



# **NILE UNIVERSITY of NIGERIA**

## **DEPARTMENT OF PETROLEUM & GAS ENGINEERING**

### **GET 101 2021. 2nd Intake. Introduction to Engineering. Presentation 3 - ENGINEERING ETHICS**

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# **1. INTRODUCTION**

# INTRODUCTION

## WHAT ARE PROFESSIONS?

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is any occupation that provides means to earn a living.

In deeper sense, a profession involves:

### **1. *Advanced Expertise.***

- require sophisticated skills and theoretical knowledge
- in exercising judgment

### **2. *Self-Regulation.***

- Societies of professionals play major role in setting standards
  - for admission to the profession,
  - drafting codes of ethics,
  - enforcing standards of conduct, and
  - representing the profession before the public and government.<sup>4</sup>

# INTRODUCTION

## WHAT ARE PROFESSIONS?



### 3. *Public Good.*

- The occupation serves some important aspect of public good.
  - engineering toward technological solutions
  - to problems concerning the public's well-being, safety, and health.
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# INTRODUCTION

## What is Ethics?

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### Definition of Ethics.

- The way people behave based on how their beliefs about what is right and wrong influence behavior ([www.ethics.org/resource/definitions-values](http://www.ethics.org/resource/definitions-values)).
- ‘Ethics’ comes from the Greek ‘Ethos’, meaning character, or what a good person is or does to have a good character (Jay Black and Chris Roberts Doing Ethics in Media, pp. 17).

# INTRODUCTION

## What is Ethics?

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### Ethics or moral philosophy

- is a branch of philosophy that involves
  - systematising
  - defending, and
  - recommending
- concepts of right and wrong conduct

# INTRODUCTION

## What is Ethics?

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- The field of ethics, along with aesthetics,
  - concern matters of value, and thus
  - comprise the branch of philosophy called axiology
- Ethics seeks to resolve questions of human morality
- by defining concepts such as
  - good and evil,
  - right and wrong,
  - virtue and vice,
  - justice and crime

# INTRODUCTION

## What is Ethics?

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- Moral philosophy also is related to the fields of
  - moral psychology,
  - descriptive ethics, and
  - value theory.

# INTRODUCTION

## What is Ethics?

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- Three major areas of study within ethics recognised today are:
  1. **Meta-ethics**,
    - concerning the theoretical meaning and reference of moral propositions, and
    - how their **truth values** (if any) can be determined
  2. **Normative ethics**,
    - concerning the practical means of determining a moral course of action
  3. **Applied ethics**,
    - concerning what a person is **obliged** (or permitted) to do in a specific situation or a particular domain of action

# INTRODUCTION

## Ethical Behaviour

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- Ethical behavior is characterized by honesty, fairness and equity in interpersonal, professional and academic relationships and in all other activities.
- Ethical behavior respects the dignity, diversity and rights of individuals and groups of people.
- This definition is not a denial of the existence of other ethical duties with respect to practice, professional service delivery, and research.

# ENGINEERING ETHICS

## Introduction.

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### Engineering Ethics

- is the field of applied ethics and system of moral principles that apply to the practice of engineering
- The field examines and sets the obligations by engineers
  - to society,
  - to their clients, and
  - to the profession
- It is closely related to subjects such as
  - the philosophy of science,
  - the philosophy of engineering, and
  - the ethics of technology.

# ENGINEERING ETHICS



## Definition.

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### Definition of Engineering Ethics

Engineering ethics is the study of moral values, issues and decisions involved in engineering practice.

The moral values take many forms, including responsibilities, ideal character traits, social policies, and relationships desirable for individuals and corporation engaged in technological development.

# ENGINEERING ETHICS

## Definition.

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- ❖ Engineering Ethics is the study of **moral issues** and decisions confronting individuals and organizations engaged in engineering.
  
- ❖ The Study of related questions about moral ideals, character, policies and relationship of people and corporations involved in **technological activity**.

## Engineering Ethics

### OVERVIEW

Engineering Ethics is the activity and discipline aimed at

- Understanding the moral values that ought to guide engineering profession or practice,
- Resolving moral issues in engineering, and
- Justifying the moral judgments in engineering. It deals with set of moral problems and issues connected with engineering.

# ENGINEERING ETHICS

## Why Study Engineering Ethics?



- Engineers should follow their professional standard of ethics because:
  - A) It helps them avoid legal problems, such as getting sued.
  - B) It provides a clear definition of what the public has a right to expect from responsible engineers.
  - C) It raises the image of the profession and hence gets engineers more pay.
  - D) The public will trust engineers more once they know engineers have a code of ethics.

# ENGINEERING ETHICS

## Why Study Engineering Ethics?

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Engineering ethics should be studied because:

- ***Important***
  - in preventing grave consequences of faulty ethical reasoning
  - in giving meaning to engineers' endeavors,
- ***Complex.***
  - It cannot be understood through casual observation.

# ENGINEERING ETHICS

## Why Study Engineering Ethics?

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The direct aim is to:

- Increase the ability to deal effectively with moral complexity in engineering.
- Empowering individuals to reason more clearly and carefully
  - concerning moral questions,
  - rather than inculcate any particular beliefs.
- The unifying goal is to increase moral autonomy
- Autonomy literally means “self-determining” or “independent”
  - viewed as the skill and habit of thinking rationally
  - about ethical issues on the basis of moral concern.

# ENGINEERING ETHICS

## Why Study Engineering Ethics?

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Improving the ability to reflect carefully on moral issues

- Accomplished by improving various practical skills—
- that will help to produce autonomous thought about moral issues.
- These skills include the following:

# ENGINEERING ETHICS

## What is Morality?

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### What is Morality?

Morality mainly concerns on right and wrong, good and ~~bad~~, the rules that ought to be followed.

This definition is incomplete, because there are nonmoral as well as moral usages of these words.

Morality is about reasons centered in respect for other people as well as ourselves.

Moral reasons, may involve being fair and just, respecting peoples right, avoiding unnecessary offense, cheating and dishonesty, caring, showing gratitude and empathy, minimising damage to environment etc.

# ENGINEERING ETHICS

## What is Morality?

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Moral reasons, may involve:

being fair and just,

respecting peoples right,

avoiding unnecessary offense,

cheating and dishonesty,

caring, showing gratitude and empathy,

minimising damage to environment

etc.

# ENGINEERING ETHICS

## Moral Dilemma or Ethical Conundrum



Moral dilemmas or Ethical Conundrum

- are situations in which two or more moral obligations, duties, rights, goods, or ideals come into conflict with one another
- It is also possible for one or one moral principle to have two or more incompatible applications in a given situation.
- it is often difficult or impossible to formulate rules that are **absolute**, that is, never have a justified exception.
  - Even such basic principles as
    - **Do Not Lie, Do Not Steal**, and
    - **Do Not Kill**
  - have some permissible exceptions when they conflict with more pressing moral duties.

# ENGINEERING ETHICS

## Moral Dilemma or Ethical Conundrum



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Resolving moral dilemmas:

- Involves good moral judgment in weighing conflicting moral reasons,
- but frequently it involves several related tasks:
  - conceptual clarification,
  - factual inquiries, and
  - resolution of interpersonal disagreements.

# ENGINEERING ETHICS

## Resolving Moral Dilemma



Can be done in the following way:

### 1. *Conceptual clarification*

- is the elucidation of moral ideas and morally relevant notions
- oral ideas contain areas of vagueness and ambiguity that need to be dealt with.

### 2. *Factual inquiries are:*

- *inquiries into the facts relevant to resolving particular moral issues*

*engineering, scientific,*

*financial, or legal matters,*

*as they are brought to bear on resolving moral dilemmas*<sup>24</sup>

# ENGINEERING ETHICS

## Resolving Moral Dilemma



3. *Interpersonal disagreements* are

- controversies among persons or groups —
- about how to understand and resolve moral dilemmas.
  - Ideally, either through mutually enriching perspective or
  - compromises.



### Steps in Confronting Moral Dilemmas

1. Identify the relevant moral factors and reasons —
2. Gather all available facts that are pertinent to the moral factors involved.
3. Rank the moral considerations in order of importance as they apply to the situation.
4. Consider alternative courses of action as ways of resolving the dilemma, tracing the full implications of each

# ENGINEERING ETHICS

## Steps in Controlling Moral Dilemma



### Steps in Confronting Moral Dilemmas

5. Talk with colleagues/friends, seeking their suggestions and alternative perspectives on the dilemma.
6. Arrive at a carefully reasoned judgment by weighing all the relevant moral factors and reasons in light of the facts

# ENGINEERING ETHICS

## Practical Moral Skills

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These skills include the following:

1. Proficiency in recognising moral problems and issues in engineering
2. Skill in comprehending, clarifying, and assessing critically arguments on opposing sides of moral issues
3. The ability to form consistent and comprehensive viewpoints based on considerations of relevant facts.
4. Imaginative awareness of alternative responses to the issues and receptivity to creative solutions for practical difficulties.
5. Increased precision in the use of a common ethical language, a skill needed to express and support one's moral views adequately to others.

# ENGINEERING ETHICS

## Practical Moral Skills

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These skills include the following:

6. Sensitivity to genuine difficulties and subtleties. —
7. An awakened sense of the importance of integrating one's professional life and personal convictions.
8. Enriched appreciation of both the possibilities of using rational dialogue in solving moral conflicts and the need of tolerance of differences in perspective among morally reasonable people.



# ETHICAL DECISION MAKING

## Introduction

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There are two reasons people try to make ethical decisions:

1. They wish to make the world a better place for everyone
  - in a single word, altruism
2. They wish to avoid unpleasant consequences,
  - such as fines, incarceration, or loss of job.

In an ideal society, the second reason would not exist

Almost all societies have developed rules, codes, and laws to specify what is and is not acceptable behaviour, and

- the punishments that will be meted out when violations occur.

# ETHICAL DECISION MAKING

**We make Ethical Decisions Daily**



## We make ethical decisions daily:

- When you drive your car, do you knowingly violate ~~the~~ the posted speed limit?
- When you unload the supermarket cart at your car,
  - do you leave it in the middle of the parking lot, or
  - spend the extra time to return it to the cart corral?
- You know that another student has plagiarised an assignment
  - do you rat him or her out?
- A person with a mental disability tries to converse with you while waiting in a public queue
  - Do you treat him or her with respect or pretend he or <sup>she</sup> she does not exist?

# ETHICAL DECISION MAKING

**We make Ethical Decisions Daily**



## We make ethical decisions daily:

- In the Supermarket, a teenager's mother tells her ~~to~~ put back the package of ice cream she brought to the cart
  - The teenager walks around the corner and places the ice cream on the shelf with the soft drinks and returns to the buggy
  - Do you ignore this or approach the teenager and politely explain that leaving a package of ice cream in that location will cause it to melt thus increasing the cost of groceries for everyone else, or
  - do you replace it in the freezer yourself?
-

# ETHICAL DECISION MAKING

**We make Ethical Decisions Daily**



## We make ethical decisions daily:

- When going through a public door,
  - do you make a habit of looking back to see if releasing the door will cause it to slam in someone's face?
- You notice a highway Policeman lying in wait for speeders
  - Do you flash your lights at other cars to warn them?
- A cashier gives you too much change for a purchase
  - Do you correct the cashier?

# ETHICAL DECISION MAKING

We make Ethical Decisions Daily



## To Ship or Not to Ship

A quality assurance engineer must decide whether or not to ship products that might be defective.

## Time-Sharing Space

An intern at a power electronics startup faces unkind comments from a fellow engineer. She suspects that her colleague is prejudice toward female engineers.

## Inhibited Reaction

A chemical engineering professor discovers that a colleague has taken credit for his research.

# ETHICAL DECISION MAKING

We make Ethical Decisions Daily



## Apathy over Anonymity

A bioengineering researcher discovers an error in protocol and feels pressured not to report it to her supervisor.

## Questioning a Mentor

A graduate student suspects her research adviser has earned tenure under false pretenses.

## Copyright Concerns

A computer startup company risks violating copyright laws if it reuses a code that is the intellectual property of another company.

## Off the Clock

A recently promoted manager at an industrial engineering company discovers that factory workers are asked to work more than eight hours a day without getting paid overtime. 36

# ETHICAL DECISION MAKING

We make Ethical Decisions Daily



## Misinterpretation Mishap

Full transparency might prevent a project leader from closing a deal with a valuable client. Should he still clarify the situation to his client?

## Disclosure Dilemma

A manager at a consumer electronics company struggles over whether or not he should disclose confidential information to a valued customer.

## Trimming Data

A medical researcher is asked to trim data before presenting it to the scientific advisory board.

# ETHICAL DECISION MAKING

We make Ethical Decisions Daily



## Going Public

A technical sales engineer feels pressure to falsify a sales report in order to prevent the delay of her company's IPO.

## A Breach in Security

When a computer filled with personal data gets stolen, a data company must decide how to manage the breach in security.

## Onerous Favorites

Employees of a computer hardware company are angered by a manager that demonstrates favoritism.

# ETHICAL DECISION MAKING

We make Ethical Decisions Daily

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## A Violation of Privacy

A computer engineer is asked to divulge private medical data for marketing purposes.

## This Land is Your Land

Environmental engineers face pressure to come up with data that favors their employers.

## Trouble with Training

In this ethics case, a woman is displeased with her work role at a computer hardware company.

# ETHICAL DECISION MAKING

We make Ethical Decisions Daily



## A Sinking Situation

A systems engineering company employee quits after getting pressured to falsify product testing paperwork.

## A Situation Unfiltered

A manager at a nonprofit mechanical engineering firm questions how responsible her company should be for ongoing maintenance on past projects.

## A Marshland's Fleeting Flourishing?

An engineer for an environmental consulting firm must decide whether or not he should encourage his client to go with a more environmentally sustainable construction plan.

# ETHICAL DECISION MAKING

We make Ethical Decisions Daily

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## Stem Cell Party

A genetic engineer feels a responsibility to educate colleagues on the truth behind stem cell research.

## Giving in or Giving up

An engineering manager gets pressured to bribe a foreign official in order to secure a business venture in East Africa.

## 2. ETHICAL DECISION MAKING

We make Ethical Decisions Daily



### A Lengthy Dilemma

A medical company asks blood sample suppliers to sign an ethically questionable consent form.

### Presidential Pressure

A quality assurance tester gets pressured to falsify data about a new product from a major cell phone company.

### Is the Customer Always Right?

Should a production engineer prioritize a customer's desires over safety?

### Insurmountable Differences

An African-American electronics design lead wonders whether his colleague's contentious behavior is motivated by racism.

# ETHICAL DECISION MAKING

We make Ethical Decisions Daily



## May the Truth be with You

A new hire at an electronics startup struggles to decide between telling the truth and maximizing the company's profit.

## Solar Falsifier

A fellow for a global services program faces an ethical dilemma when a colleague asks him to falsify receipts.

## Looking toward a Medical Future

A researcher of regenerative medicine meets a man who is eager sign up for potentially dangerous human testing.

## A Positively Negative Response

A bioengineer's research leads to the discovery that a patient might have prostate cancer.

# ETHICAL DECISION MAKING

We make Ethical Decisions Daily

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## Bulk Discount Balk

Two support engineers at a South Bay audio visual electronics startup question the fairness of a supervisor's decision.

## Questioning the Average

An employee overseeing data analysis on a clinical drug trial has concerns about the safety of a client's drug.

## Foul on the Field

A female intern at a construction company faces disrespectful treatment because of her gender.

## Unintended Effects

A project engineer believes his company is providing the wrong form of technology to an in-need community in East Africa.

# ETHICAL DECISION MAKING

**We make Ethical Decisions Daily**

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An inspector discovered faulty construction equipment and applied violation tag, preventing its continued use. The inspector's supervisor, who is the construction manager, viewed the case as a minor infraction of safety regulations and ordered the tag removed so the project would not be delayed. The inspector objected but he was threatened with disciplinary action. The continued use of equipment led to the death of a worker on a tunnel project.

# ETHICAL DECISION MAKING

**We make Ethical Decisions Daily**

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A chemical plant dumped wastes in a landfill. Hazardous substances found their way into the underground water table. The plant's engineers were aware of the situation but did not change the disposal method because their competitors did it the same cheap way. Plant supervisors told the engineers it was the responsibility of the local government to identify any problems.

# ETHICAL DECISION MAKING

**We make Ethical Decisions Daily**

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The ABC company began selling its latest high-tech product before it had been fully checked out in beta tests, that is, used on real applications by a group of knowledgeable users. It was not ready for distribution, but clients were already lured to this product by glossy advertising designed to win the market by being first to capture clients' attention.

These examples show how ethical problems arise most often when there are differences of judgment or expectation.

# ETHICAL DECISION MAKING

We make Ethical Decisions Daily



## Discussion Topics

1. Free speech and bigotry: The use of the Internet by hate groups to spread racist, sexist, and sometimes violent agendas.
2. Bulletin Board: Should bulletin board and web-site operators be held liable for failing to filter illegal forms of verbal assaults?
3. Gambling on the Internet ("techno-gambling" using "cyberspace casinos").
4. False identities: Creating and communicating to others a false persona on the Internet.

# ETHICAL DECISION MAKING

We make Ethical Decisions Daily



## Discussion Topics

5. “Spamming”: Should I be allowed to overload your system with endless advertisements?
6. A guy who operated a computer bulletin board that allowed users to download copyrighted software because he feels that software should be more freely available to everyone in a free society.
7. “Cyberstalking”: Who sent threatening e-mail messages to his victim. He claimed just merely expressing himself.

# ETHICAL DECISION MAKING

**We make Ethical Decisions Daily**

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With respect to each of the following topics,

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- (a) State what you see as any moral dilemmas (situations where two or more moral reasons conflict);
- (b) Identify any factual inquiries you think might be needed in making a reliable judgment about the case
- (c) Identify any ideas or concepts involved in dealing with the moral issues that it would be useful to clarify
- (d) Present and defend your view about how best to resolve the moral issues

# CODE OF ETHICS

## Introduction

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The world's major religions all have brief codes of conduct

- Judaism, Christianity, and derivatives thereof have the Decalogue, or Ten Commandments
  - Islam has the Five Pillars
  - Buddhism has the Noble Eightfold Path
  - Bahá'í has 12 social principles
  - In Hinduism, Grihastha dharma has four goals.
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# **CODE OF ETHICS**

## **Roles of Codes of Ethics**

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Professional codes of ethics consist primarily of principles of responsibility that delineate how to promote the public good.

The codes provide guidance and support for responsible engineer, establish shared minimum standards, and play additional important roles.

1. Shared Standard.

Great diversity of moral views

make it essential that profession establish explicit standards;

2. Support.

Codes give positive support to those seeking to act ethically;

# **CODE OF ETHICS**

## **Roles of Codes of Ethics**

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### **3. Guidance.**

Codes provide a positive stimulus for ethical conduct and helpful guidance concerning main obligations of engineers;

### **4. Inspiration.**

Codes also provide stimulus (motivation) for ethical conduct;

### **5. Education and Mutual Understanding.**

Codes can be used by professional societies and in the classroom

to prompt discussion and reflection on moral issues;

# **CODE OF ETHICS**

## **Roles of Codes of Ethics**

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### **6. Deterrence and Discipline.**

Codes can also serve as the formal basis for investigating unethical conduct;

### **7. Contributing to the Profession's Image.**

Codes can present a positive image to the public of an ethically committed profession.

# **CODE OF ETHICS**

## **Abuse of Codes of Ethics**

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### **ABUSE OF CODES**

When codes are not taken seriously within a profession, it will increase public cynicism about the profession.

One of the worst abuse of engineering codes can occur:

when honest moral effort on the part of individual engineers is restricted

by an attempt to preserve the profession's public image and protect the status quo.

# **CODE OF ETHICS**

## **Limitation of Codes of Ethics**

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### LIMITATION OF CODES

Codes are no substitute for individual responsibility in grappling with concrete dilemma.

Most codes are restricted to general wording and contain substantial areas of vagueness.

They may not be able to straightforwardly address all situations.

# **CODE OF ETHICS**

## **Examples of Codes of Ethics**



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Example of Codes of some engineering societies of an interdisciplinary nature:

1. ABET Accreditation Board of Engineering and Technology;
2. NSPE National Society of Professional Engineers;
3. BEM Board of Engineers Malaysia

# **CODE OF ETHICS**

## **Examples of Codes of Ethics**



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Example of Codes of some disciplines-specific engineering societies

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1. AIChE American Institute of Chemical Engineers;
2. ASCE American Society of Civil Engineers;
3. ASME American Society of Mechanical Engineering;
4. IEEE Institute of Electrical and Electronics Engineers

## 2. ETHICAL DECISION MAKING

### Ethical Corporate Climate

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An ethical climate is a working environment conducive to morally responsible conduct.

Within corporations, it is produced by:

- a combination of formal organisation and policies,
- informal traditions and practices, and
- personal attitudes and commitments.

## 2. ETHICAL DECISION MAKING

### Ethical Corporate Climate

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Features of an ethical corporate climate:

1. Ethical values must be widely acknowledged and appreciated by managers and employees alike.

Responsibilities to all constituencies of the corporation are affirmed – not only to stockholders, but also to customers, employees of the corporation.

2. The use of ethical language is applied and recognised as a legitimate part of corporate dialogue, e.g. include a statement of ethical responsibilities in job descriptions of all layers of management.

## **2. ETHICAL DECISION MAKING**

### **Ethical Corporate Climate**

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Features of an ethical corporate climate:

1. Top management must set amoral tone, in words, in policies, and by personal example.
2. Procedures for conflict resolution.

## 2. ETHICAL DECISION MAKING

### Moral Responsibility

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Moral judgments are involved

whenever moral responsibility is ascribed to individuals or corporations,

but judgments may be various types.

They might ascribe;

1. A virtue
2. Obligations
3. General moral capacities
4. Liabilities and accountability for actions
5. Blameworthiness or praiseworthiness

## 2. ETHICAL DECISION MAKING

### Ethical Corporate Climate

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There are two other concepts of responsibility that should not be confused with moral responsibility in any of its five preceding.

#### 1. Causal responsibility

consists simply in being a cause of some event.

People can be causally responsible for an event

without necessarily being morally responsible for it.

## 2. ETHICAL DECISION MAKING

### Ethical Corporate Climate

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1. Legal responsibility should also be distinguished from moral responsibility.

An engineer or engineering firm can be held legally responsible for harm that was so unlikely and unforeseeable that little or no moral responsibility is involved.

## 2. ETHICAL DECISION MAKING

### Four Step Procedure

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- Some ethical decisions are clear-cut
- It is unethical to kill someone because you do not like his or her hat
- Unfortunately, many real-world decisions that we must make are far from "black and white" issues
- There is no proven algorithm or set of rules that one can follow
  - to guarantee that the most ethical decision possible is being made in any particular situation
- Developed procedures that can guide us in considering questions with ethical ramifications
  - A four-step procedure is recommended

## **2. ETHICAL DECISION MAKING**

### **Four Step Procedure - Step 1**



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**Step 1 - Determine *What* the issues are and *Who* might be affected by the various alternative courses of action that might be implemented.**

**Step 2 - Consider the effects of alternative courses of action from different perspectives**

**Step 3 - Correlate perspectives**

**Step 4 - Act**

## 2. ETHICAL DECISION MAKING

### Four Step Procedure - Step 1

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**Step 1 - Determine *What* the issues are and *Who* might be affected by the various alternative courses of action that might be implemented.**

- We will refer to the **Who** as stakeholders
- The issues (**What**) can refer to
  - personal freedom,
  - national security,
  - quality of life,
  - economic issues,
  - fairness, and equality

## 2. ETHICAL DECISION MAKING

### Four Step Procedure - Step 1

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- The term stakeholders (Who)
  - an individual
  - a group of people
  - an institution
  - a natural system
  - among other things.
  - .

## **2. ETHICAL DECISION MAKING**

### **Four Step Procedure - Step 2**

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#### **Step 2 - Consider the effects of alternative courses of action from different perspectives**

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- Here, we look at three perspectives:
  1. consequences,
  2. intent, and
  3. character.

## 2. ETHICAL DECISION MAKING

### Four Step Procedure - Step 2

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#### Perspective 1: Consequences

- How the various stakeholders will be affected by each alternative plan being contemplated?
- In addition, attempt to assign a relative level of importance (weight) to each effect on each stakeholder
  - an action that might affect millions of people adversely is almost always more important than
  - an action that would cause an equivalent level of harm to a dozen people.

## 2. ETHICAL DECISION MAKING

### Four Step Procedure - Step 2

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#### Perspective 2: Intent

- The intentions of the person doing the acting or deciding
- sometimes called the “rights” perspective
- actions based on good intentions can sometimes yield bad results, and vice versa,
- the intent perspective avoids this possible pitfall by not considering the outcome at all, only the intentions
  - Is the action I am taking something that I believe everyone should do?
  - Do I believe that this sort of behaviour should be codified in law?
  - Would I like to be on the receiving end (the victim) of this action?

## 2. ETHICAL DECISION MAKING

### Four Step Procedure - Step 2



#### The Perspective 3: Character

- Character is the inherent complex of attributes that determines a person's moral and ethical actions and reactions
- This perspective considers the character of a person who takes the action under consideration
- There are different ways of thinking about this
  - Would a person of good character do this?
  - If I do this, does it enhance or degrade my character?
  - Would a person you revere as a person of unimpeachable character (whoever that might be) take this action?

## **2. ETHICAL DECISION MAKING**



### **Four Step Procedure - Step 3**

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#### **Step 3 - Correlate perspectives**

- Look back at the results of considering the issues from the three perspectives
- all three perspectives will lead to the same or a similar conclusion
- When this occurs, you have a high level of confidence that the indicated action is the best choice from an ethical standpoint
- If the three perspectives do not agree, you may wish to reconsider the question.

## 2. ETHICAL DECISION MAKING

### Four Step Procedure - Step 3



#### Step 3 - Correlate perspectives

- If the three perspectives do not agree, you may wish to reconsider the question
  - It may be helpful to discuss the issue with people whom you have not previously consulted in this matter
  - Did you omit any factors?
  - Did you properly assign weights to the various aspects?
  - Upon reconsideration, all three perspectives may converge.
- If you cannot obtain convergence of all three perspectives,
  - no matter how hard you try to make sure you left nothing out,
  - then go with two out of three.

## 2. ETHICAL DECISION MAKING

### Four Step Procedure - Step 4



#### Step 4 - Act

- This is often the hardest step of all to take, since ethical action often requires courage
  - The whistle-blower who risks losing his or her job
  - the elected official standing up for what she knows to be right even though it will probably cost her the next election, or
  - risking the ridicule of your friends because you refuse to go along with whatever questionable activities they are engaging in for “fun.”
- Ask yourself the question:
  - Do I have the courage to do what I know is right?”

## 2. ETHICAL DECISION MAKING



### Examples

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1. Should all Nigerian children be fingerprinted when entering kindergarten and again each third year of Primary and Secondary school? Identify the stakeholders and consequences
2. Should you download music illegally over the Internet?
3. Your friends are deriding another student behind her back because she comes from a poor family and does not have good clothes. Do you:
  - a. Join in the criticism?
  - b. Ignore it, pretend it is not happening, or simply walk away?
  - c. Tell your friends that they are behaving badly and insist that they desist?

## 2. ETHICAL DECISION MAKING



### Examples

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4. Your company has been granted a contract to develop the next generation of electronic cigarette, also known as a “nicotine delivery system,” and you have been assigned to the design team
  - Can you in good conscience contribute your expertise to this project?



*Coffee Break*

### 3. PLAGIARISM

#### Introduction - What is Plagiarism?



## WHAT IS PLAGIARISM?

A word cloud centered around the word "plagiarism" in large red letters. Other words include "theft", "cheating", "summarizing", "ideas", "words", "video", "without", "reuse", "paper", "fraud", "permission", "quotations", "book", "credit", "asa", "source", "book", "prevent", "knowledge", "paraphrasing", "audio", "mla", "journal", "stealing", "copyright", "passage", "integrity", "misrepresentation", "honesty", "property", "copying", "common", "chicago", "academic", "citation", "article", "ethical", "borrowing", "information", "protection", "original", "intention", "reference".

### 3. PLAGIARISM

#### Introduction - What is Plagiarism?



## PLAGIARISM:

an act of presenting another person's work or idea as your own.



# 3. PLAGIARISM

## Definition



- **Plagiarism** is the "wrongful appropriation" and "stealing and publication" of another **author's** "language, thoughts, ideas, or expressions" and the representation of them as **one's** own **original work**
- Considered **academic dishonesty** and a breach of **journalistic ethics**
- subject to sanctions such as penalties, suspension, and even **expulsion** from school or work
- Plagiarism is not in itself a **crime**, but can constitute **copyright infringement**
- In academia and industry, it is a serious **ethical** offense

# **3. PLAGIARISM**

## **Definition**



- Plagiarism and copyright infringement overlap to a considerable extent
- Plagiarism is not defined or punished by law, but rather by institutions
  - professional associations
  - educational institutions
  - commercial entities
  - publishing companies

### 3. PLAGIARISM

#### Introduction - What is Plagiarism?

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*Plagiarism, either accidental or intentional, usually begins at the note taking stage of the writing process. If information is plagiarized in your notes, it can easily be transferred into plagiarized material in your final paper. You can eliminate accidental plagiarism by taking careful notes and giving credit for other people's words and ideas, statistical information, graphics, or drawings. You can eliminate intentional plagiarism by being ethical and honest and allowing enough time for researching and writing an assignment.*

# **3. PLAGIARISM**

## **Introduction**



### **Did you know?**

- There are Internet services available that will accept a document and search the web for exact or similar content
- There are programs that will scan multiple documents and search for exact or similar content
- Prior to the romantic movement of the eighteenth century,
  - European writers were encouraged not to be inventive without good reason and to
  - carefully imitate the work of the great masters of previous centuries.

### 3. PLAGIARISM

#### Forms of Plagiarism



## TO AVOID PLAGIARISM



Use online tools to  
check for plagiarism



Provide links you  
have referred to



Write in your own  
words



Buzzle.com

# **3. PLAGIARISM**

## **Forms of Plagiarism**

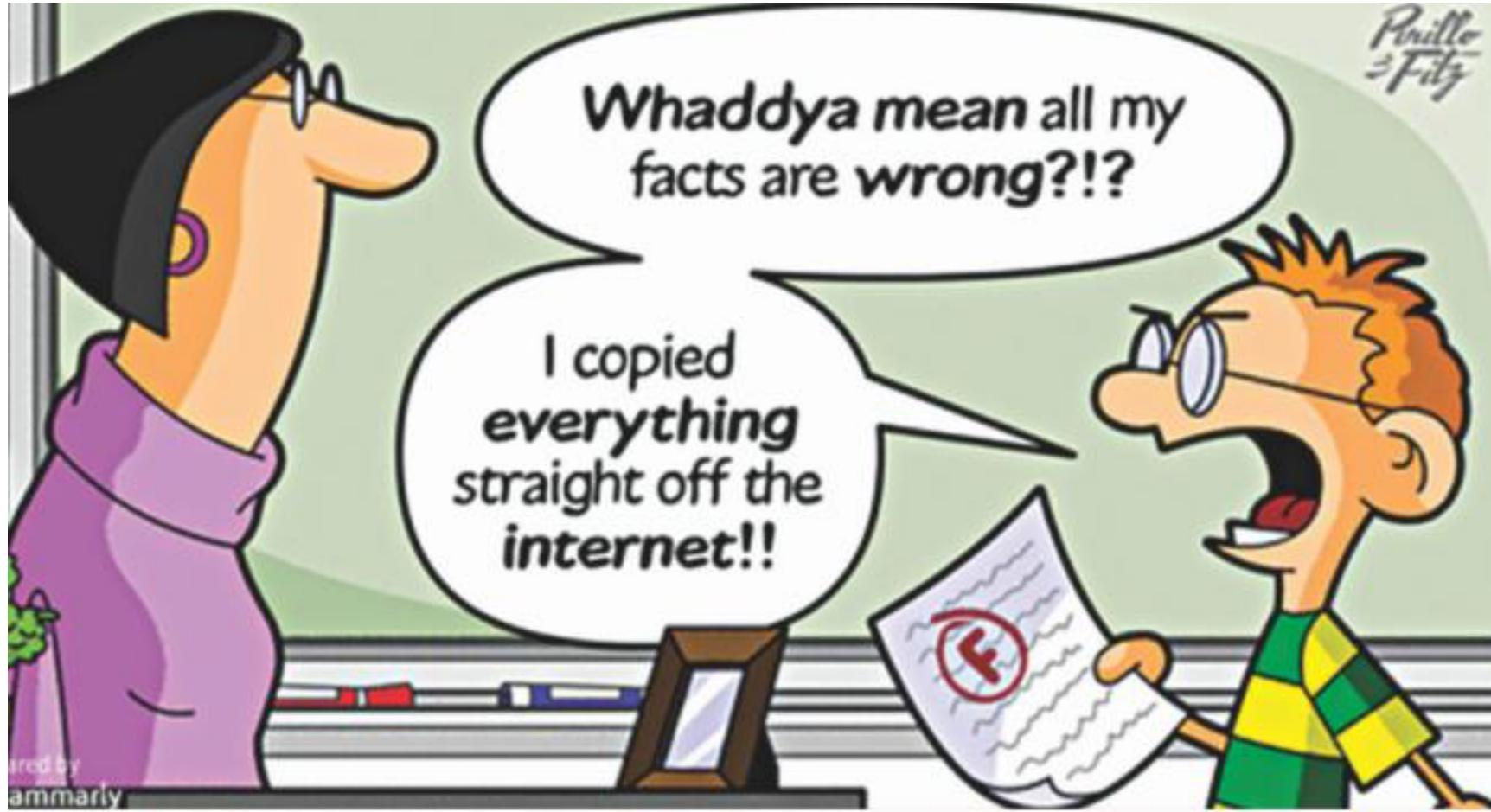


According [Turnitin](#)-there are 10 main forms of plagiarism that students commit:

1. Submitting someone's work as their own
2. Taking passages from their own previous work without adding citations
3. Re-writing someone's work without properly citing sources
4. Using quotations, but not citing the source
5. Interweaving various sources together in the work without citing
6. Citing some, but not all passages that should be cited
7. Melding together cited and uncited sections of the piece
8. Providing proper citations, but fails to change the structure and wording of the borrowed ideas enough
9. Inaccurately citing the source
10. Relying too heavily on other people's work. Fails to bring original thought <sup>86</sup> into the text

### 3. PLAGIARISM

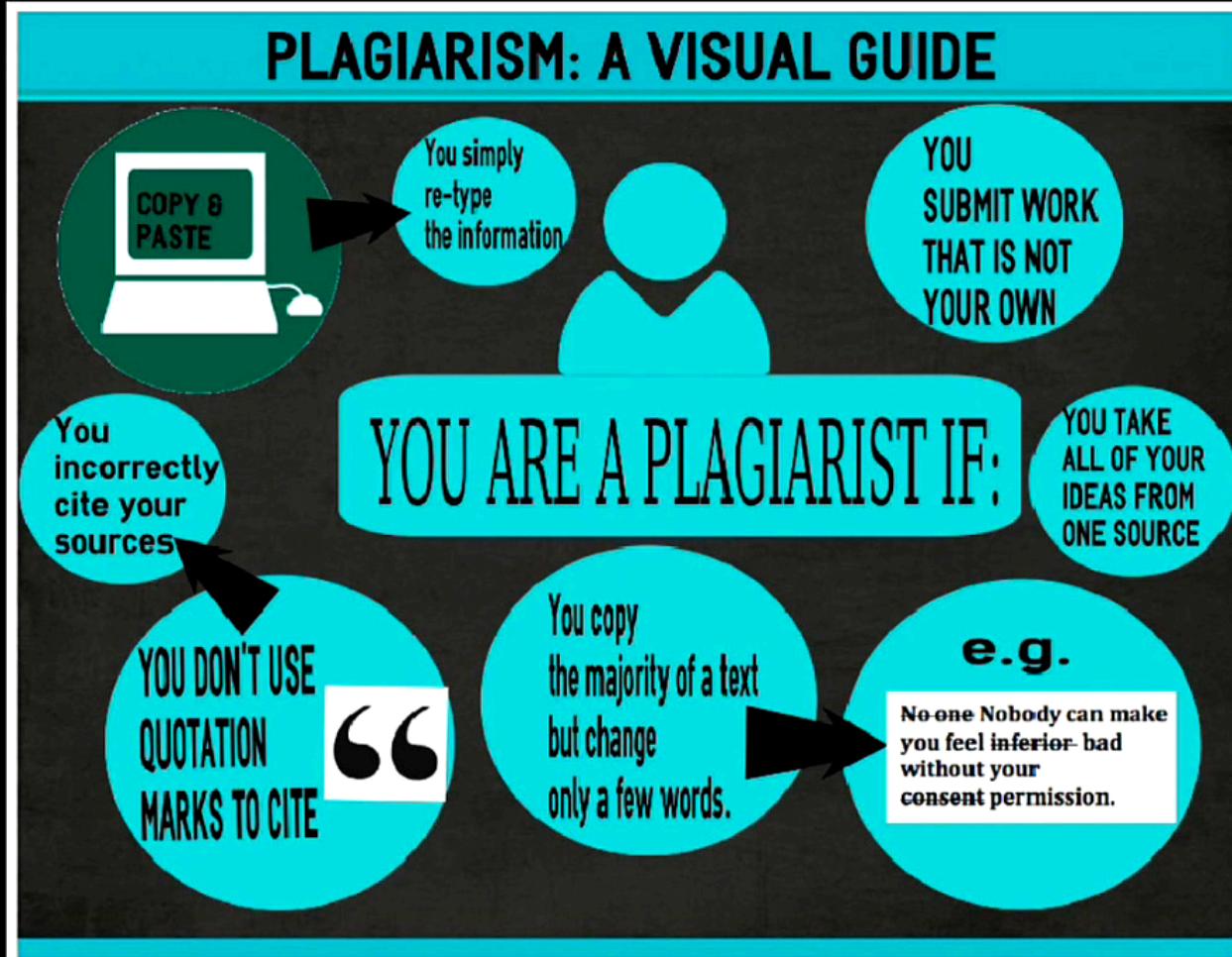
#### Forms of Plagiarism



SOURCE: [WWW.GRAMMARLY.COM](http://WWW.GRAMMARLY.COM)

# 3. PLAGIARISM

## Forms of Plagiarism





# 4. ENGINEERING CREED

## Introduction



- Various engineering organisations have thus developed codes of conduct specific to the profession
  - Code of Ethics for Engineers developed by the National Society of Professional Engineers (NSPE)
  - the Engineer's Creed and
  - the Fundamental Canons of the Code

# **4. ENGINEERING CREED**

## **Engineers Creed**



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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.

# 4. ENGINEERING CREED

## Engineers Creed



# 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 June 1954)*



The National Society of Professional Engineers 75<sup>th</sup> Anniversary



National Society of  
Professional Engineers®

# **4. ENGINEERING CREED**

## **Fundamental Canons**



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Engineers, in the fulfilment of their professional duties, shall

1. Engineering is an important and learned profession
2. Engineers are expected to exhibit the highest standards of honesty and integrity
3. Engineering has a direct and vital impact on the quality of life for all people
4. Accordingly, the services provided by engineers require

# 4. ENGINEERING CREED

## Fundamental Canons



- Accordingly, the services provided by engineers require
  - honesty
  - impartiality
  - fairness, and equity, and
  - must be dedicated to the protection of the public health, safety, and welfare
- Engineers must perform under a standard of professional behaviour
  - that requires adherence to the highest principles of ethical conduct.

# **4. ENGINEERING CREED**

## **Fundamental Canons**



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**Engineers, in the fulfilment of their professional duties, shall**

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 honourably, responsibly, ethically, and lawfully so as to enhance the honour, reputation, and usefulness of the profession

# **4. ENGINEERING CREED**

## **Rules of Practice 1**



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### **Rule 1 - Hold paramount the safety, health, and welfare of the public**

1. If engineers' judgment is overruled under circumstances that endanger life or property,
  - they shall notify their employer or client and such other authority as may be appropriate
2. Engineers shall approve only those engineering documents that are in conformity with applicable standards
3. Engineers shall not reveal facts, data, or information
  - without the prior consent of the client or employer
  - except as authorised or required by law or this Code

# **4. ENGINEERING CREED**

## **Rules of Practice 1**



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### **Rule 1 - Hold paramount the safety, health, and welfare of the public**

4. Engineers shall not permit the use of their name or associate in business ventures with any person or firm
  - that they believe is engaged in fraudulent or dishonest enterprise
5. Engineers shall not aid or abet the unlawful practice of engineering by a person or firm
6. Engineers having knowledge of any alleged violation of this Code
  - shall report thereon to appropriate professional bodies and public authorities, and
  - cooperate with the proper authorities in furnishing such information or assistance as may be required.

# **4. ENGINEERING CREED**

## **Rules of Practice 2**



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### **Rule 2 - Engineers shall perform services only in the areas of their competence**

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- 1. Engineers shall undertake assignments**
  - only when qualified by education or experience in the specific technical fields involved
  
- 2. Engineers shall not**
  - affix their signatures to any plans or documents dealing with subject matter in which they lack competence,
  - nor to any plan or document not prepared under their direction and control

# **4. ENGINEERING CREED**

## **Rules of Practice 2**



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**Rule 2 - Engineers shall perform services only in the areas of their competence**

---

### **3. Engineers**

- may accept assignments and assume responsibility
- for coordination of an entire project and
- sign and seal the engineering documents for the entire project
- provided that each technical segment is signed and sealed only by the qualified engineers who prepared the segment.

# **4. ENGINEERING CREED**

## **Rules of Practice 3**



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**Rule 3 - Engineers shall issue public statements only in an objective and truthful manner.**

1. Engineers shall be objective and truthful in
  - professional reports, statements, or testimony
  - include all relevant and pertinent information
  - reports etc should bear the date indicating when it was current
2. Engineers may express publicly technical opinions
  - founded upon knowledge of the facts and competence in the subject matter

# 4. ENGINEERING CREED

## Rules of Practice 3



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**Rule 3 - Engineers shall issue public statements only in an objective and truthful manner.**

3. Engineers shall issue no statements, criticisms, or arguments
  - on technical matters that are inspired or paid for by interested parties
  - unless they have prefaced their comments by
  - explicitly identifying the interested parties on whose behalf they are speaking, and
  - by revealing the existence of any interest the engineers may have in the matters.

# **4. ENGINEERING CREED**

## **Rules of Practice 4**



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**Rule 4 - Engineers shall act for each employer or client as faithful agents or trustees.**

---

1. Engineers shall disclose all known or potential conflicts of interest
  - that could influence or appear to influence their judgment or
  - the quality of their services
2. 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

# **4. ENGINEERING CREED**

## **Rules of Practice 4**



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**Rule 4 - Engineers shall act for each employer or client as faithful agents or trustees.**

---

3. Engineers shall not solicit or accept financial or other valuable consideration
  - directly or indirectly, from outside agents
  - in connection with the work for which they are responsible
4. Engineers in public service as members, advisors, or employees
  - of a governmental or quasi-governmental body or department
  - shall not participate in decisions with respect to services
  - solicited or provided by them or their organisations
  - in private or public engineering practice

# **4. ENGINEERING CREED**

## **Rules of Practice 4**



---

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  - in private or public engineering practice

# **4. ENGINEERING CREED**

## **Rules of Practice 4**



---

**Rule 4 - Engineers shall act for each employer or client as faithful agents or trustees.**

---

7. Engineers shall not solicit or accept a contract
  - from a governmental body on which a principal or officer
  - of their organisation serves as a member.

# **4. ENGINEERING CREED**

## **Rules of Practice 5**



### **Rule 5 - Engineers Engineers shall avoid deceptive acts.**

#### **1. Engineers shall not**

- falsify their qualifications or
- permit misrepresentation of their or their associates' qualifications
- misrepresent or exaggerate their responsibility in or for the subject matter of prior assignments
- Brochures or other presentations incident to the solicitation of employment shall not misrepresent pertinent facts concerning employers, employees, associates, joint venturers, or past accomplishments.

# **4. ENGINEERING CREED**

## **Rules of Practice 5**



### **Rule 5 - Engineers Engineers shall avoid deceptive acts.**

#### **2. Engineers shall not**

- offer, give, solicit, or receive, either directly or indirectly,
  - any contribution to influence the award of a contract by public authority, or
  - which may be reasonably construed by the public as having the effect or intent of influencing the awarding of a contract.
- offer any gift or other valuable consideration in order to secure work
- pay a commission, percentage, or brokerage fee in order to secure work
  - except to a bona fide employee or
  - bona fide established commercial or marketing agencies retained by them.

# **4. ENGINEERING CREED**

## **Professional Obligations 1**



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**Obilgation 1 - Engineers shall be guided in all their relations by the highest standards of honesty and integrity**

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1. Engineers shall acknowledge their errors and shall not distort or alter the facts
2. Engineers shall advise their clients or employers when they believe a project will not be successful
3. Engineers shall not accept outside employment
  - to the detriment of their regular work or interest
  - they will notify their employers first

# **4. ENGINEERING CREED**

## **Professional Obligations 1**



---

**Obligation 1 - Engineers shall be guided in all their relations by the highest standards of honesty and integrity**

---

4. Engineers shall not attempt to attract an engineer from another employer by false or misleading pretences
5. Engineers shall not promote their own interest at the expense of the dignity and integrity of the profession.

# **4. ENGINEERING CREED**

## **Professional Obligations 2**



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**Obligation 2 - Engineers shall at all times strive to serve the public interest.**

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1. Engineers are encouraged to

- participate in civic affairs
- career guidance for youths; and
- work for the advancement of the safety, health, and well-being of their community

2. Engineers shall not complete, sign, or seal plans and/or specifications that are not in conformity with applicable engineering standards.

# **4. ENGINEERING CREED**

## **Professional Obligations 2**



---

**Obligation 2 - Engineers shall at all times strive to serve the public interest.**

---

2. Engineers shall not

- complete, sign, or seal plans and/or specifications
  - that are not in conformity with applicable engineering standards
- If the client or employer insists on such unprofessional conduct,
  - they shall notify the proper authorities and
  - withdraw from further service on the project

# **4. ENGINEERING CREED**

## **Professional Obligations 2**



---

**Obligation 2 - Engineers shall at all times strive to serve the public interest.**

---

3. Engineers are encouraged to

- extend public knowledge and appreciation of engineering and its achievements

4. Engineers are encouraged to

- adhere to the principles of sustainable development<sup>1</sup> in order to protect the environment for future generations

# **4. ENGINEERING CREED**

## **Professional Obligations 2**



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**Obligation 2 - Engineers shall at all times strive to serve the public interest.**

---

### **5. Engineers shall**

- continue their professional development throughout their careers and
- should keep current in their specialty fields by
  - engaging in professional practice,
  - participating in continuing education courses,
  - reading in the technical literature, and
  - attending professional meetings and seminars.

# **4. ENGINEERING CREED**

## **Professional Obligations 3**



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**Obligation 3 - Engineers shall avoid all conduct or practice that deceives the public.**

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1. Engineers shall avoid the use of statements containing a material misrepresentation of fact or omitting a material fact
2. Consistent with the foregoing, engineers may advertise for recruitment of personnel
3. Consistent with the foregoing,
  - engineers may prepare articles for the lay or technical press,
  - but such articles shall not imply credit to the author for work performed by others.

# **4. ENGINEERING CREED**

## **Professional Obligations 4**



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**Obligation 4 - Engineers shall not disclose, without consent, confidential information concerning the business affairs or technical processes of any present or former client or employer, or public body on which they serve**

1. Engineers shall not, without the consent of all interested parties, promote or arrange for new employment or practice in connection with a specific project for which the engineer has gained particular and specialized knowledge
2. Engineers shall not, without the consent of all interested parties, participate in or represent an adversary interest in connection with a specific project or proceeding in which the engineer has gained particular specialized knowledge on behalf of a former client or employer.

# **4. ENGINEERING CREED**

## **Professional Obligations 4**



---

**Obligation 4 - Engineers shall not disclose, without consent, confidential information concerning the business affairs or technical processes of any present or former client or employer, or public body on which they serve**

1. Engineers shall not,

- without the consent of all interested parties
  - promote or arrange for new employment or practice in connection with a specific project
  - for which the engineer has gained particular and specialised knowledge

# **4. ENGINEERING CREED**

## **Professional Obligations 4**



---

**Obligation 4 - Engineers shall not disclose, without consent, confidential information concerning the business affairs or technical processes of any present or former client or employer, or public body on which they serve**

2. Engineers shall not,

- without the consent of all interested parties,
  - participate in or represent an adversary interest in connection
  - with a specific project or proceeding
  - in which the engineer has gained particular specialised knowledge on behalf of a former client or employer.

# **4. ENGINEERING CREED**

## **Professional Obligations 5**



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### **Obligation 5 - Engineers shall not be influenced in their professional duties by conflicting interests**

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1. Engineers shall not accept financial or other considerations,
  - including free engineering designs,
  - from material or equipment suppliers for specifying their product
2. Engineers shall not
  - accept commissions or allowances, directly or indirectly,
  - from contractors or other parties dealing with clients or
  - employers of the engineer in connection with work for which the engineer is responsible

# **4. ENGINEERING CREED**

## **Professional Obligations 6**



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**Obligation 6 - Engineers shall not attempt to obtain employment or advancement or professional engagements by untruthfully criticising other engineers, or by other improper or questionable methods**

1. Engineers shall not

- request, propose, or accept a commission on a contingent basis
- under circumstances in which their judgment may be compromised

2. Engineers in salaried positions shall accept part-time engineering work

- only to the extent consistent with policies of the employer and in accordance with ethical considerations

# **4. ENGINEERING CREED**

## **Professional Obligations 6**



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**Obligation 6 - Engineers shall not attempt to obtain employment or advancement or professional engagements by untruthfully criticising other engineers, or by other improper or questionable methods**

3. Engineers shall not, without consent,

- use equipment, supplies, laboratory, or office facilities of an employer
- to carry on outside private practice.

# **4. ENGINEERING CREED**

## **Professional Obligations 7**



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**Obligation 7 - Engineers shall not attempt to injure, maliciously or falsely, directly or indirectly, the professional reputation, prospects, practice, or employment of other engineers. Engineers who believe others are guilty of unethical or illegal practice shall present such information to the proper authority for action**

### **1. Engineers in private practice**

- shall not review the work of another engineer for the same client,
  - except with the knowledge of such engineer, or
  - unless the connection of such engineer with the work has been terminated

# **4. ENGINEERING CREED**

## **Professional Obligations 7**



---

**Obligation 7 - Engineers shall not attempt to injure, maliciously or falsely, directly or indirectly, the professional reputation, prospects, practice, or employment of other engineers. Engineers who believe others are guilty of unethical or illegal practice shall present such information to the proper authority for action**

2. Engineers in governmental, industrial, or educational employ
  - are entitled to review and evaluate the work of other engineers when so required by their employment duties
3. Engineers in sales or industrial employ are
  - entitled to make engineering comparisons of represented products with products of other suppliers.

# **4. ENGINEERING CREED**

## **Professional Obligations 8**



---

**Obligation 8 - Engineers shall accept personal responsibility for their professional activities, provided, however, that engineers may seek indemnification for services arising out of their practice for other than gross negligence, where the engineer's interests cannot otherwise be protected**

1. Engineers shall conform with Federal and State registration laws in the practice of engineering
2. Engineers shall not use association with a non Engineer, a corporation, or partnership as a "cloak" for unethical acts.

# **4. ENGINEERING CREED**

## **Professional Obligations 9**



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**Obligation 9 - Engineers shall give credit for engineering work to those to whom credit is due, and will recognise the proprietary interests of others.**

1. Engineers shall, whenever possible,

- name the person or persons who may be individually responsible for designs, inventions, writings, or other accomplishments

2. Engineers using designs supplied by a client recognise that

- the designs remain the property of the client and may not be duplicated by the engineer for others without express permission

# **4. ENGINEERING CREED**

## **Professional Obligations 9**



---

**Obligation 9 - Engineers shall give credit for engineering work to those to whom credit is due, and will recognise the proprietary interests of others.**

### **3. Engineers,**

- before undertaking work for others
  - in connection with which the engineer may make improvements, plans, designs, inventions, or
  - other records that may justify copyrights or patents,
- should enter into a positive agreement regarding ownership

# **4. ENGINEERING CREED**

## **Professional Obligations 9**



---

**Obligation 9 - Engineers shall give credit for engineering work to those to whom credit is due, and will recognise the proprietary interests of others.**

4. Engineers' designs, data, records, and notes referring exclusively to an employer's work

- are the employer's property
- The employer should indemnify the engineer for use of the information for any purpose other than the original purpose.



# 5. SOCIAL RESPONSIBILITY



## Introduction

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### Social responsibility

- is an ethical framework and suggests that an entity, \_\_
  - be it an organization or individual,
  - has an obligation to act for the benefit of society at large
- is a duty every individual has to perform so as to maintain a balance between the economy and the ecosystems
- A trade-off may exist between
  - economic development, in the material sense, and the
  - welfare of the society and environment
- Social responsibility means sustaining the equilibrium between the two

# 5. SOCIAL RESPONSIBILITY

## Introduction



### Social responsibility

- It pertains not only to business organisations
  - but also to everyone whose any action impacts the environment.
- This responsibility can be
  - passive,
    - by avoiding engaging in socially harmful acts, or
  - active
    - by performing activities that directly advance social goals.
- Social responsibility must be intergenerational since the actions of one generation have consequences on those following.

# 5. SOCIAL RESPONSIBILITY

## Introduction

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### **social responsibility**

The obligation of an organization's management towards the welfare and interests of the society in which it operates.



BusinessDictionary

# 5. SOCIAL RESPONSIBILITY

## Corporate Social Responsibility



# **5. SOCIAL RESPONSIBILITY**

## **Sustainable Development**



- is the challenge of meeting human needs for
  - natural resources,
  - industrial products,
  - energy, food,
  - transportation,
  - shelter, and
  - effective waste management
- while conserving and protecting
  - environmental quality and
  - the natural resource base essential for future development.

# INTRODUCTION

## Engineering Failures



These episodes of engineering failure include ethical as well as technical issues

- General Motors ignition switch recalls (2014)
  - Space Shuttle Columbia disaster (2003)
  - Space Shuttle Challenger disaster (1986)
  - Therac-25 accidents (1985 to 1987)
  - Chernobyl disaster (1986)
  - Bhopal disaster (1984)
  - Kansas City Hyatt Regency walkway collapse (1981)
  - Love Canal (1980), Lois Gibbs
  - Three Mile Island accident (1979)
  - Citigroup Center (1978),
  - Ford Pinto safety problems (1970s)
  - Minamata disease (1908-1973)
  - Chevrolet Corvair safety problems (1960s), Ralph Nader, and Unsafe at Any Speed
  - Boston molasses disaster (1919)
  - Quebec Bridge collapse (1907), Theodore Cooper
  - Johnstown Flood (1889), South Fork Fishing and Hunting Club
  - Tay Bridge Disaster (1879), Thomas Bouch, William Henry Barlow, and William Yolland
  - Ashtabula River Railroad Disaster (1876), Amasa Stone

# ANY QUESTION?







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**NEXT TOPIC**

**IS**

**Design & Teamwork**