

Engineering Ethics

Code of Ethics

- Engineering Professional Engineering Organizations
- American Society of Civil Engineers (<http://www.asce.org/inside/codeofethics.cfm>)
- Fundamental Principles

Engineers 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 and the environment;
 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; and
 4. supporting the **professional and technical societies** of their disciplines.
- Fundamental Canons
 1. Engineers shall hold paramount the **safety, health and welfare of the public** and shall strive to comply with the principles of sustainable development in the performance of their professional duties.
 2. Engineers shall perform services only in **areas of their competence**.
 3. Engineers shall issue public statements only in an **objective and truthful manner**.
 4. Engineers shall act in professional matters for each employer or client as faithful agents or trustees, and shall **avoid 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 act in such a manner as to uphold and enhance the **honor, integrity, and dignity** of the engineering profession and shall act with zero-tolerance for bribery, fraud, and corruption.
 7. Engineers shall continue their **professional development** throughout their careers, and shall provide opportunities for the professional development of those engineers under their supervision.

BMES

- Biomedical engineering is a learned profession that combines expertise and responsibilities in engineering, science, technology, and medicine. Since public health and welfare are paramount considerations in each of these areas, biomedical engineers must uphold those principles of ethical conduct embodied in this Code in professional practice, research, patient care, and training. This Code reflects voluntary standards of professional and personal practice recommended for biomedical engineers.
 - Professional Obligations
 - Health Care Obligations
 - Research Obligations
 - Training Obligations

- Last Modified December 19, 2007

<http://ethics.iit.edu/codes/coe/biomed.engineering.soc.html>

BMES (cont'd)

- Biomedical Engineering Professional Obligations
 - Biomedical engineers in the fulfillment of their professional engineering duties shall:
 - Use their knowledge, skills, and abilities to enhance the safety, health, and welfare of the public.
 - Strive by action, example, and influence to increase the competence, prestige, and honor of the biomedical engineering profession.

BMES

- Biomedical Engineering Health Care Obligations
 - Biomedical engineers involved in health care activities shall:
 - Regard responsibility toward and rights of patients, including those of confidentiality and privacy, as their primary concern.
 - Consider the larger consequences of their work in regard to cost, availability, and delivery of health care.

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BMES

- Biomedical Engineering Research Obligations
 - Biomedical engineers involved in research shall:
 - Comply fully with legal, ethical, institutional, governmental, and other applicable research guidelines, respecting the rights of and exercising the responsibilities to colleagues, human and animal subjects, and the scientific and general public.
 - Publish and/or present properly credited results of research accurately and clearly.

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BMES

- Biomedical Engineering Training Obligations
 - Biomedical engineers entrusted with the responsibilities of training others shall:
 - Honor the responsibility not only to train biomedical engineering students in proper professional conduct in performing research and publishing results, but also to model such conduct before them.
 - Keep training methods and content free from inappropriate influence from special interests.

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Other Societies

- Accreditation Board for Engineering and Technology
- American Consulting Engineers Council
- American Institute of Architects
- American Institute of Building Design
- American Institute of Chemical Engineers
- American Institute of Consulting Engineers
- American Institute of Electrical Engineers
- American Society of Agricultural Engineers
- American Society of Civil Engineers
- American Society of Mechanical Engineers
- American Society of Safety Engineers
- American Society of Heating, Refrigerating, and Air-Conditioning Engineers
- Institute of Electrical and Electronics Engineers
- Institute of Electronics, Information and Communication Engineers
- The Institution of Engineering and Technology
- International Federation of Consulting Engineers
- Japan Society of Civil Engineers
- National Council of Engineering Examiners
- National Society of Professional Engineers
- Society of Fire Protection Engineers
- Society of Manufacturing Engineers
- Lockheed Martin
- Tau Beta Pi
- Yacht Architects and Brokers Association

Company Code of Ethics

- Related to how an employee functions in the workplace
- Protects the company
- T Mobile Example
 - Protecting Customer Information
 - Conduction of Business
 - Commitment to Integrity
 - Criminal Convictions
 - Conflicts of Interest
 - Outside Employment
 - Gifts
 - Accessing Customer Accounts
 - Money Laundering
 - Bribes and Kickbacks
 - Fraud
 - Whistleblower Protection
 - Company Resources and Information
 - Dealing with Contractors, Suppliers

Whistleblowing

A Dilemma?

- Internal Whistleblowing
- External Whistleblowing
- Loyalty to the company
- When is whistleblowing morally obligated?
- Facts and Documentation vs Opinion
- Cases:
 - Challenger Disaster
 - Robert Lund, VP of engineering at Morton Thiokol both an engineering and manager, recommended against the launch due to O-ring problems. His management told him to take off his engineering hat and put on his management hat. Afterwards, Lund reversed his recommendation.
 - Management position: “not all the engineers agreed”
 - Effect of Nicotine in cigarettes
 - Jeffrey Wigand, a former executive of Brown & Williamson who exposed his company's practice of intentionally manipulating the effect of nicotine in cigarettes on the CBS news program 60 Minutes. Famously known as the man who blew the whistle on Big Tobacco and almost single-handedly revealed the health dangers of smoking to the public.
 - Wigand claims that he was subsequently harassed and received anonymous death threats.

Other ethical issues

- There are several other ethical issues that engineers may face. Some have to do with technical practice, but many others have to do with broader considerations of business conduct. These include:
 - Relationships with clients, consultants, competitors, and contractors
 - Ensuring legal compliance by clients, client's contractors, and others
 - Conflict of interest
 - Bribery and kickbacks, which also may include:
 - » Gifts, meals, services, and entertainment
 - Treatment of confidential or proprietary information
 - Consideration of the employer's assets
 - Outside employment/activities (Moonlighting)