

# **Engineering Ethics**

(Hum 4441)

Lecture 6

# Ethical dilemmas



- ❑ **Ethical (or moral) dilemmas** are situations in which **moral reasons come into conflict**, or in which **the applications of moral values are unclear**, and **it is not immediately obvious what should be done**. The moral reasons can be rights, duties, goods or obligations, which make the decision making complex.
- ❑ An ethical dilemma (ethical paradox or moral dilemma) is a **problem in the decision-making process between multiple possible options**, neither of which is absolutely acceptable from an ethical perspective.
- ❑ Ethical dilemmas are extremely complicated challenges that cannot be easily solved. Therefore, the **ability to find the optimal solution in such situations is critical** to everyone.

# Ethical dilemmas

- ❑ One important part of the profession of engineers and engineering practice is to deal with ethical dilemma, because there are many stakeholders involved and moral values are many and varied and can make competing claims. Also the welfare of the public at large is the major focus. So, there could be many ethical dilemmas in the process of engineering practice.
- ❑ Code of ethics serve as guide for resolving ethical dilemmas.

# Codes of ethics

- ❑ A **code of ethics** is a **guide of principles** designed to help **professionals** conduct business honestly and with integrity.
- ❑ A code of ethics document may **outline the mission and values of the business or organization**, **how professionals are supposed to approach problems**, the ethical principles based on the organization's core values, and the standards to which the professional is held.
- ❑ **A code of ethics** also referred to as **Ethical codes** that are adopted by organizations to **assist members in understanding the difference between right and wrong** and in applying that understanding to their decisions. (Wikipedia)
- ❑ These codes **express the rights, duties, roles, responsibilities and obligations of the members** of the profession.

# Codes of ethics

- ❑ Primarily, a code of ethics provides a framework for ethical judgment for a professional.
- ❑ Codes serve as a starting point for ethical decision making.
- ❑ Codes of ethics represents like-
  - how thing should be done,
  - what is the right way to do the things,
  - what should be done,
  - what should be avoided etc.
- ❑ Codes of ethics are not limited to professional organizations. They can also be found, for example, in corporations and universities as well.

# What a code of ethics **is not**

- It is **not** a recipe for ethical behavior; as previously stated, it is **only** a framework for arriving at good ethical choices.
- A code of ethics is **never** a substitute for sound judgment.
- A code of ethics is **not** a legal document.
- A code of ethics **doesn't** create new moral or ethical principles.

# Right-wrong or Better-worse

- Ethical dilemmas are divided into two broad categories.
- On the one hand, many dilemmas have solutions that are either right or wrong.
- “**Right**” means that one course of action is obligatory, and failing to do that action is unethical (immoral). In most instances a code of ethics specifies what is clearly required:
  - Obey the law and heed engineering standards,
  - do not offer or accept bribes,
  - speak and write truthfully, maintain confidentiality, and so forth.

# Right-wrong or Better-worse

- On the other hand, some dilemmas have two or more reasonable solutions, no one of which is mandatory, but one of which should be chosen. These solutions might be better or worse than others in some respects but not necessarily in all respects.



# Code of Ethics – Resolving situations of conflict

- Codes of ethics play at least **eight essential roles**:
  1. serving and protecting the public,
  2. providing guidance,
  3. offering inspiration,
  4. establishing shared standards,
  5. supporting responsible professionals,
  6. contributing to education,
  7. deterring wrongdoing, and
  8. strengthening a profession's image.

# Continued

## ***1. Serving and protecting the public.***

Engineering involves advanced expertise that professionals have and the public lacks, and also considerable dangers to a vulnerable public. Accordingly, professionals stand in a fiduciary relationship with the public: Trust and trustworthiness are essential. A code of ethics functions as a commitment by the profession as a whole that engineers will serve the public health, safety, and welfare. In one way or another, the remaining functions of codes all contribute to this primary function.

# Continued

## ***2. Guidance.***

**Codes** provide helpful guidance by articulating the main obligations of engineers. Because codes should be brief to be effective, they offer mostly general guidance. Nonetheless, when well written, they identify primary responsibilities. More specific directions may be given in supplementary statements or guidelines, which tell how to apply the code.

# Continued

## ***3. Inspiration.***

Because codes express a profession's collective commitment to ethics, they provide a **positive stimulus** (motivation) for ethical conduct. In a powerful way, they voice what it means to be a member of a profession committed to responsible conduct in promoting the safety, health, and welfare of the public. Although this paramount ideal is somewhat vague, it expresses a collective commitment to the public good that inspires individuals to have similar aspirations.

# Continued

## ***4. Shared standards.***

The **diversity of moral viewpoints** among individual engineers makes it essential that professions **establish explicit standards**, in particular minimum (but hopefully high) standards. In this way, the **public is assured of a standard of excellence** on which it can depend, and professionals are provided a fair playing field in competing for clients.

# Continued

## ***5. Support for responsible professionals.***

Codes give positive support to professionals seeking to act ethically. A publicly proclaimed code allows an engineer, under pressure to act unethically, to say: “I am bound by the code of ethics of my profession, which states that . . .”. This by itself gives engineers some group backing in taking stands on moral issues. Moreover, codes can potentially serve as legal support for engineers criticized for living up to work-related professional obligations.

# Continued

## ***6. Education and mutual understanding.***

Codes can be used by professional societies and in the classroom to prompt discussion and reflection on moral issues. Widely circulated and officially approved by professional societies, codes encourage a shared understanding among professionals, the public, and government organizations about the moral responsibilities of engineers. A case in point is NSPE's BER, which actively promotes moral discussion by applying the NSPE code to cases for educational purposes.

# Continued

## ***7. Deterrence and discipline.***

Codes can also serve as the formal basis for investigating unethical conduct. Where such investigation is possible, a deterrent for immoral behavior is thereby provided. Such an investigation generally requires paralegal proceedings designed to get at the truth about a given charge without violating the personal rights of those being investigated. Unlike the American Bar Association and some other professional groups, engineering societies cannot by themselves revoke the right to practice engineering in the United States. Yet some professional societies do suspend or expel members whose professional conduct has been proven unethical, and this alone can be a powerful sanction when combined with the loss of respect from colleagues and the local community that such action is bound to produce.



# Continued

## ***8. Contributing to the profession's image.***

Codes can present a **positive image** to the public of an ethically committed profession. Where warranted, the image can help engineers more effectively serve the public. It can also win greater powers of self regulation for the profession itself, while lessening the demand for more government regulation. The reputation of a profession, like the reputation of an individual professional or a corporation, is essential in sustaining the trust of the public.

# Codes of Ethics

- **Why are codes important?**

- Serve and protect the public
- Guidance/support for engineers
- Inspiration, deterrence, discipline
- Shared standards, education, mutual understanding
- Profession's image

- **Limitations of codes**

- Too vague to be useful in every day ethical decision-making
- Impossible to cover all eventualities

# Abuse of Codes

- ❑ When codes are not taken seriously within a profession, they amount to a kind of window dressing that ultimately increases public cynicism about the profession.
- ❑ Probably the worst abuse of engineering codes is to restrict honest moral effort on the part of individual engineers to preserve the profession's public image and protect the status quo.
- ❑ Preoccupation with keeping a shiny public image may silence healthy dialogue and criticism.
- ❑ On rare occasions, abuses have discouraged moral conduct and caused serious harm to those seeking to serve the public.

# Case Study

- **Engineer A** is employed by a software company and is involved in the design of specialized software in connection with the operations of facilities affecting the public health and safety (i.e., nuclear, air quality control, water quality control). As the part of the design of a particular software system, Engineer A conducts extensive testing and although the tests demonstrate that the software is safe to use under existing standards, **Engineer A is aware of new draft standards** that are about to be released by a standard setting organization-standards which the newly designed software may not meet. Testing is extremely costly and the company's clients are eager to begin to move forward. The software company is eager to satisfy its clients, protect the software company's

# Case Study

finances, and protect existing jobs; but at the same time, the management of the software company wants to be sure that the software is safe to use. A series of tests proposed by Engineer A will likely result in a decision whether to move forward with the use of the software. The tests are costly and will delay the use of the software by at least six months, which will put the company at a competitive disadvantage and cost the company a significant amount of money. Also, delaying implementation will mean the state public service commission utility rates will rise significantly during this time. The company requests Engineer A's recommendation concerning the need for additional software testing.

# Case Study

- ❑ There is actually **no dilemma for Engineer A** at all because what should be done is so obvious.
- ❑ The software **company faces an ethical dilemma:**
  - Is it all right to proceed without the additional testing? But that is a dilemma for the managers, it would seem, not the engineer.

# Case Study

- ❑ There are two morally permissible courses of action:
- ❑ Do the tests; do not do the tests.
  - do the tests option might have further options under it.  
For example, do the tests, but interrupt them if economic conditions worsen; or do the tests, but devise a quicker version of them; or do the tests, but go ahead with the present sale, being willing to make modifications if the tests raise concerns.

# Case Study

## □ Utilitarianism

- Hold paramount the safety, health, and welfare of the public – Do the testing for the new standards.
- This is the most good for the most people.
- Could do a cost-benefit analysis. Analyze what costs there will be to the company if there is a software failure vs. costs of the tests



# Case Study

## □ Rights and duty ethics

- Public has a right to exposure to safe systems, not to be injured, etc.
- Engineer has a right to provide an opinion on such an important matter
- Engineer has a duty to provide safe systems
- Engineer has a duty to be loyal to company (try to avoid layoffs, etc.)

# Case Study

## □ Virtue ethics

- **Honesty** – engineer's honesty in whether meet new standards, old standards
- **Competence** – engineer's competence in coming up with a less expensive test
- **Courage** – engineer's courage to make a tough decision (like to do the expensive tests)
- **Loyalty** – engineer's loyalty to the company to protect them from litigation by testing for new standards