
Professional Ethics in Engineering

MSAJCE

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Ethics:

- **Principles,
Morale,
Believes,
Standards,
...etc**

- Personal ethics is a foundation of professional ethics.
- There is a difference between professional ethics and personal ethics.
- Obvious difference; professional ethics has to do with the ethical standards accepted by a professional community.

Ethics:

- **Principles,
Morale,
Believes,
Standards,
...etc**

- **Engineering Ethics:** is about
 - how we have to act and live as an engineer,
 - what we have to consider when making decisions,
 - according to what standards are these actions right or wrong.

Shortly Engineering ethics is how engineers morally act as an Engineer. This is professional ethics NOT personal ethics.

According to what standards are these actions right or wrong?

■ Case 1:

Mary discovers that her plant (factory) is discharging a substance into the river that is not regulated by the government. She decides to do some reading about the substance and finds that some of the studies suggest that it is carcinogen. As an engineer, she believes she has an obligation to protect the public, but she also wants to be a loyal employee. The substance will probably be very expensive to remove, and her boss advises, “Forget about it until the government makes us do something. Then all the other plants will have to spend money too, and we will not be at a competitive disadvantage.” ***What should Mary do?***

According to what standards are these actions right or wrong?

■ Case 2:

Tom is designing a new chemical plant. One of his responsibilities is to identify the valves to be used in a certain portion of the plant. Before he makes his final decision, a salesperson for one of the firms that manufactures valves invites Tom to a golf game at the local country club. ***Should Tom accept the offer?***

According to what standards are these actions right or wrong?

- Consider the cases as a professional engineer.



- What you have to consider when making decisions in those cases.
- According to what standards are these actions right or wrong in those cases.

Things to consider and standards:



■ What are your
OBLIGATIONS /
RESPONSIBILITIES as a
professional engineer?

Things to consider and standards:

- **NSPE Codes** (National Society of Professional Engineers)
 - As a professional engineer it is your obligation / responsibility to obey NSPE codes.

Therefore;

- Engineering Ethics (**NSPE codes**): shows you how you have to act and live as an engineer. What you have to consider when making decisions. According to NSPE codes these actions are right or wrong.

Where to find NSPE codes?

- <http://www.ie.emu.edu.tr>

↳ Lecturers

↳ Orhan Korhan

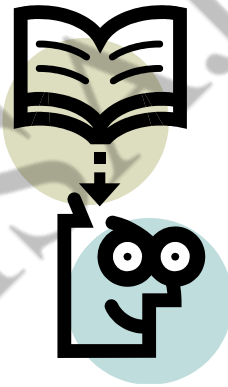
↳ IE 355

↳ Outline, NSPE codes etc.

or in your textbook: page 376 (3rd edition)

What is a Profession?

- Paid occupation, especially one that requires advanced education, characteristics and training.



Professionals vs. Non-professionals

1. *Education:* Typically requires extensive period of training, and this training is of an intellectual character. This training based on theory. This theoretical base is obtained through formal education (universities). Today, most professionals have at least bachelor's degree.
2. *Have knowledge and skills that are vital to the well being of the larger society.* (Ex. doctor, lawyer, accountant).
3. *Professions have monopoly on the demand of professional services.* This control achieved in two ways. First, only those who have graduated from a professional school should be allowed to hold the professional title. Secondly, influence the community that there should be a licensing system for those who want to enter the profession.
4. *Often have an unusual degree of autonomy in the workplace.* Ex. doctors must determine the most appropriate type of medical treatment for their patients, and lawyers must decide the most successful type of defense for their clients.
5. *Claim to be regulated by ethical standards, usually embodied in a code of ethics.* Most professions regulate themselves for the public benefit.

Differences:

- Personal Ethics
is the set of ones own ethical commitments.
- Common Morality
is the set of moral ideals shared by most members of a culture or society.
- Professional Ethics
is the set of standards adopted by professionals in so far as they see themselves acting as professionals. It can be different from personal ethics and common morality.

Ethics =Morality

The following examples shows some of the possible relationships between professional, personal, and common morality.

- An engineer refuses to design military hardware because she believes war is in-moral.
This refusal is based on personal morality.
- A civil engineer refuses to design a project he believes will be contrary to the principles of sustainable (maintain) development.

This refusal is based on personal morality and professional code of ethics.

Aims of studying ethics

- *Moral Imagination:* To minimize the chances of being taken by surprise, engineers must exercise great imagination in considering possible alternatives and their likely consequences.
- *Recognizing (Moral) Ethical Issues:*
- *Analyzing Concepts:*
- Eliciting (Bring out) a Sense of Responsibility:
- Addressing un-clarity, un-certainty, and disagreement.

Case: The Forklifter (PAGE 24 or page320 in 3rd edn)

Engineering student Bryan Springer has a high paying summer job as a forklift operator. This job enables him to attend university without having to take out any student loans. He was now staring at a 50-gallon drum filled with used machine coolant, wondering what he should do.

Just moments ago, Bryan's supervisor, Max Morrison, told him to dump half of the used coolant down the drain. Bryan knew the coolant was toxic, and he mentioned this to Max. But Max was not swayed.

Case: The Forklifter (cont.)

Max: The toxins settle at the bottom of the drum. If you pour out half and dilute it with tap water while you're pouring it, there's no problem.

Byran: I don't think that's going to work. Besides, isn't it against the law?

Max: Look, kid, I don't have time for chat about a bunch of laws. If I spent my time worrying about every little regulation that comes along, I'd never get anything done -- and neither will you. Common sense is my rule. I just told you -- Toxins settle at the bottom, and most of them will stay there. We've been doing this for years, and nothing's happened.

Byran: You mean no one's **said** anything about it? That doesn't mean the environment isn't being harmed.

Max: You aren't one of those "environmentalists," are you? You students spend too much of your time with "theory". It's time to "get real" -- and get on with the job.

Case: The Forklifter (cont.)

Byran: But....

Max: But nothing. Time to get real-and get on with the job. You know, you're very lucky to have a good paying job like this, kid. In three months you'll be back in your university. Meanwhile, how many other students do you think there are out there wondering if they'll be able to afford to go back -- students who'd give everything to be where you are right now.

Max then left, fully expecting Bryan to dump the used coolant. As Bryan stared at the drum, he pondered his options.

What options do you think he has? What do you think he should do?