

Ethics in Engineering

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What is ethics?

- A set of moral principles or values governing an individual or a group.¹
- Ethics refers to the principles of conduct that govern the behavior of an individual or a profession.²

¹ Webster's Ninth New Collegiate Dictionary, Merriam-Webster Inc., Springfield, MA, 1984.

² G.E. Dieter, Engineering Design, 3rd edition, McGraw-Hill, New York, NY, 2000, p. 728.

What is ethical?

- Depends upon values.
 - What do values depend upon?
 - What's important to society
 - What's important to profession
 - What's important to employer
 - What's important to individual

Ethical professionals must balance value responsibilities

Legal/Ethical

“Do what is right in the first place and doing what is best for all involved.”

Illegal/Ethical

RARE!

Breach of contract to protect safety and wellbeing of public

Legal/Unethical

Morally reprehensible but protected by law

Illegal/Unethical

“Go directly to jail!”

Code of ethics

- Morality
 - Individual
- Professional ethics
 - Institution

Morality

- Standards of conduct that apply to individuals within society rather than only to members of a special group.
- Standards that every rational person wants every other person to follow.

Morality – cont'd

- Standards that every rational person wants every other person to follow.
 - Respect the rights of others
 - Show fairness in dealings with others
 - Be honest in all actions
 - Consider the welfare of others
 - Show compassion to others
 - Etc...

Professional Ethics

- Standards of conduct that every member of a profession expects every other member to follow.
- Standards that apply to every member of a group because they are members of that professional group.

Professional Ethics – cont'd

- Standards that apply to every member of a group because they are members of that professional group.
 - **Honesty** and **truth**.
 - **Honor** – showing respect, integrity, and reputation for achievement.
 - **Knowledge** – gained through education and experience.
 - **Efficiency** – producing effectively with minimum of unnecessary effort.
 - **Diligence** – persistent effort.
 - **Loyalty** – allegiance to employer's goals.
 - **Confidentiality** – dependable in safeguarding information.
 - Protecting **public safety** and **health**.

ASME Code of Ethics of Engineers

The Fundamental Principles

Engineers should uphold and advance the integrity, honor, and dignity of the Engineering profession by:

1. Using their knowledge and skill for the enhancement of human welfare;
2. Being honest and impartial, and serving with fidelity the public, their employers and clients,
3. Striving to increase the competence and prestige of the engineering profession.

ASME Code of Ethics of Engineers

The Fundamental Canons

1. Engineers shall hold paramount the safety, health and welfare of the public in the performance of their professional duties.
2. Engineers shall perform services only in the areas of their competence.
3. Engineers shall continue their professional development throughout their careers and shall provide opportunities for the professional and ethical development of those engineers under their supervision.
4. Engineers shall act in professional matters for each employer or client as faithful agents or trustees, and shall avoid conflicts of interest or the appearance of conflicts of interest.
5. Engineers shall build their professional reputation on the merit of their services and shall not compete unfairly with others.
6. Engineers shall associate only with reputable persons or organizations.
7. Engineers shall issue public statements only in an objective and truthful manner.

Goals for Ethical Behavior

1. Use your knowledge as an engineer for the good of humanity.
2. Do it in an honest and impartial way.
3. Work to increase the competence of the engineering profession.

Duties of an Ethical Engineer

Look at the Canons

- Safety health and welfare of public is 1st responsibility
- Work in your area of competence and always strive to improve competence. This will make you more able to protect public safety.
- Act professionally with respect to the employer or client as faithful agents or trustees. Avoid conflicts of interest.

Duties of an Ethical Engineer – cont'd

Look at the Canons

- Never misrepresent or exaggerate academic or professional credentials.
- Only associate with reputable persons or organizations.
 - “Nothing is as important than your reputation for following high ethical standards.”
- Be objective and truthful in professional reports, statements, and public testimony.
 - When expressing your professional opinion, make sure it is founded upon adequate knowledge and competence in the subject matter.

Why Support a Code of Ethics?

- It's the professional (“right”) thing to do!
- Supporting the code protects engineers from being harmed by what other engineers do.
- Makes engineering a profession about which you need feel no morally justified embarrassment.

How do we Solve Ethical Conflicts?

- Obligation to serve diligently and loyally both your employer and society.
- Sometimes there is a conflict between these activities.
- Procedures to solve ethical conflicts.

Procedures for Solving Ethical Conflicts

I. Internal appeal option

A. Individual preparation

1. Maintain a record of the events and details
2. Examine the company's internal appeals process
3. Be familiar with the state and federal laws that could protect you
4. Identify alternative courses of action
5. Decide on the outcome that you want the appeal to accomplish

B. Communicate with your immediate supervisor

1. Initiate informal discussion
2. Make a formal written appeal
3. Indicate that you intend to begin the company's internal process of appeal

C. Initiate appeal through the internal chain of command

1. Maintain formal contacts as to where the appeal stands
2. Formally inform the company that you intend to pursue an external solution.

Procedures for Solving Ethical Conflicts – cont'd

II. External appeal option

- A. Individual actions
 - 1. Engage legal counsel
 - 2. Contact your professional society
- B. Contact your client (if applicable)
- C. Contact the media

Whistleblowing

Act of reporting on unethical conduct within an organization to someone outside of the organization in an effort to discourage the organization from continuing the activity.

When is it right to “blow the whistle?”

1. When considerable and serious harm will be done by the product to the public.
2. Concerns have been made known to their superiors, and getting no satisfaction from their immediate superiors, all channels have been exhausted within the corporation, including the board of directors.
3. The whistleblower must have documented evidence that would convince a reasonable impartial observer that his or her view of the situation is correct and the company position is wrong.
4. There must be strong evidence that releasing the information to the public would prevent the projected serious harm.

CODE OF ETHICS

Metallurgical and Materials Engineers shall uphold and advance the integrity, honor, and dignity of the engineering profession by: Being honest and impartial and serving with fidelity their employers, clients, and the public at large; striving to increase the competence and prestige of the engineering profession; and using their knowledge and skill for the enhancement of human welfare. To achieve these goals, members shall:

1. Hold paramount the safety, health, and welfare of the public in performance of their professional duties.
2. Formally advise their employers or clients (and consider further disclosure, if warranted) if they perceive that a consequence of their duties will adversely affect the present or future health or safety of their colleagues or the public.
3. Accept responsibility for their actions and recognize the contributions of others; seek critical review of their work and offer objective criticism of the work of others.
4. Issue statements of present information only in an objective and truthful manner.
5. Act in professional matters for each employer or client as faithful agents or trustees, and avoid conflicts of interest.
6. Treat fairly all colleagues and co-workers, recognizing their unique contributions and capabilities.
7. Perform professional services only in areas of their competence.
8. Build their professional reputations on the merits of their services.
9. Continue their professional development throughout their careers, and provide opportunities for the professional development of those under their supervision.

CASE STUDY