How to Use Them and Appendix B - Some Procedures for Analyzing Ethical Situations.

Students were also required to use sources other than the textbooks. A Bibliography and extensive list of Internet links were provided to the students for their use, which are available from the author upon request.

The cases were adapted from several sources. Spinello (2003) was particularly useful for a wide variety of interesting cases. For each module, the four student groups were separated into two pairs with each pair considering the same case. This gave the opportunity for the groups in each pair to evaluate the resolution of the other. Most often the resolutions agreed, but frequently for different reasons.

Grade Distribution

The grade for the course was distributed according to Table 3 in Appendix C.

3. STUDENT SURVEY

During the last week of the semester, I asked the students to take a short survey about the course that was administered through Blackboard. The survey was completely anonymous, so students could be honest in their assessment of the course. Seventeen of the nineteen students in the class completed the survey. Space will not allow me to list the complete survey. I will therefore, summarize some of the results. The full survey is available from the author by request.

Judging from the survey, the course was a success. Slightly more than half the class (52.8%) said that prior to the course they never gave much thought to ethical issues in computing. However, 94% stated that the course made them aware of ethical issues that they previously were not aware of. Again, 94% stated that after the course they were more likely to think about the ethical aspects of what they do as professionals.

I asked several questions about working in groups. 65% of the respondents either strongly agreed or agreed that working in groups was helpful in examining the cases. 84% either strongly agreed or agreed that collaboratively writing a group opinion on the cases was a good experience. However, 70% liked writing individual case opinions more than writing group opinions.

Several questions were asked to assess the effectiveness of the cases. 70% either strongly agreed or agreed that having to present the cases was a good experience. The case approach to discussing ethical issues was liked by the students – 88% either strongly agreed or agreed that the cases helped focus their ideas about the ethical issues. Every respondent either agreed or strongly agreed that the codes of professional ethics were helpful in thinking about the cases.

Finally, I asked about the usefulness of the grading rubrics. 88% of the respondents strongly agreed or agreed that the grading rubrics were helpful in thinking about the cases, while 94% strongly agreed or agreed that the rubrics were useful as guides in writing their papers.

4. FUTURE DIRECTIONS

- Have the first and fourth cases done individually rather than in a group, with the second, third, fifth and sixth done in groups. This, I believe, will give better feedback to the students on how they are approaching the cases, and more individual guidance in their writing.
- Develop a pre-course survey to be administered prior to the official beginning of the class to determine the extent to which the students are aware of the main ethical issues that will be discussed in the course. This

will be compared to the results of a post-course survey to determine how the students' ethical awareness has been affected by the course.

- Track and analyze which ethics tests were used by each group to determine those tests that were more useful.
- Investigate the group dynamics of the ethical decision-making process. To do so will require a group collaboration tool that tracks the process. One of my colleagues has developed such a tool that we plan to adapt for use in the study.

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Appendix A – Ethics Tests and How to Use Them

This document was made available to the students electronically.

These tests are *guidelines* to help you analyze the cases you will consider during the course. They will not, and are not intended to, provide clear answers to ethical questions, nor are they to be considered exhaustive of the techniques of ethical analysis. They are designed to help you think ethically within your profession. They should help you develop your own "method" of making ethical professional decisions. Use them in conjunction with what you learn in class and in your reading about various ethical systems.

Also be aware that you can use more than one of these tests to discuss a given issue. The tests are not *mutually exclusive*. Rather they are different ways of looking at the same problem, and each may reveal a different aspect of a given case. For example, the Harm Test focuses on the consequences of a decision; the Publicity Test on the character of the decision maker; and the Reversibility Test on the consistency and universality of the decision. However, each test can provide some insight into most aspects of an ethical problem.

The tests can help you to:

1. Uncover ethical problems.
2. Evaluate alternative courses of action.
3. Construct solutions to ethical problems.
4. Provide reasons for your ethical decisions.

The tests are excerpted from Frey, B. and Huff, C. from the Web site:

http://computingcases.org/general_tools/teaching_with_cases/ethics_tests/what_are_the_se_test.html accessed on July 28, 2005.

Harm/Beneficence

(Utilitarian Ethics) Does it do less harm and more good than the alternatives? This test is about the alternatives for all stakeholders

1. Identify those who will be affected by your action (stakeholders).
2. Identify the impact your action will have on these people.
3. Determine whether this impact is harmful (Does it produce physical or mental suffering, impose financial or non-financial costs, deprive others of important or essential goods?) or beneficial (does it increase safety, quality of life, health, security, etc.)
4. Repeat these steps for the best available alternatives and compare them in terms of the benefit to harm ratio they produce.
5. Conclude by answering this question: Which alternative produces the best ratio of benefit to harm?

Publicity

(Virtue Ethics) Would I want this choice published in the newspaper? This test is about what the decision would show about your character.

1. Consider that the action you are about to perform provides a window through which others can see who you really are.
2. Then take the perspective of those others who are about to judge your character through your action.
3. Ask the following question: Would others view you as a good person for what you are about to do?

Variation: Consider the following list of virtues: Responsibility, Honesty, Articulate-ness, Perseverance, Loyalty, Cooperative-ness, Creative Imagination, Habit of Documenting Work, Civic-Mindedness, Courage, Openness to Correction, Commitment to Quality, and Integrity. Does your action manifest any of these? Does it manifest the opposite, i.e., vices such as cowardliness, dishonesty, etc?

Reversibility

(Deontological Ethics) Would I think this a good choice if I were among those affected by it? This choice is about whether stakeholders are being treated with respect

1. Determine *who* is going to be affected by your action.
2. Determine *how* they are going to be affected.
3. Reverse roles: put them in your place (as the agent or doer of the action) and yourself in their place (as the one subjected to the action).
4. Answer this question: If you were in their place, would you still find the action treated you with respect?

Closely related, alternative tests:

- Does the proposed action treat others with respect? (Does it recognize their autonomy or circumvent it?)
- Does the action violate the rights of others? (Examples of rights: Free and informed consent, privacy, freedom of conscience, due process, property, freedom of expression)

- Would I recommend that this action become a universal rule?
- Am I treating others in this situation only as a means to my own ends? (one is allowed to treat others as means, as in a business transaction, but not *only* as means)

The following two tests combine ethical and sociological aspects of decision making.

Code of Ethics

How does this choice relate to the ethical standards of my profession? See the ACM Code of Ethics at <http://www.acm.org> and The IEEE Code of Ethics at <http://www.ieee.org>.

1. Identify the provisions in the professional code of ethics that are relevant to the case at hand.
2. Answer the following question: Does your proposed course of action violate any of these provisions?
3. Check for any inconsistencies, i.e., instances where an alternative satisfies some code provision but not others. If there are inconsistencies, look for priority rules. (Example: many ethics codes hold public health, safety, and welfare paramount.)

Hint: Most codes can be divided into sections organized around relations between professionals and stakeholders of that profession. Four key groups are public, client, peers, and profession. Be sure to check code requirements from the point of view of these stakeholder groups.

Feasibility

Can this solution be implemented given time, technical, economic, legal, and social considerations? This test is about practical issues.

Consider each of the following practical constraints that might bear on the proposed action:

- *Time:* Is there a deadline within which your solution has to be enacted? Is this deadline fixed or is it negotiable?

- *Financial*: Are there cost constraints on your solution? Are these fixed or are they negotiable?
- *Legal*: Does your proposed alternative violate any laws or regulations? Are the legal constraints in line with the results of your ethical evaluation? If not, what can you do to align them?
- *Personal*: Do the personalities of the people involved offer any constraints? For example, would your supervisor be open to persuasion, negotiation, or compromise? Or is he or she a dogmatic, close-minded, and inflexible person?
- *Social, Cultural, or Political*: Consider where your solution is being implemented. How would its impact be viewed through the social, cultural, and political environment in which it is being enacted?

Following is another useful test.

Principlism

Used in biomedical ethics, these four principles are always in force, but may conflict in certain situations. (Spinello, 2003, p.23)

- *Autonomy* – Do nothing to diminish a person's capacity to be autonomous and self-determining.
- *Nonmaleficence* – Above all, do no harm.
- *Beneficence* – Act in such a way to advance the welfare of others when you are able to do so. We have a duty to help others when the need is serious and urgent, we are aware of the situation, and we have the ability to provide assistance.
- *Justice* – Similar cases must be treated in similar ways. Therefore, be fair and impartial.

Appendix B - Some Techniques for Analyzing Ethical Situations

This document was made available to the students electronically.

Baase's Method

Excerpted from Baase (2003, pp. 418-419).

Brainstorming

1. List the risks, issues, problems, and consequences
2. List all the people and organizations affected – the stakeholders
3. If a simple yes-no decision is not possible but rather a course of action needs to be taken, list the possible actions

Analysis

1. Identify the responsibilities of the decision makers. Consider both the ethical and professional responsibilities
2. Identify the rights of the stakeholders. Rights can be either negative (a right not to be interfered with in carrying out the privileges associated with that right – for example the right to vote) or positive (a right that is given to you by another – for example the right to an education. Positive rights are very rare.)
3. Consider the impact of each option on all the stakeholders. Consider the consequences, risks, benefits, harms, and costs of each option.
4. Consider each option in light of various ethical theories (utilitarianism, duty, natural rights, natural law – see Spinello (2003, Chapter 1) and professional codes of ethics.
5. Based on the previous, categorize each option as ethically obligatory, ethically prohibited, or ethically acceptable.
6. If there are several ethically acceptable options, then consider the ethical merits of each, courtesy to others, practicality, self-interest, personal preferences, and so on. Then select an option.

Davis' Method. Adapted from Werth (1997).

State the problem. What about the problem makes you uncomfortable? Do you have a conflict of interest?

1. Check the facts. Many problems disappear on closer examination. Other problems change dramatically.
2. Identify relevant factors. Who are the people involved (the stakeholders), what are the relevant laws, what do the professional codes of ethics say about the situation, are

there any other practical constraints?

3. Develop a list of options. Don't get caught in a circular dilemma.
4. Test your options.
 - Harm – Does the option do less or more harm than an alternative?
 - Publicity – Would I want my choice to appear in a newspaper?
 - Defensibility – Could you defend your choice before a Congressional Committee or a committee of your peers?
 - Colleagues – What do my colleagues say when I describe the problem and suggest this option as a solution?
 - Professional – Has my professional organization taken a position on this option?
5. Make a tentative choice based on steps 1 through 4
6. Review steps 1 through 5 until you are satisfied.
 - Does your choice solve the original problem?
 - Does your solution take into account all relevant facts, including new ones that became known while reviewing the problem?
 - Have you given the correct weight to all the relevant factors?
 - Have you overlooked any options?
 - Have you done enough testing?
 - Did you choose on the basis of the reasons you developed?

Tavani's Method. Excerpted from Tavani (2004, pp. 23-24.)

1. Identify the ethical problem
 - Disclose any features, including hidden or obscure ones, that have moral implications
 - If the issue is descriptive, assess the sociological implications for relevant social institutions and socio-demographic groups
 - If there are no ethical issues, stop
 - If the ethical issue is professional in nature, assess it in terms of codes of ethics for relevant professional associations (ACM, IEEE)
 - If an ethical issue remains, go to Step 2.
2. Analyze the ethical issue by clarifying concepts and putting it in context.
 - If a policy vacuum exists (that is, there are no guidelines on how to resolve the issue), go to Step 2b; otherwise, go to Step 3
 - Clear up any conceptual muddles involving the policy vacuum and go to Step 3.
3. Deliberate on the ethical issue by
 - Applying one or more ethical theories – See Spinello (2003, Ch 1)
 - Justifying the position you reached by evaluating it.

Things to Avoid When Discussing a Case (Excerpted from Frey and Huff on http://computingcases.org/general_tools/teaching_with_cases/general_pitfalls/pitfalls_intro.html accessed on July 28, 2005)

Avoid...

1. Assuming there is a single cause
2. Subjectivity in looking for a resolution
3. Trying to affix blame
4. Rushing for a legal solution
5. Blaming the "human factor"
6. Fixating on technical failures, i.e. blaming technology

Appendix C - Tables
Table 1 – Analysis Rubric

	Excellent	Adequate	Needs Improvement	Inadequate
Content	(points)	(points)	(points)	(points)
Directions	Follows directions precisely (10)	Mostly follows directions (7)	Somewhat follows directions (5)	No appropriate directions
Technical Issues	Technical explanation is concise and complete. Leads into ethical discussion (20)	Technical issues are accurate, but incomplete or rambling (15)	Attempts to explain the technical issue, but is misleading or inaccurate (10)	Names technical issues but does not explain them (5)
Stakeholders	Specifies who is impacted AND how they are impacted. Clearly explains the important values at stake and why they are ethically significant (20)	Specifies who is impacted AND how they are impacted. Attempts to explain the values at stake, but leaves out important points (15)	Specifies either who is impacted OR how, but not both. Attempts to explain the values at stake but misses the mark (10)	Does not specify who is impacted or how they are impacted or the values at stake (5)
Analysis – Use an ethical theory or analogy to support your position	Includes an original or revealing analysis (20)	Includes an adequate analysis (15)	Mentions ethical ideas, but they are not used well (10)	None or minimal analysis (5)
Conclusion – Take and justifying a position	Provides a persuasive argument that clearly supports a position. Even a reader who disagrees with the position finds him/herself thinking about the issue more carefully (20)	Picks and tries to justify a position. Argument is not convincing OR a convincing justification is given that has nothing to do with the stated analysis (15)	Picks a position but does not justify it (10)	Does not pick a position or does not justify it (5)
Follow-up Question(s)	Includes thought-provoking question(s) that is(are) related to the conclusion and analysis (10)	Includes an adequate question that is related to the conclusion and analysis (7)	Includes a question that is only somewhat related to the conclusion and analysis (5)	None or not related to the conclusion and analysis (2)

Table 2 – Writing and Presentation Rubric

Presentation/ Writing	10 points	7 points	5 points	3 p
Clarity (paragraph level)	Easily followed. Effective transitions and polished format are used	Can be easily followed. Basic transitions and structure format are used	Difficult to follow because of inadequate transitions and rambling format	No co
Mechanics (sentence level)	Clear and concise. No grammatical or mechanical errors	Contains minimal grammatical and mechanical errors	Contains numerous grammatical and mechanical errors.	Di sta ma
Organization (overall)	Presents ideas eloquently, logically, and clearly	Most thoughts are logical, but it is listless, flat, or slightly muddled	Some thoughts are apparent but it confuses the reader. Direction is unclear.	Th ga zat

Table 3 – Grade Distribution

Activity	Value
Participation in the Discussion Board (4)	5 pts each = 20 pts
Group Resolution (4)	8 pts each = 32 pts
Facilitator (1)	10 pts
Individual Case Resolution 1	19 pts
Individual Case Resolution 2	19 pts
Total	100 points

