



# PROFESSIONAL ETHICS

## HS-219

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# HONESTY AND RESEARCH INTEGRITY

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## TRUTHFULNESS

### Principle of veracity

Sissela Bok gave what she called the *principle of veracity*:

There is a strong presumption against lying and deception, although the presumption can occasionally be overridden by other pressing moral reasons in particular contexts.

In engineering profession so much is at stake in terms of human safety, health, and well-being that even Bok's principle of veracity is too weak to capture the standard of honesty in the profession. Engineers must speak the truth conscientiously and avoid all acts of deception.

## Truthfulness responsibility

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In the National Society of Professional Engineers (NSPE) Code of Ethics, Canon 3 requires engineers to:

“Issue public statements only in an objective and truthful manner”

and Canon 5 requires engineers to:

“Avoid deceptive acts”

These two requirements taken together can be referred to as the *truthfulness responsibility*: Engineers must be objective and truthful and must not engage in deception. (All engineering codes set forth a statement of this responsibility.)

(Refer to Case No. 2 on page 177 in the course packet.)

### Why is truthfulness so important?

To deceive other persons is to undermine their autonomy and their ability to guide their own conduct. Deceivers manipulate other people and use them as mere means to their own purposes.

In engineering profession, dishonesty causes financial losses, injuries, and death. Also, violating the truthfulness responsibility undermines trust.

Untruthfulness and untrustworthiness corrupt professional judgments and communications. They also undermine the trust of the public, employers, and others who must rely on engineers' expertise.



## ACADEMIC INTEGRITY: STUDENTS

Honesty, as an engineer, begins with honesty in studying to become an engineer. Academic dishonesty among students takes the following forms:

**Cheating:** intentionally violating the rules of fair play in any academic exercise, for example, by using crib notes or copying from another student during a test/exam.

**Fabrication:** intentionally falsifying or inventing information, for example, by faking the results of an experiment.

**Plagiarism:** intentionally or negligently submitting others' work as one's own, for example, by quoting the words of others without using quotations marks and citing the source.

**Facilitating academic dishonesty:** intentionally helping other students to engage in academic dishonesty, for example, by loaning them your work.

**Misrepresentation:** intentionally giving false information to an instructor, for example, by lying about why one missed a test.

**Failure to contribute to a collaborative project:** failing to do one's fair share on a joint project.

**Sabotage:** intentionally preventing others from doing their work, for example, by disrupting their lab experiment.

**Theft:** stealing, for example, stealing library books or other students' property.

**Question:** What can be done to foster or promote academic integrity?

**Answer:**

- ▶ Universities must have honor codes which set forth firm standards and require students and faculty to report that cheating is going on. Universities must also support professors and students who follow university policies in reporting cheating or any form of academic dishonesty.
- ▶ Professors must maintain a climate of respect, fairness, and concern for students. Tests and assignments must match the material or content studied in class. Helpful feedback should be given. Opportunities to cheat should be minimized. Also, plagiarism must be checked for.



## RESEARCH INTEGRITY

Research aims at discovering, expressing, and promulgating truth. Research in engineering takes place in settings such as universities, government labs, and corporations. Truthfulness responsibility applies in all settings.

Integrity in research is about pursuing high quality and excellence. Richard Feynman calls for bending over backwards to ensure honesty, such as reporting everything that you think might make an experiment that you are doing invalid.

The National Science Foundation (NSF) defines misconduct in science and engineering as “fabrication, falsification, plagiarism, or other serious deviation from accepted practices in proposing, carrying out, or reporting results from activities funded by NSF; or retaliation of any kind against a person who reported or provided information about suspected or alleged misconduct and who has not acted in bad faith”.



## Four types of fraud in research

The nineteenth-century mathematician **Charles Babbage** outlined four types of deception and fraud in research:

**Forging** is deception intended to establish one's reputation as a researcher.

**Hoaxing** is deception intended to last only for a while and then to be uncovered or disclosed, typically to ridicule those who were taken in by it.

**Trimming** is selectively omitting bits of outlying data – results that depart furthest from the mean.

**Cooking** refers to all kinds of selective reporting of results, falsifying of data, and massaging data in the direction that supports the result one prefers.

## BIAS AND SELF-DECEPTION

Distorted judgment is **bias**. Whereas **self-deception** lies somewhere between deliberate deception/fraud and unintentional error (simple sloppiness).

## PROTECTING RESEARCH SUBJECTS

- ▶ Research in engineering sometimes involves experimental subjects and also (nonhuman) animals, especially when it overlaps with biomedical research. Experiments on humans are permissible only after obtaining the voluntary consent of human subjects. This means giving to experimental subjects (or their surrogate decision makers) all information about the risks, possible benefits, exact procedures involved, and all other information a reasonable person would want to have before participating in an experiment. The individual must have the capacity to make a reasonable decision about whether to participate.

- ▶ Special safeguards are taken when the research subjects are other than adults. When children participate in experiments, an appropriate surrogate decision maker, usually the parents, must give voluntary informed consent, and usually it is required that the child is expected to benefit from the procedure.
- ▶ Experimentation on institutionalized persons, for example in prisons or mental institutions, is either forbidden or requires especially high standards.

The **Nuremberg Code**, written immediately after World War II, is the most important historical document requiring informed consent in research. It was developed in light of the ruthless Nazi tortures and killings. Though it has been flagrantly violated under authoritarian regimes. For example, during World War II the United States government conducted biological, chemical, and nuclear experiments on unsuspecting individuals.



## GIVING AND CLAIMING CREDIT

Often researchers are under pressure as they compete for jobs, promotions, and income. So outright fraud and deception of the following types occurs:

**Plagiarism** is intentionally or negligently submitting others' work or ideas as one's own.

**Misrepresenting credentials** is a second type of deception. For example, an engineer who received a doctoral degree from a “diploma mill” organization, that required no attendance or study at its facilities, went on to list the degree on his professional correspondence. The NSPE Board of Ethical Review reasoned that listing a doctoral degree without listing where it is from is an example of unprofessional deception.



**Misleading listing of authorship**, whether of articles or other documents is unethical.

Omitting a coauthor who made a significant contribution is an instance of this.

As for the order of authors, it is understood to convey information about the relative contributions of the authors, with the earlier listing indicating greater contributions. Hence, it would be unethical, especially in engineering, for a dissertation/thesis supervisor to list his or her name first, when in fact the doctoral student did the primary research for the article.

Source:

*Engineering Ethics* by Charles Fleddermann