

Section 6

Ethics

Ethics

6.1 Definition and Background

Ethics are the principles of conduct that govern an individual or a profession. They provide the framework of the rules of behavior that are moral, fair, and proper for a true professional. A code of ethics serves to remind individuals how important integrity is in a self-regulating profession. It lays out the issues that are deemed most important in the collective wisdom of the profession. By publishing and enforcing a code of ethics, the profession serves notice that its ethical precepts are to be taken seriously. Obviously, engineers should respect the same fundamental ethical principles in the context of the special expertise and public trust of the engineering profession.

Because engineering lacks the homogeneous character of such professions as law and medicine, it is not surprising to find that there is no widely accepted code of engineering ethics. Most professional societies have adopted their own codes, and Accreditation Board for Engineering and Technology (ABET) and National Society of Professional Engineers (NSPE) have adopted broader-based but not universally accepted ethical codes. Again, because engineers who are employees of either business or government are in the great majority, they face ethical problems that self-employed professionals avoid. These arise from the employer (and this achieve recognition and promotion) and the desire to adhere to a standard of ethics that places the public welfare ahead of corporate profit. For example, what can an employed engineer do to expose and correct the corrupt practices of an employer? What should an engineer do if employed in a business atmosphere in which kickbacks and bribes are an accepted practice?

Ethics can be learned like any other subject. Ethics is based on moral philosophy. While it is not possible to develop a single comprehensive moral principle that can provide guidance in solving all ethical dilemmas, it is possible to lay a set of moral values for personal behavior:

- Respect the right of others
- Be fair
- Do not lie or cheat
- Keep promises and contracts
- Avoid harming others
- Prevent harm coming to others
- Help others in need
- Obey all laws

An engineer in a design situation potentially can be faced with a myriad of ethical situations. Consider the following short list:

- Specification of components or materials can lead to conflict of interest for certain suppliers
- Authorizing the release of production parts that are only marginally out of specification
- Condoning the use of pirated design software
- Firing a hardworking veteran employee to make room for a star who suddenly becomes available

Ethical situations in engineering generally fall within the following general situations:

- Loyalties between two groups
- Duty to general public versus right of employer
- Issues of recognition for performance
- Falsification of experimental data
- Issue of differing standards of morals in different parts of the world

Consider the following example. A newly graduated engineer is working for a consulting firm that is engaged in research for the Department of Defense (DOD). The company is preparing a proposal to DOD and will use his resume as part of the proposal. The engineer is in the room where report copying is done and happens to look at his resume as the proposal is being assembled. To his surprise he observes that someone has grossly modified his resume, listing professional experience that he does not have. What should he do?

He immediately tells his superior about the “mistakes” in his resume, believing at the time that it was an error. The superior states that he will take care of it, but a week later the young engineer finds out that the falsified resume had been included in the proposal. He talks again with his superior but receives an evasive answer. What should he do? Should he resign immediately, or stick around and hope this was an isolated incident? Should he find other employment and then report the situation to the DOD agency that received the proposal, or should he just forget about it and get on with his career with a new employer?

An important ethical situation which periodically attracts wide attention is whistleblowing. Whistleblowing refers to making a public accusation about misconduct within an organization. In the usual case the charges are made by an employee or former employee who has been unable to obtain the attention of the organization’s management to the problem. Sometimes whistleblowing is confined to within the organization where the whistleblower’s supervision is bypassed in an appeal to higher management. An important issue is to determine the conditions under which engineers are justified in blowing the whistle. Generally, it is morally permissible for engineers to engage in whistleblowing when the following conditions are met.

- The harm that will be done by the product to the public is considerable and serious.
- Concerns have been made known to their superior, and getting no satisfaction from their immediate superior, all channels have been exhausted within the corporation, including the board of directors.

- 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.
- There must be strong evidence that releasing the information to the public would prevent the projected serious harm.

Clearly a person engaging in whistleblowing runs considerable risk of being labeled a nut or of being charged with disloyalty, and possibly being dismissed. The decision to blow the whistle requires great moral courage. Federal government employees have won protection under the Civil Service Reform Act of 1978, but protection under state laws or active support from the engineering professional societies is still spotty. Some far-sighted companies have established the office of ombudsman or an ethics review committee to head off and solve these problems internally before they reach the whistleblowing stage.

6.2 Codes of Ethics of Engineers

It is generally conceded that an individual acting on his or her own cannot be counted on to always act in a proper and moral manner. Creeds, statutes, rules, and codes all attempt to complete the guidance needed for an engineer to do the correct thing. A creed is a statement or oath, usually religious in nature, taken or assented to by an individual.

The fundamental principles are:

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

- using their knowledge and skill for the enhancement of human welfare;
- being honest and impartial, and serving with fidelity the public, their employers and clients, and
- striving to increase the competence and prestige of the engineering profession.

A code is a system of non-statutory, non-mandatory canons of personal conduct. A canon is a fundamental belief that usually encompasses several rules. For example, the code of ethics of the American Society of Mechanical Engineers (ASME) contains the following fundamental canons:

- Engineers shall hold paramount the safety, health, and welfare of the public in the performance of their professional duties.
- Engineers shall perform services only in areas of their competence.
- Engineers shall continue their professional development through their careers and shall provide opportunities for the professional and ethical development of those engineers under their supervision.
- 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.

- Engineers shall build their professional reputation on the merit of their service and shall not compete unfairly with others.
- Engineers shall associate only with reputable persons or organizations.
- Engineers shall issue public statements only in an objective and truthful manner

A rule is a guide (principle, standard, or norm) for conduct and action in a certain situation. A statutory rule is enacted by the legislative branch of state or federal government and carries the weight of law. Some U.S. engineering registration boards have statutory rules of professional conduct.

6.3 Purpose of A Code of Ethics

Many different sets of codes of ethics (canons of ethics, rules of professional conduct, etc.) have been produced by various engineering societies, registration boards, and other organizations. The purpose of these ethical guidelines is to guide the conduct and decision making of engineers. Most codes are primarily educational. Nevertheless, they have been used by the societies and regulatory agencies as the basis for disciplinary actions.

Fundamental to ethical codes is the requirement that engineers render faithful, honest, professional service. In providing such service, an engineer must represent the interests of his employer or client and, at the same time, protect public health, safety, and welfare.

There is an important distinction between what is legal and what is ethical. Many legal actions can be violations of codes of ethical or professional behavior.³ For example, an engineer's contract with his client may give the engineer the right to assign his responsibilities, but doing so would be unethical without informing the client.

Ethical guidelines can be categorized on the basis of who is affected by the engineer's actions-the client, vendors and suppliers, other engineers, and the public at large.

6.4 Ethical Priorities

There are frequently conflicting demands on an engineer. While it is impossible to use a single decision-making process to solve every ethical dilemma, it is clear that ethical considerations will force an engineer to subjugate his or her dealing with others need to be considered in the following order from highest to lowest priority:

- Society and the public
- The law
- The engineering profession
- Other involved engineers
- the engineer's client
- the engineer's firm
- the engineer personally

6.5 Dealing with Client and Employers

The most common ethical guidelines affecting an engineer's interactions with his or her employer (the client) can be summarized as follows: An engineer should not accept assignments that he or she does not have the skill, knowledge, or time to complete.

- The client's interests must be protected. The extent of this protection exceeds normal business relationships and transcends the legal requirements of the engineer-client contract.
- The engineer must not be bound by what the client wants in instances where such desires would be unsuccessful, dishonest, or unethical.
- Confidential client information remains the property of the client and must be kept confidential.
- An engineer must avoid conflicts of interest and should inform the client of any business connections or interests that might influence his or her judgment. The engineer should also avoid the appearance of a conflict of interest when such an appearance would be detrimental to the profession, his or her client, or himself.
- An engineer must recognize his or her own limitations. He should use associates and other experts when the design requirements exceed his or her abilities.
- The engineer's sole source of income for a particular project should be the fee paid by his or her client. An engineer should not accept compensation in any form from more than one party for the same services.
- If the client rejects the engineer's recommendations, the engineer should fully explain the consequences to the client.
- The engineer must freely and openly admit to the client any errors made.

All courts of law have required an engineer to perform in a manner consistent with normal professional standards. This is not the same as saying an engineer's work must be error-free. If an engineer completes a design, has the design and calculations checked by another competent engineer, and an error is subsequently shown to have been made, the engineer may be held responsible, but he will probably not be considered negligent.

6.6 Dealing with Suppliers

Engineers routinely deal with manufacturers, contractors, and vendors (supplier). In this regard, engineers have great responsibility and influence. Such a relationship requires that engineers deal justly with both clients and suppliers.

An engineer will often have an interest in maintaining good relationships with suppliers since this often leads to future work. Nevertheless, relationships with suppliers must remain highly ethical. Suppliers should not be encouraged to feel that they have any special favors coming to them because of a long-standing relationship with the engineer.

The ethical responsibilities relating to suppliers are listed here:

- The engineer must enforce the plans and specifications (i.e., the contract documents) but must also interpret the contract documents fairly.
- Plans and specifications developed by the engineer on behalf of the client must be complete, definite, and specific.
- Suppliers should not be required to spend time or furnish materials that are not called for in the plans and contract documents.
- The engineer should not unduly delay the performance of suppliers.
- The engineer must not accept or solicit gifts or other valuable considerations from a supplier during, prior to, or after any job. An engineer should not accept discounts, allowances, commissions, or any other indirect compensation from suppliers, contractors, or other engineers in connection with any work or recommendations.

6.7 Dealing with Other Engineer

Engineers should try to protect the engineering profession as a whole, to strengthen it, and to enhance its public stature. The following ethical guidelines apply:

- An engineer should not attempt to maliciously injure the professional reputation, business practice, or employment position of another engineer. However, if there is proof that another engineer has acted unethically or illegally, the engineer should advise the proper authority.
- An engineer should not review someone else's work while the other engineer is still employed, unless the other engineer is made aware of the review.
- An engineer should not try to replace another engineer once the other engineer has received employment.
- An engineer should not use the advantage of a salaried position to compete unfairly (i.e., moonlight) with other engineers who have to charge more for the same consulting services.
- Subject to legal and proprietary restraints, an engineer should freely report, publish and distribute information that would be useful to other engineers.

6.8 Dealing with (and affecting) the Public

The relationship between an engineer and the public is essentially straightforward. Responsibilities to the public demand that the engineer place service to mankind above personal gain. Furthermore, proper ethical behavior requires that an engineer avoid association with projects that are contrary to public health and welfare or are of questionable legal character.

- An engineer must consider the safety, health, and welfare of the public in all work performed.

- An engineer must uphold the honor and dignity of his or her profession by refraining from self laudatory advertising, explaining (when required) his or her work to the public, and by expressing opinions only in areas of knowledge.
- When an engineer issues a public statement, he or she must clearly indicate if the statement is being made on anyone's behalf (i.e., if anyone is benefiting from his or her position).
- An engineer must keep his or her skill at a state-of-the-art level.
- An engineer should develop public knowledge and appreciation of the engineering profession and its achievements.
- An engineer must notify the proper authorities when decisions adversely affecting public safety and welfare are made.