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MURDOUGH CENTER FOR ENGINEERING PROFESSIONALISM

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Ethics Courses by Distance Education

With the encouragement and support of the Texas Board, NCEES, and TEF, the Murdough Center has offered Engineering Ethics correspondence courses since 1991 to 450 individuals from 33 states. The Center is in the process of making the courses available on the world wide web. The courses emphasize applied ethics case studies and includes ethical theories, risk, safety, responsibility, rights of engineers, global issues, and engineers as leaders. In addition, the study of the ethics codes is included in the course. Special emphasis is placed on the engineer's responsibility to protect the public health, safety, and welfare. There are four versions of the course. One version, ENGR 4092 awards college credit (3 credit hours) and the other three result in Continuing Education Units: NC756 (2 CEUs); NC757 (4 CEUs) and NC 758 (6 CEUs). These independent study courses makes one aware of the complex ethical issues which face engineers, and guides the participant into a greater awareness of his or her responsibility as an engineer. The goal of the courses is to develop:

- An understanding of the basics of engineering ethics,
- An exploration of ones own values,
- An awareness of ethical concerns and conflicts,
- A greater familiarity with codes of conduct,
- An increased ability to recognize ethical dilemmas,
- A knowledge of the various ethical dilemmas encountered by the professional engineer, and
- An ability to resolve ethical dilemmas by applying engineering inquiry methods of getting the facts, listing options, testing those options, making a decision and acting.

Information regarding enrollment or registration can be obtained by calling the Continuing Education Department at Texas Tech University at 1-800-692-6877 or by mail to: Texas Tech Univ. Continuing Education, Guided Study, Box 42191, Lubbock, TX 79409-2191. Specific information about course content can be obtained through the Murdough Center at (806)742-3525, Fax (806)742-0444, or by Email:

gjoy@coe2.coe.ttu.edu or jhsmith@coe2.coe.ttu.edu

Engineering Ethics Web Site

Web Address: www.niee.org

The National Institute for Engineering Ethics, with assistance from the Murdough Center and Bob Nichols of Freese and Nichols, has established and maintains a web site that serves as a good starting point for those seeking information about engineering ethics and its application to engineering practice. The site contains over 100 applied ethics cases from the NSPE Board of Ethical Review Opinions. The site has links to other ethics web sites such as Texas Tech, Texas A&M, and MIT. Codes of ethics of most major technical and professional societies may be obtained with the links in the NIEE site.

Best Wishes to Trish Barrington

Trish Barrington, Murdough Center Coordinator and Program Manager since 1991, now resides in the Horseshoe Bay--Marble Falls area. She attended Realtor's School during the Fall and obtained her Realtors license. Trish is now Project Manager of Star Ranch, a new subdivision development project of single family homes on 400 acres surrounding the High School in Marble Falls, Texas.

Trish's involvement in the State Board's Professional Development Program was extensive and very



much appreciated by those who worked with her over the years. Her coordination of the National Science Foundation sponsored projects "Pilot Ethics Workshop for Engineering Deans" and "Conduct and Ethics in Engineering Practice Under NAFTA," her involvement in teaching ethics classes at Tech and for TxDOT, and

her service as editor of this newsletter for almost 6 years are among her many noteworthy accomplishments. We at the Murdough Center, and the many engineers, faculty, and students with whom she interacted, will miss her and her personal sincere dedication to promoting engineering ethics within our profession. *Thanks, Trish...and God speed!*

Understanding Professional and Ethical Responsibilities

The last issue of *TexethicS* (Winter 1996-97) reported on the Professional Conduct and Ethics Exam that was developed for new registrants in Texas. At the January 1997 meeting of the Education and Industry Advisory Committees of the Texas Board of Registration, it was suggested that something similar, but in a “non-exam” format, would be helpful for **engineering students to understand the professional and ethical responsibilities of the engineer.**

The following article on a **Concept for an Educational Brochure: “How We Learn About Our Professional Responsibilities”** is the *initial* phase of this work, and is representative of the format and intent of a final version of an educational brochure for engineering students. During the Fall 1997, the final version of the educational brochure, containing approximately eight (8) situations relating to ethical and professional responsibility of the engineer, will be distributed to engineering colleges in Texas for use by their students. In keeping with the recommendations from the Board’s Advisory Committees, the college deans have volunteered to distribute the educational brochure to faculty and students in their preferred manner. Some may desire to distribute it in engineering classes, while others may prefer distribution through their student engineering societies. There is no grade or reporting of results to the Board planned, but feedback will be appreciated.

Concept for an Educational Brochure

On

“How We Learn About Our Professional Responsibilities”

Introduction:

Ethical dilemmas, which face a professional engineer, are not always easy to answer. Many times the most difficult problems are ones that involve making personal ethical decisions rather than the technical aspects of engineering work.

Choosing between good and evil appears easy until unseen variables are introduced such as time constraints, family, promotion, job security, peer pressure, supervisor pressure, and professional reputation. Also, choosing between competing goods often confronts the engineer and these choices are sometimes difficult, but always important. In order to be better prepared to face and resolve ethical dilemmas, a life “case history” which includes typical situations with which engineers are confronted, can give us practice in critical ethical decision making.

The following story is about an engineer named “Joe” and relates some experiences he has faced as an engineer. These experiences have actually happened to engineers in the past and could happen to you. It is important to consider yourself in Joe’s situation. You will benefit from Joe’s experience if you consider them as though they were your own. Try to answer these questions as if you were really ‘in’ the scenario. Consider the importance of your family, job, and reputation as an engineer, as well as your responsibilities to the public.

The following situations are intended to help the student understand their professional and ethical responsibilities when they become engineers. This exercise is designed to help the student to:

- ❖ Understand ethical dilemmas which relate to engineering,
- ❖ Consider how you would react,
- ❖ Realize the types of dilemmas that you may encounter in the future. and
- ❖ Be aware of the guidance available in the Professional Conduct and Ethics Section of the Texas Engineering Practice Act and the NSPE Code of Ethics.

Joe’s Story

After graduating with an ABET accredited degree in Civil Engineering, Joe went to work for an engineering firm in his home city. He worked for several years ‘crunching numbers’ for the firm and then, because he wanted to be able to practice engineering for the public, Joe decided to become a licensed engineer in Texas.

He learned from studying the Texas Engineering Practice Act that to become registered, he must have experience in which he had progressively increasing levels of responsibility. His employer was not assigning him increasing responsibilities in engineering work, so Joe went to work for a different firm and subsequently became registered.

Joe’s firm was retained to investigate the structural integrity of an apartment complex which his client was planning to sell. Joe was given the assignment. Joe’s employer informed him that the client’s agreed terms required that the structural report remain confidential. The client informed him that he had plans to sell the occupied property “As Is.”

During Joe’s investigation he found no structural problems with the building complex. However, because of prior experiences with city codes, Joe recognized mechanical and electrical deficiencies that violated city codes. In his report Joe made reference to these problems because he felt obligated to tell his client of the deficiencies. His client told him that he did not plan to inform the residents of the apartment complex, nor the prospective buyer of the building.

Joe wondered whether he had an ethical obligation do more than just include his concerns in his report. He wondered if he should also report the safety violations to the proper authorities, especially in light of the fact that the client was disclosing the safety problems to neither the occupants nor buyer.

Joe wanted to ask his immediate boss, but felt awkward considering his short period of employment. He decided that it really did not matter. Joe assumed that he should be satisfied since his employer and client were satisfied.

Six months later the apartment complex caught on fire. It was caused by the electrical deficiencies that Joe had pointed out to his client.

Questions (assuming you were Joe):

What would you have done in the same situation?

Would you feel that you would have a “right” or “obligation” to report the deficiency to the proper authorities?

Would you have spoken with anyone about the dilemma?

Would you be responsible, or would your employer, or the client?

How do you feel about the obligation to be faithful to your client in this situation?

Discussion:

It is important for Joe or any engineer when faced with similar situations to realize the engineer’s primary responsibility is to protect the safety of the public. The occupants of the apartment complex were not aware of the electrical deficiencies. Although not an electrical engineer, Joe had the knowledge of city codes and the ability to foresee the dangers of the inadequacies with the electrical systems.

Joe could have referred to the Texas Engineering Practice Act and the NSPE Code of Ethics before making his decision. If he had done so, here is some of the guidance he would have found.

Texas Engineering Practice Act - Section 1.1: “In recognition of the vital impact which the rapid advance of knowledge of the mathematical, physical and engineering sciences as applied in the practice of engineering is having upon the lives, property, economy and security of our people and national defense, it is the intent of the legislature, in order to protect the public health, safety and welfare...” (purpose of the Engineering Practice Act).

Texas Engineering Practice Act

§131.156(12): “The engineer shall not...maliciously injure or attempt to injure or damage the professional reputation of another by any means whatsoever; provided and except, however, that this shall not relieve an engineer of the obligation to expose any fraud, gross negligence, incompetency, misconduct, unethical or illegal conduct to the proper authorities”

NSPE Code of Ethics

Section II.1.a: “Engineers shall at all times recognize that their primary obligation is to protect the safety, health, property and welfare of the public.”

NSPE Board of Ethical Review:

In a similar case, the NSPE Board of Ethical Review found, in BER Case #89-7, that the engineer did have an “obligation” to report the safety violations to the proper authorities.

Continuing the story: Joe has a friend, David, who had just gone to work for a medium-sized engineering firm. David’s

degree is in mechanical engineering, and he has always practiced in his area of expertise. Shortly after being hired, David learns that his firm has begun a marketing campaign and in its literature has listed David as an electrical engineer. The firm does not have an electrical engineer on their staff. David does not understand why the error was made. He decides to alert the marketing director, who is also an engineer. The marketing director assures David that the error would be corrected. However, after a period of six months, the literature remains unchanged.

The company was submitting a proposal for a project that would involve only a small amount of electrical engineering work. David was frustrated with the situation, but he did not feel he had the time or inclination to complain further to the marketing director. He was involved in another big project and decided not to confront the issue again.

Questions (assuming you were David):

Would you have responded to the mistake as David did?

Under the circumstances, what actions, if any, would you have taken?

Would you have felt obligated to confront the marketing director?

Discussion:

David could have referred to the Texas Engineering Practice Act and the NSPE Code of Ethics before making a decision. If he had done so, here is some of the guidance he would have found.

Texas Engineering Practice Act

§131.153 (a): “The engineer shall not accept any engineering employment or undertake any engineering assignment, for which he is not qualified by education or experience to perform or carry out adequately and competently....”

§131.156 a (9): The engineer shall not “perform any acts, allow any omissions, or make any assertions or representations in the practice of engineering which are fraudulent, deceitful, or misleading, or which in any manner whatsoever tend to create a misleading impression.”

NSPE Code of Ethics

Section I.5: Engineers shall avoid deceptive acts in the solicitation of professional employment.

Section II.3: Engineers shall issue public statements only in an objective and truthful manner.

NSPE Board of Ethical Review:

In a similar case, the NSPE/BER concluded in BER Case #92-2

that the engineer should raise the issue of the error with a principal in the firm and note the appropriate requirements under the state board’s rules of professional conduct in writing.

<p align="center">Comments & Suggestions Requested</p> <p>Readers of this issue of TexethicS, whether faculty or practitioners, are encouraged to submit their opinions regarding the effectiveness of this concept for an educational brochure on “How We Learn About Our Professional Responsibilities”. Suggestions for improvement will be sincerely appreciated. Please send comments and/or suggestions to the Murdough Center for Engineering Professionalism, Box 41023, Texas Tech University, Lubbock, TX 79409-1023. Or Fax to: 809-742-0444, or Email to: gjoy@coe2.coe.ttu.edu or jhsmith@coe2.coe.ttu.edu</p>
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Note to Readers: Articles on engineering ethics and/or professionalism, and suggestions for future topics for the **TexethicS** Newsletter will be welcomed.