Professional and Ethical Responsibility for Engineers
Engineering, Ethics, and Society

• Professional responsibilities as engineers
• What does professional responsibility mean?
• Why do engineers have professional responsibilities?
• How engineers can act on their professional responsibilities?
• Professional societies provide some guidance.
Engineers' Creed

Adopted by National Society of Professional Engineers, June 1954

As a Professional Engineer, I dedicate my professional knowledge and skill to the advancement and betterment of human welfare.

I pledge:

• To give the utmost of performance;
• To participate in none but honest enterprise;
• To live and work according to the laws of man and the highest standards of professional conduct;
• To place service before profit, the honor and standing of the profession before personal advantage, and the public welfare above all other considerations.

In humility and with need for Divine Guidance, I make this pledge.
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 engineering 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.
Environmental and Social Dimensions of Engineering (1 & 5)

• What responsibilities do engineers have regarding environmental and social considerations (e.g., safety, health and welfare of the public)?

• Some topics to consider are moral development, risks both present & future, and sustainability.
Conflicts of Interest (2)

- Different types of conflicts of interest- financial gain, work commitments, and intellectual & personal matters
- Financial- Example: Substantial investment in an outside company that would benefit from work. There are U.S., State, & local laws, regulations and policies relating to financial conflicts of interest.
- Conflict of commitment- Example: Working for more than one customer/employer.
- Intellectual & personal matters- Example: Personal belief(s) predispose/bias research.
- What strategies may mitigate or eliminate the impact of conflicts of interest?
Engineering Misconduct (3,4,9)

- Main types - fabrication, falsification, bribery, and plagiarism/intellectual theft
- Make estimates & performance claims that are honest/realistic. E.g., do not deliberately underbid a project and then change price(s) later. E.g., vacuum cleaner hp claims.
- Fabrication/falsification. E.g., When conducting tests, inspections, etc, do the work; no pencil whipping or inappropriate shortcuts.
- Bribery - ‘gifts’ to decision makers, inspectors, …
Engineering Misconduct cont.

• Plagiarism/intellectual theft are major violations of professional integrity standards/engineering misconduct.
• What constitutes plagiarism? Google- the practice of taking someone else's work or ideas and passing them off as one's own. Always best to give proper credit.
• Intellectual theft- E.g., reverse engineering products or code, violating patents, etc.
• Conversely- ethical responsibility to protect data & trade secrets of customers (e.g., hacking, NDAs)
• What steps can be taken to handle allegations of engineering misconduct?
Technical Competence & Integrity (5, 6, 7)

• Stay up to date in your field. E.g., continuing education, advanced professional training, etc.

• Undertake work that you are qualified to do. E.g., Do not bid on jobs that you do not have capability to handle.

• Have co-workers/peers review your work. In turn, review and provide feedback to co-workers/peers.

• Very important job- can have huge impact on careers, company, and profession
Golden Rule (9, 10)

• Treat people ethically and fairly.
• Don’t hurt/impugn the livelihoods or reputations of people or companies, destroy or damage property to gain unethical advantages.
• Aid co-workers/peers in meeting professional and ethical responsibilities.
• Improve the lives of people through your work.
References/Resources

- National Society of Professional Engineers (NSPE) http://www.nspe.org/
- Institute of Electrical and Electronics Engineers (IEEE) http://www.ieee.org
- Office of Research Integrity (ORI) Introduction to the Responsible Conduct of Research https://ori.hhs.gov/ori-introduction-responsible-conduct-research (provides a good overview)
- Responsible conduct of research (RCR) by American Psychological Association http://www.apa.org/research/responsible/ (many good links)
- General RCR Resources- https://ori.hhs.gov/general-resources-0 (many good links)
- Collaborative Institutional Training Initiative (CITI), University of Miami, Responsible Conduct of Research Program https://www.citiprogram.org/index.cfm?pageID=265
- Ethics Case Studies by Northeastern University http://www.webguru.neu.edu/professionalism/research-integrity/ethics-case-studies