INTRODUCTION TO ENGINEERING ETHICS

Prof Dr Ahmad Kamal Ariffin

islam and engineering 1

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References

- National Society of Professional Engineers http://www.nspe.org/Ethics/index.html
- American Society of Mechanical Engineers http://www.professionalpractice.asme.org/Information/Podcasts.cfm#Ethics

- Bowen, Richard W., *Engineering Ethics, Outline of an Aspirational Approach*, Springer, 2009.
- Moriarty, G., The Engineering Project, Its Nature, Ethics and Promise, The Pennsylvania State University Press, 2008
- Seebauer, E. G., and Barry, R. L., *Fundamentals of Ethics for Scientists and Engineers*, Oxford, 2001.

Engineering – What is it?

- Engineering is the profession in which a knowledge of the mathematical and natural sciences, gained by study, experience, and practice, is applied with judgment to develop ways to utilise, economically, the materials and forces of nature for the benefit of mankind.

The Engineer – who is he/she?

- Engineers turn ideas into reality; i.e. they create useful products and systems (through design and manufacturing/construction)
- Engineers apply creativity - playing with imagination and possibilities, leading to new and meaningful connections and outcomes while interacting with ideas, people, and the environment. This is what engineers do (another possible definition of engineering) - in regard to the man-made environment.

The Engineer

- Is an important and learned professional
- Is expected to exhibit the highest standards of honesty and integrity
- Has a profession that has a direct and vital impact on the quality of life for all people

Expectations

- Services provided by engineers require honesty, impartiality, fairness and equity, and must be dedicated to the protection of the public health, safety, and welfare
- Perform under a standard of professional behaviour

Therefore…..

- adherence to the highest principles of ethical conduct by engineers.

INTRODUCTION TO ETHICS

- Definitions: see for example

- Introduction:

  An Introduction to Ethics *http://www.galilean-library.org/int11.html*

- Islamic ethics:

  http://www.understanding-islam.com/related/text.asp?type=article&aid=75

- Further reading

  http://ethics.acusd.edu/

Introduction - definition

- **Ethics** - *also called* ***moral philosophy*** the discipline concerned with what is morally good and bad, right and wrong. The term is also applied to any system or **theory** of moral values or principles.

  from Encyclopedia Britannica

What do we mean by ethics?

- *morality* is the right or wrong (or otherwise) of an action, a way of life or a decision
- *ethics* is the study of such standards as we use or propose to judge such things

- Example: abortion may be moral or immoral according to the code we employ but ethics tells us why we call it so and how we made up our minds.

On the contrary…

- Moral and ethical statements – distinguished from *etiquette* and *law*.

Why study ethics?

- *everyone* is engaged in ethical thought at most times in their lives, knowingly or otherwise
- each day we are confronted with ethical problems and have to make ethical decisions

History

- ethics is universal therefore many thinkers in the past put forward their ideas and tried to improve on what came before them
- many conceptions of ethics in the ancient world were based on or influenced by the Greeks, particularly Plato and Aristotle
- (also, later we will discuss further about Islamic ethics)

Where do ethics come from?

- From God
- Islam teaches that:
  "whoever saves the life of one, it shall be as if he had saved the life of all mankind." (Qur'an, 5:32)
- From an abstract world where concepts exist in some way
- From agreement between people
- From a consideration of duty, or virtue
- From a consideration of the consequences of various actions

Engineering code of ethics…their origins

- not just a personal preference established and governed by the individual engineer
- companies and professional societies have drafted codes of ethics to which their members are required to commit
- the codes tend to be very similar

The Hammurabi Code

- **If a builder has built a house for a man and has not made his work sound, and the house he has built has fallen down and so caused the death of the householder, that builder shall be put to death. If it causes the death of the householder's son, they shall put the builder's son to death….**

(Babylon, 1758 B.C.)

Examples of Code of Ethics

- The NSPE – National Society of Professional Engineers
- The ASME – American Society of Mechanical Engineers
- The IEEE

Engineering Ethics

Code of Ethics for Engineers (excerpt of NSPE)

I. Fundamental Canons

Engineers, in the fulfillment of their professional duties, shall:

- Hold paramount the safety, health and welfare of the public

- Perform services only in areas of their competence.
- Issue public statements only in an objective and truthful manner.
- Act for each employer or client as faithful agents or trustees.

- Avoid deceptive acts

- Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.

Ethical Issues are Seldom Black and White

Conflicting demands:

- Loyalty to company and colleagues
- Concern for public welfare
- Personal gain, ambition

Ethical standards are usually relative and personal, there is seldom an absolute standard

From the internet..

- Engineering is our profession, not just a job.
- Study of engineering ethics can guide us in resolving the moral dilemmas we might encounter.
- Being responsible is what a professional is all about.
- Our goal must be to become morally autonomous in the performance of our duties.

Quote from Armando B. Corripio, Ph.D., P.E.

Personal Ethics - everyday examples

- Software piracy
- Copying of homework or tests
- Income taxes
- “Borrowing” nuts and bolts, office supplies from employer
- Copying of Videos or CD’s
- Plagiarism
- Using the copy machine at work