



Objectives

Aim 1: You will be able to describe the ethical codes

Aim 2: You will be able to exemplify the ethical codes

Aim 3: You will be able to order engineering ethical codes

Aim 4: You will be able to list the rules of practice and professional obligations

In this module, we will review the formal ethical codes for engineers. We will start with ethical conduct and will continue with ethical codes. As an engineer you always should remember the list of ethical codes for engineers. It is your responsibility to turn them into tacit knowledge in engineering. You should always perform as an engineer in your professional life by remembering the ethical codes of engineering.

1. ETHICAL CONDUCT

Ethics is the study of the principles of **conduct** that govern the behavior of an individual or a profession. It provides the framework of the rules of behavior that are moral, fair, and proper for a true professional. **Ethical conduct** is behavior desired by society and is above and beyond the minimum standards of the law.

Engineering is an important and learned profession. As members of this profession, engineers are expected to exhibit the highest standards of **honesty and integrity**. Engineering has a direct and vital impact on the **quality of life for all people**. Accordingly, the services provided by engineers require honesty, impartiality, fairness, and equity, and must be dedicated to the protection of the public health, safety, and welfare. Engineers must perform under a standard of professional behavior that requires adherence to the highest principles of **ethical conduct**.

2. ETHICAL CODES

Morality refers to those standards of conduct that apply to all individuals within society rather than only to members of a special group. Moral values arise from our obligation to respect every other human. These are the standards that every rational person wants every other person to follow and include standards such as the following:

- **Respect** the rights of others.
- Show **fairness** in your dealings with others.
- Be **honest** in all actions.
- **Keep promises** and contracts.
- Consider the **welfare** of others.
- Show **compassion** to others.

Note that each of these standards of conduct is based on the italicized values. Moral values are not static. They change as the culture changes and people become better educated and worldly-wise. For example, 100 years ago there was little concern for the impact of technology on the global environment. Today, engineering designs must be concerned with their impact on the sustainability of the planet.



These ethical standards apply to members of that group simply because they are members of that professional group. Like morality, standards of **ethical conduct** are value-based. Some values that are pertinent to professional ethics include:

- *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*

Note that some of these values are directed toward the employer (e.g., confidentiality), some toward the customer (e.g., diligence), some toward the profession (e.g., honor), and some toward society (e.g., public health and safety). These values reflect the professional’s value obligations.

3. CODE OF ETHICS OF ENGINEERS

The members of a profession are involved in an intellectual effort that requires special training that benefits society. Collectively, a group of people form a true profession only as long as they command the respect of the public and inspire confidence in their integrity and a belief that they are serving the general welfare.

The nature of professional service varies widely. The physician, lawyer, and clergyman have direct, individual relationships with their clients, but an engineer usually is salaried in someone else’s employ. About 95 percent of engineers work for either industry or government, and only a small, but important, percentage is in direct contact with the public as consulting engineers or university faculty. Thus, the service aspect of engineering is less obvious to the general public than in other professions.

To provide guidance on how to behave in situations with ethical implications, each engineering professional society has published a code of ethics. Note that the code is rather brief and quite general in its statements and that it is heavily oriented toward values. It is not a list of do’s and don’ts. The three fundamental principles identify goals for the ethical behavior of engineers.

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



The Code of Ethics of ASME International.

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; they shall build their professional reputation on the merit of their services and shall not compete unfairly with others.
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 clients as faithful agents or trustees, and shall avoid conflicts of interest or the appearance of conflicts of interest.
5. Engineers shall respect the proprietary information and intellectual property rights of others, including charitable organizations and professional societies in the engineering field.
6. Engineers shall associate only with reputable persons or organizations.
7. Engineers shall issue public statements only in an objective and truthful manner and shall avoid any conduct which brings discredit upon the profession.
8. Engineers shall consider environmental impact and sustainable development in the performance of their professional duties.
9. Engineers shall not seek ethical sanction against another engineer unless there is good reason to do so under the relevant codes, policies and procedures governing that engineer's ethical conduct.
10. Engineers who are members of the Society shall endeavor to abide by the Constitution, By-Laws and policies of the Society, and they shall disclose knowledge of any matter involving another member's alleged violation of this code of Ethics or the Society's Conflicts of interest policy in a prompt, complete and truthful manner to the chair of the Committee and Ethical Standards and Review.

4. Extremes of Ethical Behavior

Altruism is a form of moral behavior in which individuals act for the sake of other people's interests. Ethical altruism is the view that individuals ought to act with each other's interests in mind. This is the viewpoint best summarized by the Golden Rule: Do unto others as you would have others do unto you.

Egoism is a form of moral behavior in which individuals act for their own advantage. Ethical egoism is the view that individuals ought always to act to satisfy their own interests. Most day-to-day practice of engineering is done in the individual's self-interest and is not in conflict with



the codes of ethics. However, the codes of ethics are meant to alert the practicing professional that he or she has altruistic obligations that must be properly balanced with self-interest.

5. Solving Ethical Conflicts

Every engineer must resolve at least one ethical dilemma over the duration of his or her career. If the engineer mishandles the situation, his or her career can be damaged even in cases where he or she is trying to do the right thing. Therefore, it is important to know how to handle ethical conflicts and to have thought about conflict resolution before being confronted by a problem. A difficult problem for engineers arises from their dual obligation to serve both their employer and society diligently and with loyalty.

Procedure for Solving Ethical Conflicts

1. Internal appeal option
 - a. Individual preparation
 - i. Maintain a record of the event and details
 - ii. Examine the company's internal appeals process
 - iii. Be familiar with the state and federal laws that could protect you
 - iv. Identify alternative courses of action
 - v. Decide on the outcome that you want the appeal to accomplish
 - b. Communicate with your immediate supervisor
 - i. Initiate informal discussion
 - ii. Make a formal written appeal
 - iii. Indicate that you intend to begin the company's internal process of appeal
 - c. Initiate appeal through the internal chain of command
 - i. Maintain formal contacts as to where the appeal stands
 - ii. Formally inform the company that you intend to pursue an external solution
2. External appeal option
 - a. Individual actions
 - i. Engage legal counsel
 - ii. Contact your professional society
 - b. Contact with your client (if applicable)
 - c. Contact the media

6. Obligations

Requirements arising from a person's situation or circumstances (e.g., relationships, knowledge, and position) that specify what must or must not be done for some moral, legal, religious, or institutional reasons. For example, students have an obligation to see their advisor on or before Registration Day. People have a moral obligation to keep their promises.

Occasionally you will see such statements as "engineers have an obligation in their work to ensure public safety," meaning that engineers are morally required to ensure the public safety but without specifying what acts they should or should not perform in order to ensure safety. A



legal obligation is a legal requirement that specifies what types of actions are permitted, forbidden, or required on legal grounds. Often legal obligations are monetary debts. When we speak of an obligation without specifying its nature, we will mean a moral obligation.

CASE

Engineer A is employed as the City Engineer / Director of Public Works for a medium-sized city and is the only licensed professional engineer in a position of responsibility in the city government. The city has several large food processing plants that discharge very large amounts of vegetable wastes into the city's sanitary sewer (wastewater) system during the canning season. Part of the canning season coincides with the rainy season. Engineer A has the responsibility for the wastewater treatment plant and is directly responsible to City Administrator C. Technician B answers to Engineer A.

During the course of employment, Engineer A notifies Administrator C of the inadequate capacity of the wastewater treatment plant to handle the potential overflow during the rainy season and offers possible solutions. Engineer A has also discussed the problem privately with certain members of the city council without the permission of City Administrator C. City Administrator C has told Engineer A that "we will face the problem when it comes." City Administrator C orders Engineer A to discuss the problems only with him and warns Engineer A that his job is in danger if Engineer A disobeys.

Engineer A again privately brings the problem up to other city officials. City Administrator C removes Engineer A from responsibility of the entire sanitary system and the chain of command by a letter instructing Technician B that he is to take responsible charge of the wastewater system and report directly to City Administrator C. Technician B asks for a clarification and is again instructed via memo by City Administrator C that he, Technician B, is completely responsible and is to report any interference by a third party to City Administrator C. Engineer A receives a copy of the memo. In addition, Engineer A is placed on probation and ordered not to discuss this matter further and that if he does he will be terminated.

Engineer A continues in his capacity as City Engineer/Director of Public Works, assumes no responsibility for the disposal plant and beds, but continues to advise Technician B without the knowledge of City Administrator C.

That winter during the canning season, particularly heavy storms occur in the city. It becomes obvious to those involved that if wastewater from the ponds containing the domestic waste is not released to the local river, the ponds will overflow the levees and dump all waste into the river. Under state law, this condition is required to be reported to the state water pollution control authority, the agency responsible for monitoring and overseeing water quality in state streams and rivers.

Question:



Did Engineer A fulfil his ethical obligation by informing City Administrator C and certain members of the city council of her concerns?

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