Lecture 5

Engineering Ethics

Adapted from Dr. Erkan MESE

Engineering Ethics

- What is it?

- Why is it important?

- Issues, difficulties, and dilemmas

- Whistle-blowing

Definitions

Moral
Fundamental rules and belief which make us evaluate correctly, well and fairly.

Ethic
Decisions and behaviors which reflects our moral understanding.

Definitions (cont.)

Engineering Ethics :

- The study of **_moral_** issues and decisions confronting engineers.

- The study of **_moral_** conduct, character, ideals, and behavior among people in engineering.
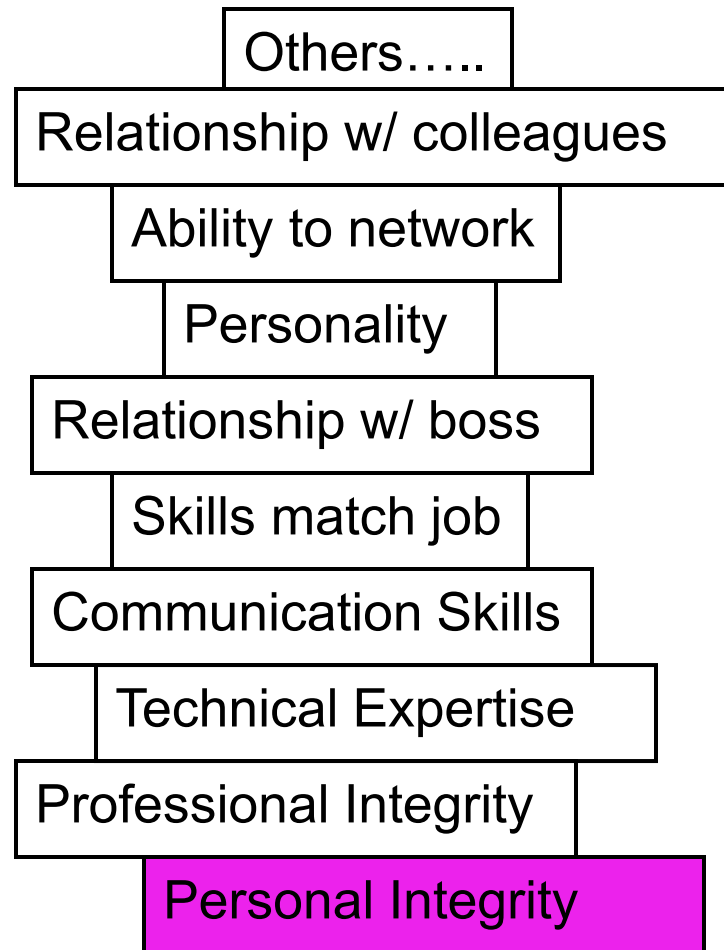
Martin and Schinzinger

Why is it important?

- As a student, you are expected to behave in an ethical manner -- you need to know what your responsibilities are.

- In the workplace, you will be responsible for decisions that affect people's lives and well being.

Our society depends upon a bond of trust between engineers and the general public. The public expects quality and safety.

Building Blocks of a Successful Career

Others…..

Relationship w/ colleagues

Ability to network

Personality

Relationship w/ boss

Skills match job

Communication Skills

Technical Expertise

Professional Integrity

Personal Integrity

Foundation of a worthwhile career

Integrity

- Integrity involves behaving in a ethical manner.

- Integrity is an engineer's most valuable asset.

- Without integrity, an engineer has little value in a technical community.

Integrity (cont.)

Integrity is important to everyone.

Here is a slogan which emphasis the importance of issue :

"Ethics is not something you should flirt with...It is something you should be married to"

Ethical Decision-Making

Ethical Decisions
vs.
Analytical Decisions

- Ethical decisions are based on morality, not scientific principles.

- Most of your coursework will prepare you for making analytical decisions.

Some Thoughts to Consider

- You will face ethical conflicts throughout your engineering career.

- Your decisions are often final and irreversible.

- Your actions will impact on our society.

- Unfortunately, solutions to ethical conflicts are not simple. They are often hard.

Example: Heinz's Dilemma

A woman dying from a rare disease must have an expensive drug that her doctors think will help her.

She and her husband Heinz cannot afford the drug, in part because the local pharmacist is charging ten times the cost of producing the drug. The pharmacist has invented the drug and remains its only source.

Heinz attempts to borrow the money but is able to raise only half of what is needed. He asks the pharmacist to reduce the price or to accept half now and the remainder later, but the pharmacist refuses. In desperation, Heinz breaks into the pharmacy and steals the drug.

Was Heinz's theft justified from an ethical point of view?

IEEE Code of Ethics

1. to accept responsibility in making engineering decisions consistent with the safety, health and welfare of the public, and to disclose promptly factors that might endanger the public or the environment;

2. to avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist;

3. to be honest and realistic in stating claims or estimates based on available data;

IEEE Code of Ethics (cont.)

4. to reject bribery in all its forms;

5. to improve the understanding of technology, its appropriate application, and potential consequences;

6. to maintain and improve our technical competence and to undertake technological tasks for others only if qualified by training or experience, or after full disclosure of pertinent limitation;

7. to seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, and to credit properly the contributions of others;

IEEE Code of Ethics (cont.)

8. to treat fairly all persons regardless of such factors as race, religion, gender, disability, age or national origin;

9. to avoid injuring others, their property, reputation, or employment by false or malicious action;

10. to assist colleagues and co-workers in their professional development and to support them in following this code of ethics.

Ethics in the Workplace

Some of the issues we will discuss:

- Accepting blame for failure
- Safety versus cost
- Making moral decisions within your workplace
- Whistleblowing

Accepting Blame

We can choose to...

Accept blame for failures when they are our fault

or

"Point the finger" and try to put the blame on others.

Examples:

- A person gets a speeding ticket...blames the police.

- A student does not do well on an exam...blames the exam.

Accepting Blame (cont.)

General rule:

The sooner a person (or department, company, etc.) accepts blame and acts to correct a problem, the easier the solution will be.

Accepting blame and acting to correct the problem is the ethical thing to do.

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Safety Versus Cost

No product can be engineered to be absolutely safe, and still be practical and affordable.

No procedure can be made absolutely safe and effective, and still be time-efficient and affordable.

No engineering design can absolutely guarantee against misuse or potential flaws.

Safety Versus Cost (cont.)

Consider a typical product...the lawn mower.

Can it be engineered to be 100% safe?

Be Proactive!

When safety is an issue…

- It is ethical to speak up report all violations.

- It is ethical to taking "positive responsibility" by looking ahead to possible problems, and proactively ask what we can best do to minimize risk and harm.

If you fail to do this, the results can be *disastrous*.

Whistle-blowing

***Whistle-blowing*:** To convey information outside through the approved organizational channels to bring attention to a problem within the organization.

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Whistle-Blowing: Considerations

Personal liability: loss of job or career

The moral obligation to be a whistleblower is based on the responsibility to society.

Evidence of potential harm to public is usually necessary.

Documentation is important