What are personal ethics ... and what do they have to do with engineering?

Referenced from Exploring Engineering by Kosky, Wise, Balmer, & Neat.

Personal ethics are the standards of human behavior that individuals of different cultures have constructed to make moral judgments about personal or group situations. Ethical principles have developed as people have reflected on the intentions and consequences of their acts. Naturally, they vary over time and from culture to culture, resulting in conflict when what is acceptable in one culture is not in another. For example, the notion of privacy in U.S. culture is very strong, and a desk is considered an extension of that privacy, whereas in another culture, such as Japan, office space is open and one’s desk would be considered public domain.

Suppose you are a passenger in a car driven by a close friend. The friend is exceeding the speed limit and has an accident. There are no witnesses, and his lawyer tells you that if you testify that your friend was not exceeding the speed limit, it will save him from a jail sentence. What do you do?

Lying is more accepted in cultures that stress human relationships, but it is less accepted in cultures that stress laws. People in cultures that emphasize human relationships would most likely lie to protect the relationship, whereas people in cultures that put greater value on laws would lie less in order to obey the law.

How do you reconcile a belief in certain moral absolutes such as “I will not kill anyone” with the reality that in some circumstances (e.g., war) it might be necessary to endanger or kill innocent people for the greater good? This issue gets particularly difficult if one denies tolerance to other faiths, yet the prevailing morality that most of us would describe as “good” is to extend tolerance to others.

The Five Cornerstones of Ethical Behavior

Here are some examples of codes of personal ethics. At this point you might want to compare your own personal code of ethics with the ones listed here.

- Do what you say you will do.
- Never divulge information given to you in confidence.
- Accept responsibility for your mistakes.
- Never become involved in a lie.
- Never accept gifts that compromise your ability to perform in the best interests of your organization.
Top Ten Questions You Should Ask Yourself When Making an Ethical Decision

10. Could the decision become habit forming? If so, don’t do it.
9. Is it legal? If it isn’t, don’t do it.
8. Is it safe? If it isn’t, don’t do it.
7. Is it the right thing to do? If it isn’t, don’t do it.
6. Will this stand the test of public scrutiny? If it won’t, don’t do it.
5. If something terrible happened, could I defend my actions? If you can’t, don’t do it.
4. Is it just, balanced, and fair? If it isn’t, don’t do it.
3. How will it make me feel about myself? If it’s lousy, don’t do it.
2. Does this choice lead to the greatest good for the greatest number? If it doesn’t, don’t do it.

And the #1 question you should ask yourself when making an ethical decision:

1. Would I do this in front of my mother? If you wouldn’t, don’t do it.

What are Professional Ethics?

A professional code of ethics has the goal of ensuring that a profession serves the legitimate goals of all its constituencies: self, employer, profession, and public. The code protects the members of the profession from some undesired consequences of competition (for example, the pressure to cut corners to save money) while leaving the members of the profession free to benefit from the desired consequences of competition (for example, invention and innovation). Having a code of ethics enables an engineer to resist the pressure to produce substandard work by saying, “As a professional, I cannot ethnically put business concerns ahead of professional ethics.” It also enables the engineer to similarly resist pressures to allow concerns such as personal desires, greed, ideology, religion, or politics to override professional ethics.

National Society of Professional Engineers (NSPE) Code of Ethics for Engineers

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.

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.
An Ethical Situation

The following scenario is a common situation faced by engineering students. Read it and discuss how you would respond. What are your ethical responsibilities?

You and your roommate are both enrolled in the same engineering class. Your roommate spent the weekend partying and did not do the homework that is due on Monday. You did the homework, and your roommate asks to see it. You are afraid he/she will just copy it and turn it in as his/her own work. What are you ethically obligated to do?

a. Show your roommate the homework.
b. Show the homework but ask your roommate not to copy it.
c. Show the homework and tell the roommate that if the homework is copied, you will tell the professor.
d. Refuse to show the homework.
e. Refuse to show the homework but offer to spend time tutoring the roommate.

Solution

For the purposes of this course, the answer to an ethics question will consist of appropriately applying a code of ethics. In this example, The Five Cornerstones of Ethical Behavior will be used.

In subsequent chapters, the Code of Engineering Ethics will be used, but this does not constitute an endorsement of the code or any other particular code for personal ethics. Use of the Code of Engineering Ethics in subsequent answers, by contrast, does constitute a reminder that you must accept that code in your professional dealings if you want to be a professional engineer.

Let us see which of the Five Cornerstones apply here.

1. Do what you say you will do. If the teacher has made it clear that this is an individual assignment, then by participating in the assignment you have implicitly agreed to keep your individual effort private. Allowing one’s homework to be copied means going back on this implicit promise. This implies that answer d or e, “Refuse to show the homework,” is at least part of the right answer.

2. Never divulge information given to you in confidence. Again, homework is implicitly a confidential communication between individual student and teacher. By solving the problem, you have created a confidential communication with the teacher. This is more support for choice d or e.

3. Accept responsibility for your mistakes. Sharing your homework will enable your roommate to evade this standard. Being an accomplice in the violation of standards by others is itself an ethical violation. This is further support for choice d or e.
4. Never become involved in a lie. Allowing your homework to be copied is participating in a lie: that the work the roommate turns in is his or her own work. This further supports choice d or e.

5. Never accept gifts that compromise your ability to perform in the best interests of your organization. Since the roommate has not offered anything in exchange for the help, this standard appears not to apply in this case.

Four of the five cornerstones endorse choice d or e, refuse to show the homework, while the fifth cornerstone is silent. These results indicate that your ethical obligation under this particular code of personal ethics is to refuse to show the homework.

Many people will find the Five Cornerstones to be incomplete because they lack a canon common to most of the world’s ethical codes: the Golden Rule. Including the Golden Rule would create the additional obligation to show some empathy for your roommate’s plight, just as you would hope to receive such empathy if you were in a similar situation. This suggests the appropriateness of choice e), offering to tutor the roommate in doing the homework. In much the same way, in subsequent exercises you may feel the need to supplement the Code of Engineering Ethics with elements from your own personal code of ethics. However, this must not take the form of replacing an element in the Code of Engineering Ethics with a personal preference.
Additional Reference Material

Referenced from Managing Engineering and Technology by Morse & Babcock

Guidelines for Facilitating Solutions to Ethical Dilemmas in Professional Practice

Step 1: Determine the facts in the situation. Obtain all of the unbiased facts possible.
Step 2: Define the Stakeholders - those with a vested interest in the outcome.
Step 3: Assess the motivations of the stakeholders by using effective communication techniques and personality assessment.
Step 4: Formulate alternative solutions based on most complete information available - using basic ethical core values as a guide.
Step 5: Evaluate proposed alternatives - short-list ethical solutions only; may be a potential choice between or among two or more totally ethical solutions.
Step 6: Seek additional assistance, as appropriate - engineering codes of ethics, previous cases, peers, reliance on personal experience, prayer.
Step 7: Select the best course of action - that which satisfies the highest core ethical values.
Step 8: Implement the selected solution. Take action as warranted.
Step 9: Monitor and assess the outcome. Note how to improve the next time.

(Source: http://www.niee.org/pd.cfm?pt=AECM, 9/7/05)

Nine Basic Steps to Personal Ethical Decision Making

Step 1: Practice ethical behavior actively (initiate a personal ethical awareness training program), including definition of personal worldview and review of core ethical values.

The ethical design professional is consistently ethical!

Step 2: Beware of “new ethics” programs. Very little of true value is “new”; all of the necessary tools are already at your fingertips.
Step 3: Define the ethical problem when it arises. Ignoring the problem doesn’t make it go away.
Step 4: Formulate alternatives. Avoid “first impulse” solutions without having extensive ethical awareness training and experience.
Step 5: Evaluate the alternatives. Are they ethical? Am I the sole beneficiary? How would I feel if the roles or circumstances were reversed?
Step 6: Seek additional assistance, as appropriate - previous cases, peers, reliance on personal experience, prayer.
Step 7: Choose best ethical alternative - the one that does the most good for all the right reasons.
Step 8: Implement the best alternative - no initiative, no results.
Step 9: Monitor and assess the outcome - how to improve the next time.

(Source: http://www.niee.org/, September 2005)
Core Concepts in Engineering Ethics

I. The public interest

A. Paramount responsibility to the public health, safety, and welfare, including that of future generations
B. Call attention to threats to the public health, safety, and welfare, and act to eliminate them
C. Work through professional societies to encourage and support engineers who follow these concepts
D. Apply knowledge, skill, and imagination to enhance human welfare and the quality of life for all
E. Work only with those who follow these concepts

II. Qualities of truth, honesty, and fairness

A. Be honest and impartial
B. Advise employer, client, or public of all consequences of work
C. Maintain confidences; act as faithful agent or trustee
D. Avoid conflicts of interest
E. Give fair and equitable treatment to all others
F. Base decisions and actions on merit, competence, and knowledge, and without bias because of race, religion, sex, age, or national origin
G. Neither pay nor accept bribes, gifts, or gratuities
H. Be objective and truthful in discussions, reports, and actions

III. Professional performance

A. Competence for work undertaken
B. Strive to improve competence, and assist others in so doing
C. Extend public and professional knowledge of technical projects and their results
D. Accept responsibility for actions and give appropriate credit to others

IEEE Code of Ethics

WE, THE MEMBERS OF THE IEEE, in recognition of the importance of our technologies in affecting the quality of life throughout the world, and in accepting a personal obligation to our profession, its members and the communities we serve, do hereby commit ourselves to the highest ethical and professional conduct and agree:

1. to accept responsibility in making 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;

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 limitations;

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

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.

Referenced from; IEEE.ORG.
NSPE Code of Ethics for Engineers

Preamble
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.

I. Fundamental Canons

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

1. Hold paramount the safety, health and welfare of the public.

2. Perform services only in areas of their competence.

3. Issue public statements only in an objective and truthful manner.

4. Act for each employer or client as faithful agents or trustees.

5. Avoid deceptive acts.

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

II. Rules of Practice

1. Engineers shall hold paramount the safety, health, and welfare of the public.

   a. If engineers' judgment is overruled under circumstances that endanger life or property, they shall notify their employer or client and such other authority as may be appropriate.

   b. Engineers shall approve only those engineering documents that are in conformity with applicable standards.

   c. Engineers shall not reveal facts, data, or information without the prior consent of the client or employer except as authorized or required by law or this Code.

   d. Engineers shall not permit the use of their name or associate in business ventures with any person or firm that they believe are engaged in fraudulent or dishonest enterprise.

   e. Engineers shall not aid or abet the unlawful practice of engineering by a person or firm.

   f. Engineers having knowledge of any alleged violation of this Code shall report thereon to appropriate professional bodies and, when relevant, also to public authorities, and cooperate with the proper authorities in furnishing such information or assistance as may be required.

2. Engineers shall perform services only in the areas of their competence.
a. Engineers shall undertake assignments only when qualified by education or experience in the specific technical fields involved.

b. Engineers shall not affix their signatures to any plans or documents dealing with subject matter in which they lack competence, nor to any plan or document not prepared under their direction and control.

c. Engineers may accept assignments and assume responsibility for coordination of an entire project and sign and seal the engineering documents for the entire project, provided that each technical segment is signed and sealed only by the qualified engineers who prepared the segment.

3. Engineers shall issue public statements only in an objective and truthful manner.

a. Engineers shall be objective and truthful in professional reports, statements, or testimony. They shall include all relevant and pertinent information in such reports, statements, or testimony, which should bear the date indicating when it was current.

b. Engineers may express publicly technical opinions that are founded upon knowledge of the facts and competence in the subject matter.

c. Engineers shall issue no statements, criticisms, or arguments on technical matters that are inspired or paid for by interested parties, unless they have prefaced their comments by explicitly identifying the interested parties on whose behalf they are speaking, and by revealing the existence of any interest the engineers may have in the matters.

4. Engineers shall act for each employer or client as faithful agents or trustees.

a. Engineers shall disclose all known or potential conflicts of interest that could influence or appear to influence their judgment or the quality of their services.

b. Engineers shall not accept compensation, financial or otherwise, from more than one party for services on the same project, or for services pertaining to the same project, unless the circumstances are fully disclosed and agreed to by all interested parties.

c. Engineers shall not solicit or accept financial or other valuable consideration, directly or indirectly, from outside agents in connection with the work for which they are responsible.

d. Engineers in public service as members, advisors, or employees of a governmental or quasi-governmental body or department shall not participate in decisions with respect to services solicited or provided by them or their organizations in private or public engineering practice.

e. Engineers shall not solicit or accept a contract from a governmental body on which a principal or officer of their organization serves as a member.

5. Engineers shall avoid deceptive acts.

a. Engineers shall not falsify their qualifications or permit misrepresentation of their or their associates' qualifications. They shall not misrepresent or exaggerate their responsibility in or for the subject matter of prior assignments. Brochures or other presentations incident to the solicitation of employment shall not misrepresent pertinent facts concerning employers, employees, associates, joint venturers, or past accomplishments.

b. Engineers shall not offer, give, solicit or receive, either directly or indirectly, any contribution to influence the award of a contract by public authority, or which may be reasonably construed by the public
as having the effect of intent to influencing the awarding of a contract. They shall not offer any gift or other valuable consideration in order to secure work. They shall not pay a commission, percentage, or brokerage fee in order to secure work, except to a bona fide employee or bona fide established commercial or marketing agencies retained by them.

III. Professional Obligations

1. Engineers shall be guided in all their relations by the highest standards of honesty and integrity.
   a. Engineers shall acknowledge their errors and shall not distort or alter the facts.
   b. Engineers shall advise their clients or employers when they believe a project will not be successful.
   c. Engineers shall not accept outside employment to the detriment of their regular work or interest. Before accepting any outside engineering employment they will notify their employers.
   d. Engineers shall not attempt to attract an engineer from another employer by false or misleading pretenses.
   e. Engineers shall not promote their own interest at the expense of the dignity and integrity of the profession.

2. Engineers shall at all times strive to serve the public interest.
   a. Engineers shall seek opportunities to participate in civic affairs; career guidance for youths; and work for the advancement of the safety, health, and well-being of their community.
   b. Engineers shall not complete, sign, or seal plans and/or specifications that are not in conformity with applicable engineering standards. If the client or employer insists on such unprofessional conduct, they shall notify the proper authorities and withdraw from further service on the project.
   c. Engineers shall endeavor to extend public knowledge and appreciation of engineering and its achievements.

3. Engineers shall avoid all conduct or practice that deceives the public.
   a. Engineers shall avoid the use of statements containing a material misrepresentation of fact or omitting a material fact.
   b. Consistent with the foregoing, engineers may advertise for recruitment of personnel.
   c. Consistent with the foregoing, engineers may prepare articles for the lay or technical press, but such articles shall not imply credit to the author for work performed by others.

4. Engineers shall not disclose, without consent, confidential information concerning the business affairs or technical processes of any present or former client or employer, or public body on which they serve.
   a. Engineers shall not, without the consent of all interested parties, promote or arrange for new employment or practice in connection with a specific project for which the engineer has gained particular and specialized knowledge.
b. Engineers shall not, without the consent of all interested parties, participate in or represent an adversary interest in connection with a specific project or proceeding in which the engineer has gained particular specialized knowledge on behalf of a former client or employer.

5. Engineers shall not be influenced in their professional duties by conflicting interests.

a. Engineers shall not accept financial or other considerations, including free engineering designs, from material or equipment suppliers for specifying their product.

b. Engineers shall not accept commissions or allowances, directly or indirectly, from contractors or other parties dealing with clients or employers of the engineer in connection with work for which the engineer is responsible.

6. Engineers shall not attempt to obtain employment or advancement or professional engagements by untruthfully criticizing other engineers, or by other improper or questionable methods.

a. Engineers shall not request, propose, or accept a commission on a contingent basis under circumstances in which their judgment may be compromised.

b. Engineers in salaried positions shall accept part-time engineering work only to the extent consistent with policies of the employer and in accordance with ethical considerations.

c. Engineers shall not, without consent, use equipment, supplies, laboratory, or office facilities of an employer to carry on outside private practice.

7. Engineers shall not attempt to injure, maliciously or falsely, directly or indirectly, the professional reputation, prospects, practice, or employment of other engineers. Engineers who believe others are guilty of unethical or illegal practice shall present such information to the proper authority for action.

a. Engineers in private practice shall not review the work of another engineer for the same client, except with the knowledge of such engineer, or unless the connection of such engineer with the work has been terminated.

b. Engineers in governmental, industrial, or educational employ are entitled to review and evaluate the work of other engineers when so required by their employment duties.

c. Engineers in sales or industrial employ are entitled to make engineering comparisons of represented products with products of other suppliers.

8. Engineers shall accept personal responsibility for their professional activities, provided, however, that engineers may seek indemnification for services arising out of their practice for other than gross negligence, where the engineer's interests cannot otherwise be protected.

a. Engineers shall conform with state registration laws in the practice of engineering.

b. Engineers shall not use association with a nonengineer, a corporation, or partnership as a "cloak" for unethical acts.

9. Engineers shall give credit for engineering work to those to whom credit is due, and will recognize the proprietary interests of others.
a. Engineers shall, whenever possible, name the person or persons who may be individually responsible for designs, inventions, writings, or other accomplishments.

b. Engineers using designs supplied by a client recognize that the designs remain the property of the client and may not be duplicated by the engineer for others without express permission.

c. Engineers, before undertaking work for others in connection with which the engineer may make improvements, plans, designs, inventions, or other records that may justify copyrights or patents, should enter into a positive agreement regarding ownership.

d. Engineers’ designs, data, records, and notes referring exclusively to an employer's work are the employer's property. The employer should indemnify the engineer for use of the information for any purpose other than the original purpose.

e. Engineers shall continue their professional development throughout their careers and should keep current in their specialty fields by engaging in professional practice, participating in continuing education courses, reading in the technical literature, and attending professional meetings and seminars.

—As Revised January 2003

"By order of the United States District Court for the District of Columbia, former Section 11(c) of the NSPE Code of Ethics prohibiting competitive bidding, and all policy statements, opinions, rulings or other guidelines interpreting its scope, have been rescinded as unlawfully interfering with the legal right of engineers, protected under the antitrust laws, to provide price information to prospective clients; accordingly, nothing contained in the NSPE Code of Ethics, policy statements, opinions, rulings or other guidelines prohibits the submission of price quotations or competitive bids for engineering services at any time or in any amount."

Statement by NSPE Executive Committee

In order to correct misunderstandings which have been indicated in some instances since the issuance of the Supreme Court decision and the entry of the Final Judgment, it is noted that in its decision of April 25, 1978, the Supreme Court of the United States declared: "The Sherman Act does not require competitive bidding."

It is further noted that as made clear in the Supreme Court decision:

1. Engineers and firms may individually refuse to bid for engineering services.

2. Clients are not required to seek bids for engineering services.

3. Federal, state, and local laws governing procedures to procure engineering services are not affected, and remain in full force and effect.

4. State societies and local chapters are free to actively and aggressively seek legislation for professional selection and negotiation procedures by public agencies.

5. State registration board rules of professional conduct, including rules prohibiting competitive bidding for engineering services, are not affected and remain in full force and effect. State registration boards with authority to adopt rules of professional conduct may adopt rules governing procedures to obtain engineering services.
6. As noted by the Supreme Court, "nothing in the judgment prevents NSPE and its members from attempting to influence governmental action . . ."

NOTE: In regard to the question of application of the Code to corporations vis-à-vis real persons, business form or type should not negate nor influence conformance of individuals to the Code. The Code deals with professional services, which services must be performed by real persons. Real persons in turn establish and implement policies within business structures. The Code is clearly written to apply to the Engineer and items incumbent on members of NSPE to endeavor to live up to its provisions. This applies to all pertinent sections of the Code.

Referenced from: NSPE.ORG.