

GENG 215: Introduction to Ethics and Design

Homework 1- Fall 2022

Case 1: Engineering Inspection Unit, By Dr. Omar J. Al-Khatib

Due Date: 5 days (Updated for NEW NSPE Code)

Homework Rules	Check (✓) to acknowledge
1. This homework is an individual assignment.	
2. Register your name in the homework list when you submit homework in class.	
3. Late submissions after the due date will result in a 50% total point deduction each day.	
4. Students caught copying homework will receive no credit and parents will be notified.	
5. Copying or turning in identical homework sets is considered cheating, and students will automatically receive a zero.	

Part I : Engineering ethics case of study

Three engineers are working in the **municipality** as inspectors for newly constructed residential buildings. The three engineers can be listed as follows:

1. **Engineer 1** is a **civil** engineer
2. **Engineer 2** is an **electrical** engineer
3. **Engineer 3** is a **mechanical** engineer

Three engineers were assigned to investigate a newly constructed building for **Building Tech Company (BTC)**. The following are the inspection comments for each engineer:

- a. **Engineer 1**: The construction work for the new building was completed by **BTC**, but the building was constructed according to different specifications than those approved by the municipality (e.g., using a different engineering design). The **manager** of **BTC** informed **Engineer 1** that the building was built using a different set of engineering documents than those approved by the municipality, with a lower level of safety and some design errors. **BTC's** manager requests approval of the building from **Engineer 1**.
- b. **Engineer 2**: The electrical lighting system (**ELS**) of the building was not completed according to the technical standards of the municipality. However, **Engineer 2** is not fully aware of the technical standard and cannot make a decision since he did not study this code while he was a student. **Engineer 2** is considering the approval of the electrical system despite the violation of the municipality's code because there is no major issue with the electrical system.
- c. **Engineer 3**: As a result of the inspection of the air-conditioning system (**AC**), it was found that the safety short-circuit was missing. A problem such as this could lead to the **AC** system overheating and causing the entire electrical wiring to burn out. The **BTC** manager, however, requested that **Engineer 3** not report the air conditioning system due to the fact that it is a new system with low safety risks. A failure to report an issue with the fire system is a violation of civil defense laws.

Based on the comments of these engineers, answer the following questions. **Buildings should be approved by the three engineers in accordance with the technical regulations of the municipality and the government.**

Name :

ID:

Sec.:

Grade: / 50 points

ENGINEERING ETHICS CASE STUDY – Answer Form

1. For three engineers, what is the ethical dilemma in this case? (/5 points)

2. Write **one ethical obligation** for each of the **three engineers** involved in this case.
(Be specific in your answer as it relates to this case.) (/6 points)

3. Identify **three ethical issues that would** face the three engineers in this case. (/6 points)

NEW CASE, NO PREVIOUS VERSION

4. What actions should be taken by **Engineer 1** based on the NSPE code of ethics?

Write three actions based on the NSPE code of ethics and use **applicable code items** in code of ethics **sections I, II, and III.** (When using NSPE Canons, write the section number only and do not copy it.)

<p>What Engineer 1 should do in this to avoid having an ethical dilemma with his employer?</p>	<p>Based on applicable items in NSPE code of ethics</p>
<p>Action 1 (/2 pnt) - <i>canons required (CR) and Item Required (IR)</i></p> <div style="border: 1px dashed red; height: 200px; width: 100%;"></div>	<p><i>Answer of this section should be in the form of: Example : I-2-c, or II-1-a, or III-1-b</i></p> <p>Based on sec. I: 2 pnt-2 CR</p> <div style="border: 1px dashed red; height: 25px; width: 100%;"></div> <p>Based on sec. II: 2 pnt-1 IR</p> <div style="border: 1px dashed red; height: 25px; width: 100%;"></div> <p>Based on sec. III: 2 pnt-2 IR</p> <div style="border: 1px dashed red; height: 25px; width: 100%;"></div>
<p>What should Engineer 2 do in this violation of the code of ethics?</p> <p>Action 2 (/2 pnt)</p> <div style="border: 1px dashed red; height: 200px; width: 100%;"></div>	<p><i>Answer of this section should be in the form of: Example: I-2-c</i></p> <p>Based on sec. I: 2 pnt-2 CR</p> <div style="border: 1px dashed red; height: 25px; width: 100%;"></div> <p>Based on sec. II: 2 pnt-2 CR</p> <div style="border: 1px dashed red; height: 25px; width: 100%;"></div> <p>Based on sec. III: 2 pnt-1 CR</p> <div style="border: 1px dashed red; height: 25px; width: 100%;"></div>
<p>What should Engineer 3 do in this case to avoid harming the building residents or the owner?</p> <p>Action 3 (/2 pnt)</p> <div style="border: 1px dashed red; height: 200px; width: 100%;"></div>	<p><i>The answer to this section should be in the form of: Example: I-2-c</i></p> <p>Based on sec. I: 2 pnt-2 CR</p> <div style="border: 1px dashed red; height: 25px; width: 100%;"></div> <p>Based on sec. II: 2 pnt-2 CR</p> <div style="border: 1px dashed red; height: 25px; width: 100%;"></div> <p>Based on sec. III: 2 pnt-1 CR</p> <div style="border: 1px dashed red; height: 25px; width: 100%;"></div>

Total points of this section: /24 pnts

NEW CASE, NO PREVIOUS VERSION

5. What should **Engineer 2** do in this case based on moral beliefs using the **utilitarian theory**? The answer should be specific to the case. **3.5 pnts.**

6. What should **Engineer 3** do in this case based on moral beliefs using the **duty ethics theory**? Answer should be specific to the case. **3.5 pnts.**

Error List: **Total points:** **/ 6 pnts**

Error Code	The Error Description
E1	Ethical dilemma is missing one or more elements, or parts of the correct answer.
E2-a	Ethical issue is not related.
E2-b^{NEW}	The answer is given as an ethical issue, but it is in fact not an ethical issue. Instead, it might be an obligation or a general answer. Some examples of such answers are an engineer should follow his responsibility, an engineer should be honest, an engineer should not lie and should be honest. These are not ethical issues as they are applicable in any situation. A specific answer should be provided for each situation.
E3	The answer does not focus on the character of the question. (e.g., a question is asked about Engineer A and the given answer is based on Contractor)
E4	The answer is not related to the question.
E5	The answer is not applicable to moral theory.
E6	The answer is too general and not related to the case (e.g., an engineer should follow his responsibility, or an engineer should be honest – so what should he do)?
E7	There is a missing item from the code of ethics; it could be from Section I, II, or III.
E8	The same answer is used in the previous section.
E9	Copying answers from previous homework answers or cases.
E10	Some of the questions or parts of the questions are not answered.