

Engineering Ethics



HOWARD UNIVERSITY

Academic Code of Student Conduct



NATIONAL SOCIETY OF BLACK ENGINEERS

Member Code of Conduct

Engineering as a Profession

- **Professions** includes fields such as engineering, medicine, the clergy, and law.
- **Profession** is a field of work involving:
 - **Systematic, advanced expertise:**
 - Through accredited **undergraduate programs**
 - Through experience as a **practicing engineer**
 - **Self-regulation:**
 - Enjoy freedom to govern itself
 - Through **licensure**
 - Through enforcement of **ethical codes**.
 - **Commitment to the public good:**
 - Serving the greater public good by **high moral and ethical standards** as defined by ethical code.

(a) Systematic, advanced expertise

- **Engineer in Training (EIT)** (Fundamentals of Engineering (FE) Exam) and **Professional Engineer (PE)** (Principles and Practices of Engineering Exam)

Certification of Engineer in Training (EIT)

Professional Engineer (P.E.) License

(b) Self-Regulation

- Self-regulation is seen at multiple levels, most notably through the professional organizations of each discipline and through licensure.
- Professional Organizations



Association for
Computing Machinery



Society of Automotive Engineers

(c) Commitment to the Public Good

- Engineers impact people.
- the power to impact society comes with the responsibility to do so in the public's best interest.
- **Public:**
 - is blind to the impact that engineers have on their daily lives.
 - holds an implicit trust that engineered products will work properly.
 - is not present when engineering design decisions are made.
- **Engineer's role** is to represent society and to ensure their safety and well-being.
- **The rules of engineers' roles** for public good are the set of values formulated as ethical codes.

Professionalism and Ethics



- NSPE code of ethics
 - Sec 1 (the **Fundamental Canons**): Main issues from an ethical and professional **standing**
 - Sec 2 (**Rules of Practice**): **First part** of the fundamentals of canons in detail
 - Sec 3 (**Professional Obligations**): **The last point of the fundamentals of canons**, focused on professional conduct from a legal, ethical, and societal viewpoint

- Fundamentals of Canons

While fulfilling professional duties, engineers shall

1. Hold paramount the safety, health, and welfare of the (_____)
2. Perform services only in the areas of their (_____)
3. Issue public statements only in an (_____) and truthful manner
4. Act for each employer or client as (_____) agents or trustees
5. Avoid (_____) acts
6. Conduct themselves **honorably, responsibly, ethically, and lawfully** so as to enhance the (_____), reputation, and usefulness of the profession

- Rules of Practice (partial list)
 1. Hold paramount the safety, health, and welfare of the public
 - a. If engineers' judgment is overruled under circumstances that endanger life or property, they shall (_____) their employer or client and such other (_____) as may be appropriate
 - b. Engineers having knowledge of any alleged violation of this Code shall (_____) thereon to appropriate professional bodies and, when relevant, also to public authorities, and (_____) with the proper authorities in furnishing such information or assistance as may be required.

- Rules of Practice (partial list)
 3. Issue public statements only in an objective and truthful manner.
 - a. Engineers shall issue no statements, criticism, or arguments on technical matters that are inspired or (_____) for by interested parties, unless they have prefaced their comments by identifying the interested parties on whose behalf they are speaking, and by revealing the existence of any (_____) the engineers may have in the matters.

- Rules of Practice (partial list)

4. Act for each employer or client as faithful agents or trustees

- a. Engineers shall disclose all known or potential (_____) of interest that could influence or appear to influence their judgment or the quality of their services
- b. Engineers shall not solicit or accept (_____) or other valuable consideration, directly or indirectly, from outside agents in connection with the work for which they are responsible.

5. Avoid deceptive acts

- a. Engineers shall not offer, give, solicit, or receive, either directly or indirectly, any contribution to (_____) the award of a contract.

Howard University Academic Code of Student Conduct

HOWARD UNIVERSITY

Search or A-Z Directories

Students • Faculty / Staff • Pa

<https://www.howard.edu/policy/academic/student-conduct.htm>

Academic Code of Student Conduct

[<< Index of Academic Policies & Procedures](#)

(Revised 2010)

Approved by the Board of Trustees, June 29, 2010

Howard University is a community of scholars composed of faculty and students both of whom must hold the pursuit of learning and search for truth in the highest regard. Such regard requires adherence to the goal of unquestionable integrity and honesty in the discharge of teaching and learning responsibilities. Such regard allows no place for academic dishonesty. To better assure the realization of this goal any student enrolled for study at the University may be disciplined for the academic infractions defined below.

Definitions of Academic Infractions

- 1. Academic Cheating**—any intentional act(s) of dishonesty in the fulfillment of academic course or program requirements. This offense shall include (but is not limited to) utilization of the assistance of any additional individual(s), organization, document, or other aid not specifically and expressly authorized by the instructor or department involved. (Note: This infraction assumes that with the exception of authorized group assignment or group take-home assignments, all course or program assignments shall be completed by an individual student only without any consultation or collaboration with any other individual, organization, or aid.)
- 2. Plagiarism**—to take and pass off intentionally as one's own the ideas, writings, etc. of another without attribution (without acknowledging the author).
- 3. Copy Infringement**—Copy infringement occurs when a copyrighted work is reproduced, distributed, performed, publicly displayed, or made into a derivative work without the permission of the copyright owner.

Howard University Academic Code of Student Conduct

- HU is a community of scholars composed of faculty and (_____)
- Both must hold the pursuit of (_____) and search for (_____) in the highest regard
- Such regard requires adherence to the goal of unquestionable (_____) and (_____) in the discharge of teaching and learning responsibilities.
- Such regard allows no place for academic (_____).
- Academic infractions:
 - **Academic cheating**: any additional assistance
 - **Plagiarism**: intentionally taking off as one's own of another
 - **Copy infringement**: reproduction of copyrighted works without permission

Technical Essay on Ethics – Subject

- Consequences of unethical behavior in Takata Airbag Scandal



Don't Risk It, Fix It!



Until your airbag is fixed, you're putting yourself, your spouse, your child, your best friend, or whoever's in your vehicle, in danger every time you drive. Because this isn't just a recall. **It's a public safety crisis.**


The Takata Airbag Recall Handout ...
toyotapartsandservice.com

WHAT IS THE TAKATA AIRBAG RECALL?

Defective Takata airbags were installed in millions of vehicles. The defect stems from the Japanese parts maker using ammonium nitrate as a propellant in its inflators without a drying agent. As a result, the ammonium nitrate degrades when exposed to moisture leading to explosions.

THE NUMBERS:

- 37 million vehicles are under recall.
- 50 million Takata airbags have been recalled.
- Fewer than 41 million Takata airbags have been replaced.




Since 2009, there have been 15 DEATHS and 278 INJURIES in the U.S. alone caused by exploding Takata airbags.

Many of the deaths stem from minor crashes that victims should have survived.


COMMON INJURIES FROM DEFECTIVE TAKATA AIRBAGS

- Blindness
- Severe Lacerations
- Skull fractures
- Brain bleeds
- Torn or shredded arteries




DAMAGES YOU MAY RECOVER:

- Medical bills
- Lost wages
- Pain and suffering
- Wrongful death



VEHICLE MAKES WITH TAKATA AIRBAGS

- Acura
- Audi
- BMW
- Chrysler
- Ferrari
- Ford/Lincoln
- General Motors
- Honda
- Infiniti
- Jaguar/Land Rover
- Lexus
- Mazda
- Mercedes-Benz
- Mitsubishi
- Nissan
- Subaru
- Tesla
- Toyota
- Volkswagen



The Carlson Law Firm
1-800-359-5690 • carlsonattorneys.com

- Relevant sources/resources

- <https://www.bloomberg.com/news/features/2016-06-02/sixty-million-car-bombs-inside-takata-s-air-bag-crisis>
- <http://www.autonews.com/article/20160718/OEM11/160719854/honda-audit-finds-takata-engineers-manipulated-airbag-test-data>
- <https://www.nytimes.com/2014/11/07/business/airbag-maker-takata-is-said-to-have-conducted-secret-tests.html>
- <https://insight.ieeeusa.org/articles/backscatter-ethics-and-airbags/>

Technical Essay on Ethics – Individual Assignment

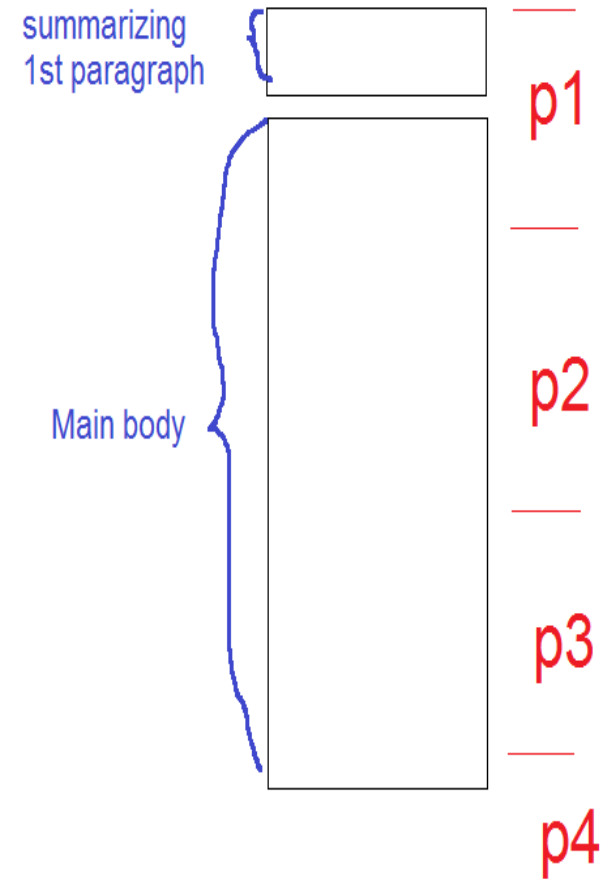
- **Technical Essay Subject:** “Consequences of unethical behavior – Takata Airbag Scandal”
- Essay should answer the following questions
 1. What and when did this scandal happen?
 2. What was the root cause of the scandal?
 3. What specific NSPE code of ethics (of fundamental canons) was violated?
 4. What’s the consequence of the unethical behavior?
 5. How would you do if you were working for the company as an engineer? **[Write in the first-person voice]**

How to write better ?

- “Consequences of unethical behavior - Takata airbag scandal”
- Link: **How to write technical essay well (mandatory)**
 - First paragraph [50] (F) – **Should answer all the questions summarily.**
 - Main body [50] (M) – **Expanded description on the questions and answers. Main body must be 4 times longer than the first paragraph.**
 - Similarity Score [0.0 – 1.0] (S) – **Write your own words. Do not quote.**
 - Final Essay Score[100] = $F + M - 50 * S$
- Submission File Naming: **Ethics_LastName.xxx (docx, txt, but no pdf)**
- **Due:** Check the accompanying Essay Assignment for more details

Practical matters

- Mechanics
 - Matched tense
 - 3rd person
 - Brevity and concise and direct
 - No abuse of technical jargons
 - Use complete sentence with correct grammar
- Style
 - The assigned/given essay question has to be summarily answered in the first paragraph. The second paragraph will be considered the start of the main body.
 - The main body contains the main and entire essay. The main body, in terms of length or word count, must be at least 4 times of the 1st paragraph.
 - Text only – no graphics no photos no images



How to write well

- One last piece:
 - Turnitin similarity check
 - Use your **own** words
 - Do **not** quote – **rephrase instead**

The screenshot displays a Turnitin Originality Report interface. At the top, the Turnitin logo and 'Originality Report' are visible. A 'Document Viewer' button is present. The 'Similarity Index' is shown as 23%. A 'Similarity by Source' table lists: Internet Sources (16%), Publications (6%), and Student Papers (21%). Below this, a list of 9 matches is shown, each with a percentage and a source link. The matches are:

Match #	Percentage	Source
1	5%	Internet from 04-Mar-2015 http://technology-hint.blogspot.com
2	4%	student papers from 28-Apr-2004 Submitted to Monmouth University
3	4%	student papers from 29-Jan-2012 Submitted to University of Dayton
4	2%	student papers from 30-Jan-2013 Submitted to University of Dayton
5	2%	Internet from 04-Oct-2016 https://en.wikipedia.org/wiki/Endianness
6	2%	Internet from 03-Feb-2012 http://en.wikipedia.org
7	2%	Internet from 08-Oct-2014 http://www.blogjava.net
8	2%	Internet from 08-Jun-2011 http://www.reference.com
9	1%	student papers from 24-Mar-2011 Submitted to Institute of Technology Blanchardstown

The main text area shows a paragraph about endianness with several highlighted phrases in red boxes, each with a small number in a box next to it:

- people prefer to eat their hard boiled eggs from the little end first (little endian), while others prefer to eat the big end first (big endian). [4]
- when you want to break up a large value [1]
- register is neither big endian nor little endian. [1]
- the rightmost bit is the least significant bit and the leftmost bit is the most significant bit [1]

Scoring Rubric

	1 st Paragraph	Main Body
50	All given questions are answered concisely written in 3 rd person [except the last question] with correct grammar and no abuse of jargons	All given questions are extensively written for answer in 3 rd person [except the last question] with correct grammar and no abuse of jargons with its length <u>4 times or more</u> of the 1 st paragraph.
40	Only parts of the questions are answered concisely written in 3 rd person [except the last question] with correct grammar and no abuse of jargons	Only parts of the questions are extensively written for answer in 3 rd person [except the last question] with correct grammar and no abuse of jargons with its length <u>4 times or more</u> of the 1 st paragraph.
20	The questions are answered with wordy phrases and some grammar errors	The questions are somewhat expanded with some grammar errors
10	The questions are not summarily answered	The questions are not expanded.

- Grading
 - (x) Entire Report Score : 50 pts
 - (y) 1st Paragraph Score: 50 pts
 - (z) Similarity Score: [0.0 – 1.0] (0 – 100%)
 - **Final Score:** $(x + y - 50 * z)$