



Engineering Ethics

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About me...



- Raised in Troy, Michigan
- Studied civil and environmental engineering at University of Michigan, graduated 2006.
- Environmental Health Promoter, Peace Corps Panama, Oct 2006 to Oct 2008.
- Field Engineer, Shiprock DSFC, Feb 2009 to present.
- My other passions: Faith, family, & farming in Hogback, NM.

What is a Professional Engineer?

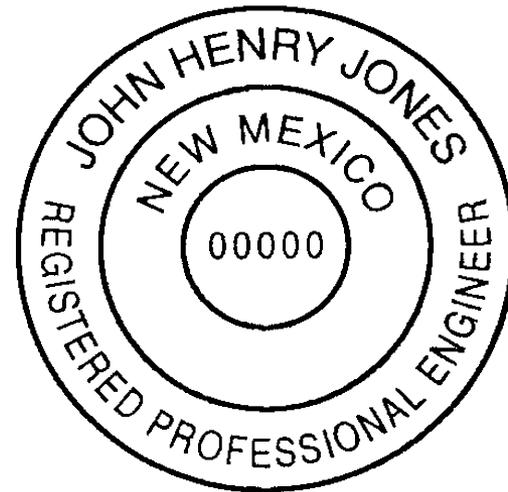
A professional engineer (PE) must:

- Complete a 4-year engineering degree.
- Work under another PE for at least 4 years .
- Pass two intensive competency exams.
- Earn license from state's licensure board.
- Maintain and improve their skills throughout their career. *Some states require regular ethics training.*

Source: NSPE.org

Why obtain a PE license?

- Prestige
- Career Development
- Authority
- Flexibility



Source: NSPE.org

Image Source: <http://www.americanstampco.com/NEW%20MEXICO%20ARCHITECT.htm>

Objectives:

Participants will:

- Discuss the definition of ethics.
- Review the 6 fundamental canons of the National Society of Professional Engineer's (NSPE) Code of Ethics.
- Practice ethical decision making individually and discuss as a group.
- Take a quiz.
- Read the Engineer's Creed.
- Receive credit for ethics training for their respective state PE board. *Check with your state PE Board to verify this webinar will count.*

What are Ethics?

- *“A system of moral principles”*
- *“The rules of conduct recognized in respect to a... particular group”*
- Ethics define what is right and wrong.

Source: *Dictionary.com Unabridged*

Who determines what is ethical?

- In life, the paths are many.

- In engineering, we like order!
 - Engineers have agreed to a set of rules.

What is the National Society of Professional Engineers?

Mission:

“...NSPE enhances the image of its members and their ability to ethically and professionally practice engineering.”

- Sets standard for protection of public welfare and ethical, competent practice of engineering.
- Has a Board of Ethical Review to guide PE's facing ethical dilemmas
- Created the NSPE Code of Ethics for Engineers

NSPE Code of Ethics for Engineers

- Applies to all engineers, whether or not they are licensed.
- Industry standard for ethical conduct for engineers.

<http://www.nspe.org/resources/ethics/code-ethics>

The 6 Canons of NSPE's Code of Ethics

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.

Case Studies

The following case studies are based upon NSPE Board of Ethical review decisions. They have been changed to be more applicable to an IHS audience.



Case Study #1 - Scenario

Engineer A, a tribal utility consultant employed by IHS, is visiting a local tribal water treatment plant. He discovers one of the filters is short-circuiting, allowing water to pass through without full treatment. Later that day, an official from the state environmental agency solicits Engineer A's feedback on the plant's operations. Engineer A knows that if he tells the official about the filter, the state will impose a heavy fine upon the utility. Any fine will be nearly impossible to cover on their tight budget and could mean a water shut-off for all water customers on the system. What should Engineer A do?

Based on NSPE Board of Ethical Review Case 09-1, NSPE.org

Image source: http://www.ccwater.com/photopages/pages/Bollman%20Water%20Treatment%20Plant%20Sedimentation%20Basins_jpg.htm

Case Study #1 - Which canons apply?

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.
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5. Avoid deceptive acts.
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Case Study #1 - Discussion

- Engineer A should report what he has found to the water treatment plant operators and his supervisors.
- His obligation to protect public safety trumps his duty to his client, the tribe.
- He should document the situation and report it to the official. Withholding such information would endanger the public health and be deceptive.
- Other ideas?

Case Study #2 - Scenario



Engineer B is asked by a tribal government to evaluate the impact of a proposed dairy processing plant on the local wastewater treatment plant. Engineer B determines that the proposed plant will significantly harm the local river ecosystem without costly pretreatment at the dairy plant. A local representative balks at the increased measures suggested by Engineer B, worrying the dairy company will move elsewhere. He hires another engineer who doesn't recommend any upgrades to the dairy plant and proceeds with the original plans. What should Engineer B do?

Based on NSPE Board of Ethical Review Case 04-5, NSPE.org

Case Study #2 - Which canons apply?

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.
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Case Study #2 - Discussion

- Engineer B should report to his supervisors his concerns.
- He should document the situation.
- Engineer B or his supervisor should report the situation to the wastewater treatment plant and the appropriate State or Federal Agency.



Case Study #3 - Scenario

IHS Engineer C designs a well for a new water distribution system. She contacts her friend at a vendor for electrical controls, who provides her with some unstamped technical drawings for the electrical work. Although Engineer C is a civil engineer, she includes these technical drawings in her final plans and signs and seals them. Has Engineer C acted unethically?

Based on NSPE Board of Ethical Review Case 11-1, NSPE.org

Image source: <http://www.municipalwellandpump.com/watersystems.cfm>

Case Study #3 - Which canons apply?

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.
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Case Study #3 - Discussion

- Engineer C should not stamp any technical document outside of her competency OR prepared directly under her supervision.
- She should request that her friend provide the technical documents stamped by a licensed and competent professional engineer who prepared them.
- Other comments?

Test Questions!

True or False



1. Engineers, in the fulfillment of their professional duties, must carefully consider the safety, health, and welfare of the public.
2. If engineers' judgment is overruled under circumstances that endanger life or property, they shall notify their employers or clients and such other authority as may be appropriate.
3. Engineers having knowledge of any alleged violation of this Code, following a period of 30 days during which the violation is not corrected, 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.
4. Engineers shall undertake assignments only when qualified by education or experience in the specific technical fields involved.
5. Engineers shall not affix their signatures to plans or documents dealing with subject matter in which they lack competence, but may affix their signatures to plans or documents not prepared under their direction and control where they have a good faith belief that such plans or documents were competently prepared by another designated party.

Answers

True or False



1. Engineers, in the fulfillment of their professional duties, must carefully consider the safety, health, and welfare of the public. **FALSE. See NSPE Code, Sec. I.1**
2. If engineers' judgment is overruled under circumstances that endanger life or property, they shall notify their employers or clients and such other authority as may be appropriate. **TRUE. See NSPE Code, Sec. I.1.a**
3. Engineers having knowledge of any alleged violation of this Code, following a period of 30 days during which the violation is not corrected, 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. **FALSE. See NSPE Code, Sec. I.1.e**
4. Engineers shall undertake assignments only when qualified by education or experience in the specific technical fields involved. **TRUE. See NSPE Code, Sec. II.2.a**
5. Engineers shall not affix their signatures to plans or documents dealing with subject matter in which they lack competence, but may affix their signatures to plans or documents not prepared under their direction and control where they have a good faith belief that such plans or documents were competently prepared by another designated party. **FALSE. See NSPE Code, Sec. II.2.b**

Case Study #4 – Scenario

Engineer D works at a water and wastewater utility with an in-house engineering team. His supervisor informs him that they are running low on funds for a large wastewater treatment plant and tells him to save money on his waterline project. He suggests several ways to save money by cutting corners. Engineer D is concerned that these cost cutting measures will result in a waterline of inferior quality and is not what was agreed to when the project was funded by the city. When Engineer D objects several times to his supervisor, he is threatened with termination. What should Engineer D do?

Based on NSPE Board of Ethical Review Case 09-2,
NSPE.org



Case Study #4 - Which canons apply?

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.
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5. Avoid deceptive acts.
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Case Study #4 - Discussion

- Engineer D should report to the management of his supervisors his concerns.
- He should follow all applicable standards. He should not cut corners if he is concerned about the ramifications.
- He can speak with city officials to see if a reduced scope of work is acceptable.
- Other ideas?



Case Study #5 - Scenario

“Engineer E works as an employee for QRS Engineering on a full time basis. Engineer E also has his own separate engineering practice in which he performs services that are also performed by QRS Engineering. Engineer E's work, including all client contacts, is done completely on his own time (evenings and weekends), using his own equipment and materials. Engineer E does not attempt to lure existing QRS Engineering clients to his engineering practice. The QRS Engineering Employee Handbook has no specific policy that addresses performing outside work, and Engineer E does not advise the firm of his outside practice. Would it be ethical for Engineer E to continue to perform engineering services in his own engineering practice in the manner indicated?”

Source: NSPE Board of Ethical Review Case 10-2, NSPE.org

Case Study #5 - Which canons apply?

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.
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5. Avoid deceptive acts.
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Case Study #5 - Discussion

- Engineer E is being ethical by doing work only on his own time (evenings and weekends), using his own equipment, and not luring existing QRS Engineering clients to his engineering practice.
- However, the potential for a conflict of interest is high. Engineer E should first and foremost consult with QRS Engineering before working in any other professional capacity.
- Other ideas?

Case Study #6 - Scenario



Engineer F designs a waterline in an area with very high pressures. He uses a design code that is 2 years old. After the waterline is installed, several areas suffer major breaks due to surge pressure. A large section of the waterline must be replaced and a surge tank is installed per the updated code requirements. Should Engineer F be held liable?

Based on NSPE Board of Ethical Review Case 02-5, NSPE.org

Case Study #6 - Which canons apply?

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.
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5. Avoid deceptive acts.
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Case Study #6 - Discussion

- Engineer F is not ethically liable if he made a good faith effort to stay current in his engineering and technical knowledge.
- Although he was not ethically wrong, this case study underscores the need to remain current and seek knowledge from a variety of sources.
- Additional comments?

Case Study #7 - Scenario

Engineer G is waiting with several tribal officials for a tribal representative who is late to a meeting about a new waterline project. Engineer G makes a joke that the representative is late because he is busy misusing tribal funds. Has Engineer G violated the NSPE code of ethics?



Case Study #7 - Which canons apply?

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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.

Case Study #7 - Discussion

- While informal conversation improves relationships and enhances the engineering profession, engineers should behave in a professional and dignified manner at all times. Never is it in good taste to make disparaging remarks or use crude humor.
- Although the meeting had not started, comments made in such a setting may be construed as public and may hurt the engineer's company and the engineering profession in general.
- Other comments?

More Test Questions!

True or False



6. Engineers may accept assignments and assume responsibility for coordination of an entire project and shall sign and seal the engineering documents for the entire project, including each technical segment of the plans and documents.
7. Engineers may not participate in any matter involving a conflict of interest if it could influence or appear to influence their judgment or the quality of their services.
8. 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.
9. Engineers shall not solicit but may accept financial or other valuable consideration, directly or indirectly, from outside agents in connection with the work for which they are responsible, if such compensation is fully disclosed.
10. Engineers shall acknowledge their errors after consulting with their employers or clients.

Source: NSPE.org

Answers

True or False



6. Engineers may accept assignments and assume responsibility for coordination of an entire project and shall sign and seal the engineering documents for the entire project, including each technical segment of the plans and documents. **FALSE. See NSPE Code, Sec. II.2.c**
7. Engineers may not participate in any matter involving a conflict of interest if it could influence or appear to influence their judgment or the quality of their services. **FALSE. See NSPE Code, Sec. II.4.a**
8. 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. **TRUE. See NSPE Code, Sec. II.4.b**
9. Engineers shall not solicit but may accept financial or other valuable consideration, directly or indirectly, from outside agents in connection with the work for which they are responsible, if such compensation is fully disclosed. **FALSE. See NSPE Code, Sec. II.4.c**
10. Engineers shall acknowledge their errors after consulting with their employers or clients. **FALSE. See NSPE Code, Sec. III.1.a**

Engineers' Creed

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.

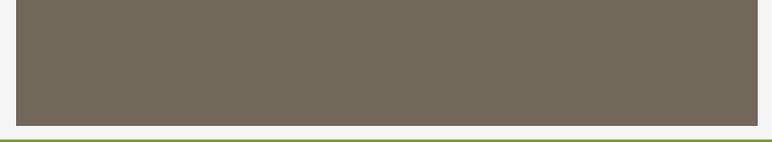
Adopted by National Society of Professional Engineers, June 1954

The complete NSPE Test

<http://www.nspe.org/resources/ethics/ethics-resources/code-ethics-examination>

Board of Ethical Review Cases

<http://www.nspe.org/resources/ethics/ethics-resources/board-of-ethical-review-cases>



Thank You!

- Questions?

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