



CANDIDATE GUIDE

***PROFESSIONAL  
ETHICS***

OUTCOME 8



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# CANDIDATE INFORMATION

Details	Please Complete details
Name of candidate	
Name of supervisor	
Work Unit	
Name of mentor	
Date started	
Date of completion & Assessment	



# **C**OMPETENCY STANDARD REQUIREMENTS

(Direct extract from SAIMechE's Standard of Professional Competency (SPC))

## **LEARNING OUTCOME 8**

**Conduct his or her engineering activities ethically.**

### **Assessment Criteria:**

The candidate is expected to be sensitive to ethical issues and adopt a systematic approach to resolving these issues, typified by:

1. Identify the central ethical problem;
2. Identify affected parties and their interests;
3. Search for possible solutions for the dilemma;
4. Evaluate each solution using the interests of those involved, accorded suitable priority;
5. Select and justify solution that best resolves the dilemma.








**Range Statement:** Ethical behaviour is at least that defined by the Code of Conduct.



# K

## KEYS TO ICONS

The following icons are used throughout the study guide to indicate specific functions:

	<b>DON'T FORGET/NOTE</b> This icon indicates information of particular importance
	<b>CANDIDATE GUIDE</b> This refers to the learning material in this module which is aligned to the SAIMechE Competency Standard
	<b>EXERCISES</b> Practical activities to do, either individual or in syndicate groups during the training process
	<b>BOOKS AND WEBSITES</b> Additional resource information for further reading and reference
	<b>SELF TEST QUESTIONS</b> Self-evaluation for candidates to test understanding of the learning material
	<b>QUOTATIONS</b> Quotations which offer interesting points of view and statements of wisdom and insight
	<b>YOUR NOTE PAD</b> Provided for candidate to document notes during presentation of training



# **G**ENERAL GUIDELINES

## **PURPOSE**

This module provides easy to follow steps to help you define, analyse, understand and solve ethical problems.

This module is designed to equip you with the basic skills required to:

1. Know the definitions and major concepts in ethics
2. Understand the ethical approach to decision making,
3. Follow the assessment criteria steps when making a decision
4. Understand the SAIMEchE Code of Conduct
5. Explain the concept of personal ethics and their relationship to business and engineering ethics
6. Describe the role of a code of conduct in a work environment, when following ethical principles
7. Uphold the code of conduct within the work team
8. Identify and solve ethical problems in upholding the code of conduct
9. Communicate effectively, when explaining and describing the concept of ethics and the application of a code of conduct.

This module introduces the engineer to these ethical responsibilities and concerns. While it may be impossible and impractical to present in this module all the guidelines pertaining to engineering practice, certain issues of concern will be highlighted and discussed.

Candidates will have the opportunity to discuss and debate values and ethical standards, and thereby understand and be better equipped to address ethical issues.




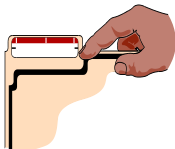


## **LEARNING OUTCOME AND RANGE OF LEARNING**

This programme uses the basic structure of SAIMechE's Competency Standard and specifically the assessment criteria to take you through the process of learning, as an understanding of the assessment criteria and the range of understanding required is fundamental to professional competence.



# CANDIDATE SUPPORT

<b>Resources</b>	<p>Candidate Guide (Manual)</p> 	<p><b>Professional Ethics.</b></p> <p>This Candidate Guide is both a manual, covering the theory of ethical problem-solving and decision-making, and also a workbook containing exercises for skills application with self-assessments to chart your understanding of each section</p>
	<p>Candidate Portfolio of Evidence Guide</p>	<p>This is a separate document which provides guidelines for candidates on how to compile their portfolio and a template to structure their practical task evidence into a file for assessment by the mentor/ assessor</p>
	<p>Books and Websites</p> 	<p>Refer to References at the end of the Candidate Guide</p>
	<p>Videos</p> 	<p>Seconds from Disaster</p> <p><a href="http://www.youtube.com/watch?v=SainTe1ZOS0&amp;list=PL3D5BE0A550A4155F&amp;index=1">http://www.youtube.com/watch?v=SainTe1ZOS0&amp;list=PL3D5BE0A550A4155F&amp;index=1</a></p>
	<p>Folder Enclosures</p> 	<p>This includes all hand outs, checklists e.g. “The Engineer’s Code of Conduct”</p>



## ***SECTION 1***

# **ETHICAL ISSUES**

### **LEARNING OUTCOMES:**

- Describe and define what is meant by the word “ethically”
- Explain the role of general ethical codes in good business practice
- Be fully conversant with The Code of Conduct



# 1. ETHICAL ISSUES

## 1.1. What are Ethics?

Ethics is relevant to you in your everyday life as at some point in your professional or personal life you will have to deal with an ethical question or problem, e.g. what is your level of responsibility towards protecting another person from threat, or whether or not you should tell the truth in a particular situation?



### EXAMPLES OF POOR ETHICS:

- **Your fair share is whatever you can get away with**
- **Nobody expects you to be honest when they're not looking**
- **It's not stealing unless they catch you**



### AN AFRICAN FABLE

Truth, Falsehood, Water, and Fire were traveling together and came upon four heads of cattle. They decided to split the cattle evenly and each take an equal share. But Falsehood was greedy and told Water that Fire was going to burn his land and steal his cattle.

Water believed him and jumped on Fire and put him out. Falsehood tricked Truth into believing that Water was going to steal their cattle so they took them to the top of a hill for Water cannot run uphill. Falsehood laughed that he had tricked everyone and Truth, realizing Falsehood had lied, began to fight him for the cattle. They called Wind to determine whom the cattle belonged to, but Wind did not know. According to this fable, what are Falsehood and Truth still doing?

According to this fable told in Ethiopia and other eastern African nations, Truth and Falsehood are still in a battle with one another. Let's hope truth wins.



## 1.2. Value Systems

Values are the unarticulated beliefs that form the foundation for ethical behavior, i.e. practices that are viewed by our society as correct behavior. As an Engineer, you should acknowledge the fundamental importance of the following **values** both for yourself and your profession:

1. **Quality of life** - people being satisfied with their whole life experience;
2. **Health, human potential, empowerment, growth and excellence** - people being healthy, aware of the fullness of their potential, recognizing their power to bring that potential into being, growing into it, living it, and, generally, doing the best they can with it, individually and collectively;
3. **Freedom and responsibility** - people being free and responsible in choosing how they will live their lives;
4. **Justice** - people living lives whose results are fair and right for everyone;
5. **Dignity, integrity, worth and fundamental rights** of individuals, organizations, communities, societies, and other human systems;
6. **All-win attitudes and cooperation** - people caring about one another and about working together to achieve results that work for everyone, individually and collectively;
7. **Authenticity and openness** in relationships;
8. **Effectiveness, efficiency and alignment** - people achieving the maximum of desired results, at minimum cost, in ways that coordinate their individual energies and purposes with those of the system-as-a-whole, the subsystems of which they are parts, and the larger system of which their system is a part;
9. **Holistic, systemic view and affected parties orientation** - understanding human behaviour from the perspective of whole system(s) that influence and are influenced by that behaviour; recognizing the interests that different people have in the system's results and valuing those interests fairly and justly;
10. Wide participation in system affairs, confrontation of issues leading to effective problem solving, and democratic decision making.



## **1.3. A Brief History of Ethics**

### **1.3.1. Natural Behaviour**

Even when observing the animal kingdom, there are clear signs of rules of behaviour. The young monkey does not mess with the “big daddy” and when lions are feeding off a freshly killed carcass the hyenas keep a good distance. All of this behaviour appears to be instinctual or intuitive but it serves the very clear purpose of maintaining order within the animal kingdom.

### **1.3.2. Human Behaviour**

Human ethical behaviour has been observed from the earliest recorded data and anthropological and archeological studies have indicated that all primitive tribes have very definite rules of behaviour. Christopher Boehm (1982) has hypothesized that the incremental development of moral complexity throughout hominid evolution was due to the increasing need to avoid disputes and injuries in moving to open savannah and developing stone weapons. Human morality, though sophisticated and complex relative to other animals, is essentially a natural phenomenon that evolved to restrict excessive individualism and foster human co-operation. Group morality develops from shared concepts and beliefs and is often codified to regulate behaviour within a culture or community.

### **1.3.3. Mythology**

Perhaps the existence of mythology arose out of the need to regulate society and this was much easier to do when the stories were fascinating and the members of the community could identify with the mythological characters. Out of these myths grew rules of behaviour and conduct which contributed towards controlled and ordered living.



#### **1.3.4. Codes of Conduct**

Moral code examples throughout history are: the 'Golden Rule', the 'Five Precepts' and the 'Noble Eightfold Path' of Buddhism, the Egyptian code of Ma'at, and the 'Ten Commandments' of Judaism, Christianity and Islam.

Among the earliest written codes is the 'Code of Hammurabi', the sixth King of Babylon who lived between 1810 BCE and 1750 BCE. This code was of a more secular nature and was written up on stone pillars for all the subjects of his kingdom to see and live by. There were very clear, if somewhat brutal, sanctions for anyone who transgressed them but this led to the orderly functioning of that ancient society.

#### **1.3.5. From Ancient Greece to the Modern Era**

Ancient Greece was the birthplace of Western philosophical ethics, moral precepts from the 7th and 6th centuries BCE. Names like Socrates, Plato and Aristotle have become household names. Greece had moved from being a warring group of tribes to a community of people living in city states where individuals spent time thinking about such things as happiness, the 'good life' and the value of being organised.


Ethical principles and practices have become the cement that binds a society together in such a way that individual citizens may pursue their desires and reach for their goals. Grayling (2005) states that: 'manners are central to true morality; they are the lubricant of social relations, the sweetener of personal interaction, and the softener of conflict. Without them society itself would be impossible and out of control. The answers to questions about how a complex, pluralistic community should cope with the stresses of internal difference and competition have to put civility at their heart, because nothing else - certainly not the blunt instrument of the law - can do nearly as well'.



### 1.3.6. The Need for Ethics and Codes of Conduct

	<p><b>“On the whole human beings want to be good, but not too good, and not quite all the time”</b></p> <p><i>George Orwell</i></p>
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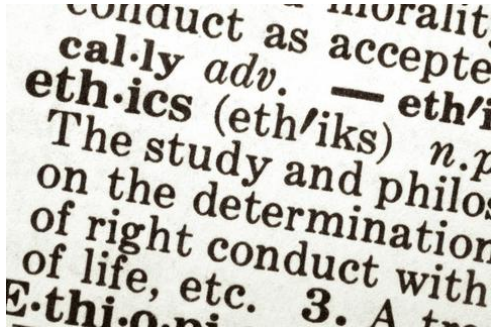
Therefore, from the early stirrings of functionality in primitive society, through the early codes of city life and academic philosophizing we arrived at a place where society needs rules of conduct which, when expressed as simple plain good manners, can provide a framework for the ‘good life’ which is of benefit to both individuals and society.

	<p><b>A 2005 global study of over 1100 managers and executives identified the top three factors most likely to cause business people to compromise ethical standards:</b></p> <ul style="list-style-type: none"><li>• <b>Pressure to meet unrealistic objectives/deadlines</b></li><li>• <b>Desire to further one’s career</b></li><li>• <b>Desire to protect one’s livelihood</b></li></ul> <p><i>John Eckmire in the essay Ethics Dilemma</i></p>
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## 1.4. Ethics Definitions

It is useful to have a clear understanding of what is meant by the word *ethics*.



### Definition of Ethics:

The Concise Oxford Dictionary defines ethics as:

“Relating to morals, treating of moral questions; morally correct, honourable”.

This begs the question: “What is the definition of MORALS?”

### Definition of Morals:

“Concerned with goodness or badness of character or disposition, or with the distinction between right and wrong; dealing with regulations of conduct”.

### Definition of Ethics from the Dictionary of Psychology:

“A branch of philosophy concerned with that which is deemed acceptable in human behaviour, with what is good or bad, right or wrong in human conduct in pursuit of goals and aims.”

Ethics explores the nature of rights, of moral responsibilities, and of how to go about addressing an ethical problem.

***Engineering ethics*** is the field of applied ethics which examines and sets standards for engineers' obligations to the public, their clients, employers and the profession and is appropriate in all aspects of professional practice.





**"Don't compromise yourself. You are all you've got."**

*Janis Joplin*

## 1.5. Key Concepts

Here are the meanings of some key words and concepts:

Ethics:	The process of determining right and wrong conduct. The discipline dealing with what is good and bad and with moral duty and obligations
Ethical Behaviour:	Behaviour that conforms to accepted standards of conduct
Ethical Reasoning:	The process of sorting out the principles that help determine what is ethical when faced with an ethical dilemma
Ethical System:	A specific formula for distinguishing right from wrong
Unethical:	An action or conduct which violates the principles of one or more ethical systems, or which is counter to an accepted ethical value, such as honesty
Non-ethical Considerations:	Powerful human motivations that are not based on right or wrong, but on considerations of survival and well-being, such as health, security, love, wealth, or self-esteem
Ethical Dilemma:	This is an ethical problem in which the ethical choice involves ignoring a powerful non-ethical consideration. Do the right thing, but lose your job, a friend, a lover, or an opportunity for



advancement. A situation or problem facing an individual that involves complex and often conflicting principles of ethical behaviour

## 1.6 Ethics Alarms

Jack Marshall, director of ProEthics, runs an ethics blog (<http://proethics.com/>) and he says:



“Ethics alarms are the feelings in your gut, the twinges in your conscience, and the sense of caution in your brain when situations involving choices of right and wrong are beginning to develop, fast approaching, or unavoidable.” The better your ethics alarm is working and the sooner your alarm goes off the more likely you are to do the right thing, or at least use good ethical reasoning to decide what to do.

He goes on to say “creating an ethical culture is the shared obligation of everyone, and each of us needs to think critically about what is right and wrong, make our opinions known, and never hesitate to communicate those opinions for fear of being ‘judgmental’”. We should be judgmental – civil, fair, open-minded, and also willing to hold ourselves to high standards of conduct. Living ethically is not always easy, but it becomes easier with thought, debate and practice.



## **1.7. The Importance of Ethical Conduct in Business**

The field of business ethics often overlaps and informs ethical decision making for engineers.


Conducting business ethically is critical to a company's success in the marketplace. Customers, suppliers and employees will not support a company that is involved in fraudulent, dishonest or unethical practices. Setting high standards of integrity in business relations and promoting their adherence by employees will enable the company to merit the confidence and support of its customers and the public at large.

As an employee or consultant you act as an ambassador and represent the organisation in your business dealings. The company's reputation is in your hands and it therefore depends on you to do the right thing in the best interests of the organization. High standards in business conduct will go a long way to meriting the confidence and support of your clients and employers.

While business practices may change over time, our commitment to the highest standards of integrity should remain constant and unblemished. Conducting business ethically is critical to success in the marketplace. It means more than obeying the law; it means that high standards of integrity must underlie every activity we undertake. It is up to the engineer to apply these guidelines to the best of their ability in their own individual situation.

Many organizations provide broad principles on expected ethical behaviour in the form of a Code of Conduct. However, the responsibility to apply the guidelines and use sound judgment in situations that could compromise integrity is up to the individual. It is the individual's choice not to commit dishonest destructive or illegal acts – even if instructed by a supervisor, co-worker or others to act improperly. It is no justification to claim that a higher authority ordered illegal acts.



	<p><b>“It is curious - curious that physical courage should be so common in the world, and moral courage so rare”</b></p> <p><i>Mark Twain</i></p>
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## 1.8. Professional Ethics

In life our behavior is governed by different norm systems. The word *NORM* comes from Latin “NORMA”= yardstick. Norms dictate what we “ought” or “ought not” to do. The norm systems governing the behaviour of a professional are:

- **Individual morality**

Refers to individual values of a specific person and what they believe to be right. Individual morality is influenced by how a person was raised. It is their personal value system. The sanction for disobeying one’s individual morality is a guilty conscience.

- **Positive morality**

This set of norms represents what is considered “right” in society at a particular time. The sanction for failure to obey positive morality is social sanction.

- **Law (Legal Norms)**

Laws protect society and prevent anarchy by regulating behavior.

**Public Law** – also referred to as criminal law: between the state and individual.

**Private Law** – also referred to as contractual law and focuses on the relationship between persons.

**Formal Law** and **Common Law** find expression in the reported judgments of courts.

- **Professional Ethics**

Professionals are a group of people who earn a living by undertaking a common activity and who regulate most of this themselves. Firstly they must form a constitution, e.g. SAIMEchE, and secondly they must publish a professional code



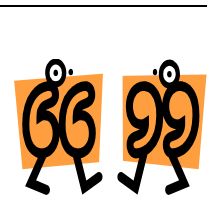
of rules or an ethical code of conduct. This code must be in line with the law and is often more restrictive than the law.

## 1.9. Ethical Issues Facing Engineers

Whistle blowing is an ethical issue facing Engineers in that they are obliged to report to SAIMEchE the alleged wrongdoing on behalf of a client or employer who endangers others by failing to comply with the engineer's advice. This duty supersedes the duty to client and employer, and if the engineer does not bring such failure to the notice of SAIMEchE his/her membership may be cancelled.

There are several other ethical issues that engineers may face. Some have to do with technical practice, but many others have to do with broader considerations of business conduct. These include:

- Relationships with clients, consultants, competitors, and contractors
- Ensuring legal compliance by clients, client's contractors, and others
- Conflict of interest
- Bribery and kickbacks, which might include:
  - Gifts, meals, services, entertainment and recreation opportunities
  - Treatment of confidential or proprietary information
  - Consideration of the employer's assets
- Outside employment/activities (moonlighting)



**“Live a good, honorable life. Then when you get older and think back, you’ll be able to enjoy it a second time”**

*The Dali Lama*




## 1.10. Code of Ethics

The norm system governing and regulating engineering professional behavior is **professional ethics**. Certain common principles underlie professional codes and bodies, e.g. Medical and Dental Council, Police Service Code of Conduct, Estate Agents Code of Conduct. Codes may not be exhaustive and may not include all the rules and regulations that apply to every situation. The contents therefore have to be viewed within the framework of company policies, procedures and the requirements of the law.

In our society ethical concerns have escalated in the past few years and have been raised at government level. Organisations have hot lines for employees to anonymously report unethical behaviour. In our field of engineering issues of fairness have been legislated and we have a Code of Conduct in place. The question of ethical practice, however, covers broad ground and encompasses everything we do as professionals and the way we behave towards each other and our clients.

Practising engineers must become aware of their ethical responsibility towards the client as well as being on the lookout for possible areas where ethical concerns could arise.

Engineers need to understand what values are and examine their own value system which determines their interactions. What pitfalls regarding business and professional ethics face Engineers and what standards of integrity do they need to be aware of and adhere to, i.e. what ideals should they strive towards?

	<b>The Boy Scout Law: "A Scout is trustworthy, loyal, helpful, friendly, courteous, kind, obedient, cheerful, thrifty, brave, clean, and reverent."</b>
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Most codes have common fundamental principles which boil down to four universal fundamental principles:

### **1. Respect for People's Dignity and Rights**

- Respect the client's personal integrity (privacy, confidentiality)
- Be non-judgmental of the intrinsic value of the client irrespective of age, behavior, culture, gender, race or religion
- If you are not competent to undertake a project/ task refer to another engineer
- Respect the knowledge skills and experience of your colleagues and other professionals

### **2. Responsible Practice**

- The critical focus of this principle is to limit your practice to your field of expertise and competence
- You must have the appropriate knowledge and skill before undertaking an activity
- Undergo relevant training and adhere to best practice
- Keep abreast of new developments in your field
- Use a new technique under supervision of a competent and experienced engineer

### **3. Integrity in Relationships**

- The power relationship is unbalanced between the client and the engineer as most power rests with the engineer (having the knowledge and skill) which leaves the client vulnerable
- Professional codes expect engineers to act with integrity
- For engineers to be accepted in society and successful in their profession they need to be trusted. There is a fiduciary relationship whereby one person (the client), in a position of vulnerability, justifiably reposes confidence, good faith, reliance and trust in another (the engineer) whose aid, advice or protection is sought in some matter. In such a relationship good conscience requires one to act at all times for the sole benefit and interests of another, with loyalty to those interests (source Wikipedia)



#### **4. Responsibility**

- Clients are clearly the engineer's first responsibility but engineers also have a responsibility to society
- Examples of responsible social actions are to:
  - disperse information that can advance the profession
  - protect the public trust in the engineering profession by "blowing the whistle" on non-professional conduct
  - assisting in some instances where worthy causes cannot afford professional services
  - protect society from dangerous practices





## GROUP EXERCISE 1

1. **What makes an ethical person?** Identify persons who have famously held fast to their principles despite opposition and even when doing so placed them in danger.
2. **Can you think of an unethical role model for the youth of today?**
3. **Discuss one of the following topics:**
  - a. Honesty is the best policy.
  - b. The truth will set you free.
  - c. Honesty is something so tough and tempting. It demands self-denial and spiritual purity. Honesty counts even things that we may think simple and immaterial. Who doesn't sometimes behave dishonestly?
  - d. You are allowed to tell a white lie once in a while to spare someone's feelings; that's not wrong!
  - e. Is giving a bribe dishonest if I have to accomplish something?
  - f. To be honest with yourself, will make your life simple. Honesty is the best policy. Be honest and you are less likely to face any difficulties.
  - g. What are some advantages of conducting business with integrity? Some people say they have no responsibility beyond maximizing the value of the firm in financial terms. Can this position be defended? If so, how?
  - h. I try to be honest and treat others as I would like to be treated. I hope that others do the same. I believe it is very important to have empathy for one another.
  - i. If I am hungry and my family is starving, is it acceptable to steal food from the local supermarket?
  - j. Workers sometimes take sick leave or students miss class and stay off work when they are not sick. Is this acceptable?



**4. Discuss one of the following topics:**

- a. Is corporal punishment unethical or immoral?
- b. Is it ethical to tax the citizens of a country excessively?
- c. What is the correct thing to do about illegal aliens?
- d. Is cloning to produce children ethical?
- e. "Euthanasia is an acceptable practice in a civilized society with an ageing population".



**GROUP EXERCISE 2**

**Quick Test**

**Two ethical questions:**

**Question 1:**

You have been asked to participate as an "Engineer in Training" in the design and construction of a nuclear power plant. You will be working in a team of 10 design engineers. Some of the engineers are experienced and capable nuclear plant designers.

- a) Is the use and development of nuclear power plant ethical?
- b) Can you participate in the design of such a plant without any previous experience?

**Question 2:**

You work for a Government department as a Procurement Engineer. Your wife works for one of the companies that supplies some of the pump spares that you use. One day you decide to stop buying spares from this company because they have become too



expensive and the company has said they cannot drop their prices. You inform the supplier of your decision on Wednesday.



On Friday your wife comes home with two tickets to the rugby final on Saturday and you go to the game and thoroughly enjoy it. Two weeks later your wife comes home and informs you that she has been given a voucher for a weekend away at an exclusive game lodge. Her boss told her she and her husband deserve a luxurious break.

Should you have gone to the rugby?



## 1.11 SAIMechE's Code of Conduct

The Code of Conduct provides information about the standards of integrity that the Council expects all members to follow. These rules of conduct serve as a guideline for practice that must be adhered to at all times. This is to ensure that engineers conduct themselves in a manner that is professionally and ethically acceptable, and do not bring the profession into disrepute.

	<b>Know about applicable regulations &amp; guidelines and think about them when conducting your work.</b>
	<b>The limitations of professional codes are that they have restricted powers as they are voluntary and only apply to members.</b>

The SAIMechE's Code of Conduct is not a substitute for the responsibility of each engineer to exercise sound judgment. It is meant to serve both as a guide to assist each engineer to resolve ethical dilemmas in an increasingly complex global business environment, and a public statement of the Council's commitment to the highest standards of integrity. It provides a universal set of principles to guide individual engineers on ethical matters.

Having a guideline to follow is helpful to assist engineers in practicing principled business dealings in an increasingly complex global business environment. The Code of Conduct cannot address or set "rules" and regulations that apply to every possible situation or ethical dilemma. It should be viewed within the framework of company policies, procedures and requirements of the law.





**What you are tomorrow depends on what you do today.**

Ultimately our conduct is our own responsibility. None of us should ever commit dishonest, destructive or illegal acts, even if directed to do so by a supervisor or colleague, nor should we direct others to act improperly. In addition, don't deviate from the code even if doing so appears to be in your employer's favour. Your reputation is in your hands – so do the right thing.

## **Code of Conduct for Professional Persons**

The purpose of the Code of Conduct is threefold:

- to increase professional and ethical consciousness among engineers and their sense of ethical responsibility;
- to guide engineers in making more informed ethical choices; and
- to help the Engineering profession itself function at the fullness of its potential.

As professionals, engineers commit themselves to supporting and acting in accordance with ethical guidelines covering the following six main areas:

- Competency
- Integrity
- Public Interest
- Environment
- Dignity of the Profession
- Administrative

We will look at these six aspects in greater depth over the next few pages.



## COMPETENCY

### Registered Persons:

**MUST ...**  
✓ discharge their duties to their employers, clients, associates and the public effectively with skill, efficiency, professionalism, knowledge, competence, due care and diligence

**MAY NOT ...**  
✗ undertake or offer to undertake work of a nature for which their education, training and experience have not rendered them competent to perform

**MUST ...**  
✓ when carrying out work, engage in and adhere to acceptable practices

## INTEGRITY

### Registered Persons:

**MUST ...**  
✓ discharge their duties to their employers, clients, associates and the public with integrity, fidelity and honesty

**MUST NOT...**  
✗ undertake work under conditions or terms that would compromise their ability to carry out their responsibilities in accordance with acceptable professional standards

**MUST NOT...**  
✗ engage in any act of dishonesty, corruption or bribery

**MUST ...**  
✓ disclose to their employers and clients, or prospective employers or clients, in writing:

- (i) any interest, whether financial or otherwise, which they may have in any business undertaking, or with any person, and which is related to the work for which they may be or have been employed
- (ii) particulars of any royalty or other benefit which accrues or may accrue to them as a result of the work with the client or employer concerned
- (iii) the status pertaining to professional indemnity insurance cover



<b>MAY NOT...</b> <b>✗</b>	either directly or indirectly, receive any gratuity, or commission or other financial benefit on any article or process used in or for the purpose of the work in respect of which they are employed, unless such gratuity, commission or other financial benefit has been authorised in writing by the employer or client concerned
<b>MUST...</b> <b>✓</b>	avoid any perceived, real or potential conflict of interest
<b>MAY NOT...</b> <b>✗</b>	knowingly misrepresent, or permit misrepresentation of their own academic or professional qualifications or competency or those of any other person involved with work, nor knowingly exaggerate their own degree of responsibility for any work or that of any person
<b>MUST...</b> <b>✓</b>	give engineering decisions, recommendations or opinions that are honest, objective and based on facts that are used in reaching recommendations or opinions given to clients or employers
<b>MAY NEITHER...</b> <b>✗</b>	personally nor through any other person, improperly seek to obtain work, or by way of commission or otherwise, make or offer to make payment to a client or prospective client for obtaining such work
<b>MAY NOT...</b> <b>✗</b>	unless required by law or by these Rules, divulge any information of a confidential nature which they obtained in the exercise of their duties
<b>MUST ...</b> <b>✓</b>	notify Council immediately if they become aware of a violation of these Rules by any other Registered Person
<b>MUST ...</b> <b>✓</b>	notify council immediately they become insolvent
<b>MUST ...</b> <b>✓</b>	without delay notify Council if they become aware of any Registered Person who is subject to one or more of the following: (i) removal from an office of trust on account of improper conduct (ii) being convicted of an offence and sentenced to imprisonment without an option of a fine, or, in the case of fraud, to a fine or imprisonment or both



## PUBLIC INTEREST

### Registered Persons:

- |                      |   |
|----------------------|---|
| <b>MUST ...</b><br>✓ | at all times have due regard and priority to public health, safety and interest   |
| <b>MUST ...</b><br>✓ | when providing professional advice to a client or employer, and if such advice is not accepted, inform such client or employer of any consequences which may be detrimental to the public health, safety or interests and at the same time inform the Council of their action |
| <b>MUST ...</b><br>✓ | without delay notify Council if they become aware of any person who has been declared medically unfit by a registered medical practitioner to practise as a Registered Person   |



**Act morally and ethically at all times.**

## ENVIRONMENT

### Registered Persons:

- |                      |  |
|----------------------|--|
| <b>MUST ...</b><br>✓ | at all times have due regard for, and in their work avoid, adverse impact on the environment |
| <b>MUST ...</b><br>✓ | adhere to generally accepted principles of sustainable development                           |



# DIGNITY OF THE PROFESSION

## Registered Persons:

<b>MUST ...</b> ✓	order their conduct so as to uphold the dignity, standing and reputation of the profession
<b>MAY NOT...</b> ✗	whether practising their profession or otherwise, knowingly injure the professional reputation or business of any other Registered Person
<b>MUST...</b> ✓	provide work or services of quality and scope, and to a level, which is commensurate with accepted standards and practices in the profession
<b>MAY NOT...</b> ✗	knowingly attempt to supplant a Registered Person in a particular engagement after the client has employed such Registered Person
<b>MAY NOT...</b> ✗	advertise their professional services in a self-laudatory manner that is derogatory to the dignity of the profession
<b>MAY NOT...</b> ✗	<p>review for a particular client work of another Registered Person, except</p> <ul style="list-style-type: none"> <li>(i) with the prior knowledge of the other Registered Person, who must be afforded a reasonable opportunity to submit comments to the client on the findings of the review</li> <li>(ii) after receipt of a notification in writing from the client that the engagement of the other Registered Person has been terminated</li> <li>(iii) where the review is intended for purposes of a court of law or other legal proceedings, including proceedings arising from these Rules</li> </ul>



# ADMINISTRATIVE

## Registered Persons:

<b>MAY NOT...</b> <b>✗</b>	without satisfactory reasons destroy or dispose of, or knowingly allow any other person to destroy or dispose of, any information within a period of 10 years after completion of the work concerned
<b>MAY NOT...</b> <b>✗</b>	place contracts or orders, or be the medium of payments, on their employer's or client's behalf without the written authority of the employers or clients
<b>MAY NOT...</b> <b>✗</b>	issue any information in respect of work prepared by them or by any other person under their direction or control, unless <ul style="list-style-type: none"> <li>(i) such information bears the name of the organisation concerned</li> <li>(ii) information so issued is dated and signed by the Registered Person concerned or another appropriately qualified and authorised person</li> </ul>
<b>MUST ...</b> <b>✓</b>	order their conduct in connection with work outside the borders of the Republic of South Africa in accordance with these rules in so far as they are not inconsistent with the law of the country concerned: provided that where there are recognised standards of professional conduct in a country outside the Republic, they must adhere to those standards in as far as they are not inconsistent with these rules
<b>MUST ...</b> <b>✓</b>	always ensure adequate supervision of, and take responsibility for, work carried out by their subordinates
<b>MUST ...</b> <b>✓</b>	ensure that, while engaged as partners, directors, members or employees of a business undertaking which performs work, the control over the work is exercised, and the responsibility in respect thereof is carried out by a Registered Person other than a person registered as a candidate in terms of section 18(1)(b) of the Act
<b>MUST ...</b> <b>✓</b>	when requested by the Council to do so, in writing provide the Council with all the information available to them which may enable the Council to determine which registered person was responsible for any act which the Council may consider <b>prima facie</b> to be improper conduct
<b>MUST ...</b> <b>✓</b>	notify Council without delay of any change of his or her physical address
<b>MUST ...</b> <b>✓</b>	within 30 days respond to correspondence received from clients, colleagues and Council in so far as it relates to work or proceedings in terms of these Rules





## GROUP EXERCISE 3

Consider the following and then consult and share your answers.

Consider an unethical practice that you can remember in the work situation. See if you can identify which category of ethical behaviour in the Code of Conduct the situation belongs to, e.g. gifts and favours, physical threat.

Describe the situation briefly and what the consequences were for the persons involved and for the organisation. What would be the best way to behave in a similar situation?

### SITUATION:

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### TYPE OF ETHICAL PRINCIPLE INVOLVED:

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### CONSEQUENCES:

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## **INITIAL TEST**

Complete the Initial Test in Appendix 1 (10 minutes are allocated for this).



## **SECTION 2**

# ***PRACTICAL ETHICAL DECISION MAKING MODEL***

### **LEARNING OUTCOMES:**

- Understand the practical problem solving steps to be taken when making ethical evaluations
- Be competent in relating ethical dilemmas to the various aspects of the Code of Conduct
- Be fully aware of the relationship between the practical problem-solving process and the assessment criteria



## **2. PRACTICAL ETHICAL DECISION-MAKING MODEL AS PER THE ASSESSMENT CRITERIA**

### **2.1. Introduction**

There are always ethical problems and situations that occur in everyday life and especially in daily working activities. We are confronted with ethical issues at every turn: we open a newspaper or turn on the TV to the latest political scandal; on the sports field national heroes are disgraced for match fixing; the morality of medical technology such as cloning, or agricultural breakthroughs or practices that impact positively on the quality of food and affect seed integrity are questionable, and at work we face memos containing questionable organizational decisions.

There are many complex issues facing business today which create ethical dilemmas that are difficult to resolve. In the engineering field, for example, new technology has created new problems or dilemmas for which there are no easy solutions, e.g. downsizing of staff, pollution control, disposal of toxic waste, depletion and allocation of scarce resources, cost containment, changes in law and technology, employee rights, discrimination against women and minorities, and product safety. Other ethical issues are intellectual property, expert witnessing, public communication and conflicts of interest.

Although you may have built in a proactive approach to problem solving by anticipating possible problems and having relevant solutions and alternatives available, there are times when an unanticipated problem requires solving.


Ethical dilemmas can cause you to lose sleep as you worry about the correct course of action. These ethical dilemmas can be complex without an easy answer, and dealing with these ethical issues is often perplexing. It means weighing your ethical code of conduct against the consequences for the people involved.

How, exactly, should we think through an ethical issue? What questions should we ask?



What factors should we consider?

This section provides a framework for ethical decision making following the requirements of the assessment criteria included in the Competency Standard. This framework will assist you to apply the code of ethics in a business setting and offer a mechanism for discussion and problem-solving to lead you through the resolution of complex issues.

	<p><b>There are three ways you can get to the top of a tree:</b> <b>1) sit on an acorn, 2) make friends with a bird, 3) climb it.</b> <i>Anonymous</i></p>
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## 2.2. Steps in Ethical Decision Making

How does a person go about solving problems by making the right decision/choices?

This answer lies in the problem-solving/ decision making techniques.

There are five simple, infallible steps for resolving problems: (Notice that they are the 5 aspects of the assessment criteria)

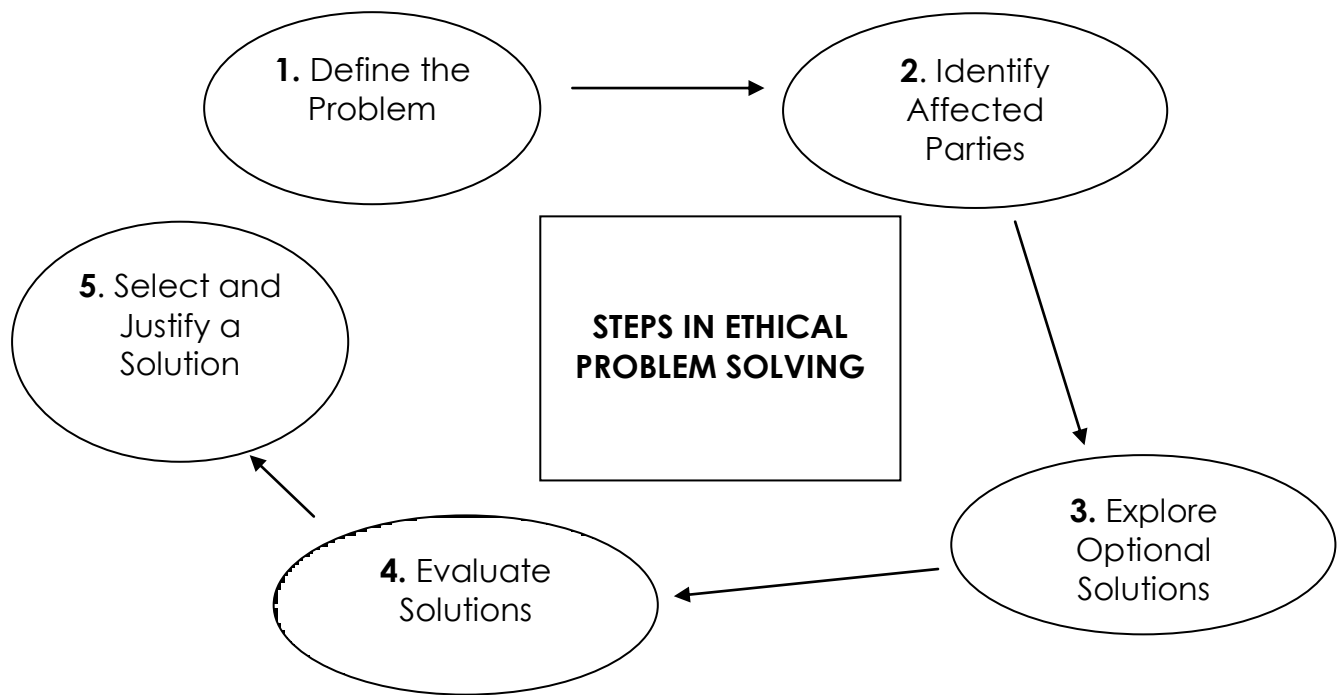
1. Identify the central ethical problem
2. Identify affected parties and their interests
3. Search for possible solutions for the dilemma
4. Evaluate each solution using the interests of those involved, accorded suitable priority
5. Select and justify the solution that best resolves the dilemma

This seems almost too simple, but it's a matter of how the above method is applied. In reality what tends to happen is that people rush into deciding on solutions too quickly. They assume they know what the problem is and its cause.

If the real problem is not accurately and clearly identified you run the risk of going off on a tangent and finding a solution for the wrong problem.



The following are the five steps that provide a systematic method of solving ethical problems and making decisions:



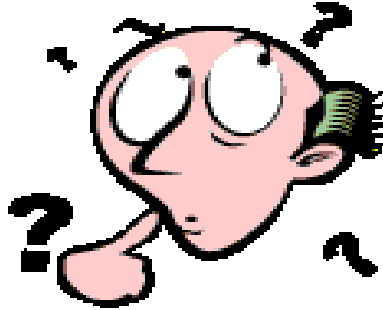
**To solve any problem, here are three questions to ask yourself: First, what could I do? Second, what could I read? And third, who could I ask?**

*Jim Rohn*



## STEP 1: Identify the ethical problem

What is the problem?



In Step 1 you have to determine precisely what must be decided, i.e. determine whether there is an ethical issue and/or dilemma. Is there a conflict of values, or rights, or professional responsibilities? **Which clause of the Code of Conduct is affected by this dilemma? If no connection can be made, there is no ethical problem.**



**It isn't that they can't see the solution. It's that they can't see the problem.**


*G. K. Chesterton*

The first step in analyzing ethical issues involves recognizing that there is a problem that requires resolution and a thorough understanding of the problem. The problem may seem obvious but it is advisable nonetheless to still undertake research, investigation, and study until the whole problem is understood. Do not make the mistake of rushing off to solve a problem, which may not address what is really wrong underneath.

Collect all the appropriate information, e.g. looking up records, asking for opinions, etc. Correct information concerning the problem must be collected. Real facts and causes must be investigated and assumptions, deductions and unsubstantiated claims must be avoided. Some ethical issues create controversies simply because we do not bother to check the facts.



The real problem may not be what you initially think the problem is. The presenting symptom may only be the tip of the iceberg and the real problem underneath may be a lot bigger than it appears on the surface. For example, falling production levels is a serious issue but is a side effect of the underlying trouble.

	<p><b>A problem well stated is a problem half solved.</b></p> <p><i>John Dewey</i></p>
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Clearly describe the problem. Before you can start to solve a problem you have to have a clear understanding of what is wrong. This description must be concise, objective, nonjudgmental, and should focus on the process, not speculate about the cause of the problem as this might lead you to jump to the wrong conclusion.

Apparent symptoms are clues that must be sifted through to find the real problem. It is not always easy to pinpoint the real problem. Although this step may be time-consuming it is necessary as you will waste more time pursuing a red herring. It is important to clearly define the problem requiring a solution.

	<p><b>A prudent question is one-half of wisdom.</b></p> <p><i>Francis Bacon</i></p>
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## Know Your Motives (Why? Why? Why?)

Asking ourselves 'why?' helps us delve deeply into our main motives -- why we do what we do. This process helps us go deeper into our reasoning, habits and unconscious beliefs. Once we become aware of our underlying motives, we can choose to change them, if we wish.

Regularly ask yourself, "Why am I ...?" Listen closely for the answer that surfaces in your mind, and write it down. Now look at your answer and ask 'why' again. Continue with this process to reach the true source of your motivation.

Identify the actual root cause of the problem. Find out what the missing link or explanation is for why the problem exists. This is a fact-finding mission to assemble enough facts about the problem to understand it properly. Use the tools provided in the previous outcome on problem solving to help you to sort out the issues and get to the specifics of the problem.

From what source does the problem originate? You are looking to the heart of the matter to establish the underlying basic core of the problem. The root cause is a controllable force that can be dealt with.

Assemble the facts pertaining to the problem. Collect all the appropriate information, e.g. look up records, and ask for details. Assess and use the collected information to tease out the problem.



**When solving problems, dig at the roots instead of just hacking at the leaves.**

*Anthony J. D'Angelo*

The root cause is the pivotal cause that made the problem happen in the first place. You have to dig down past partial explanations to the very foundation and only then can a long-term workable solution be found, otherwise time and energy will be spent fixing symptoms instead of the real problem. It is vital to trace back the contributing factors to the ultimate source.



## **STEP 2: Identify affected parties**

### **Who is affected?**

Who will be affected by any decisions made and the execution of the solution?

If you have any doubts or questions as to what the proper course of conduct should be in any given situation, consult with relevant stakeholders, the interested and affected parties.

Certain key role players form part of the process of finding the best solution to an ethical problem. Seeking co-operation and involvement of all the stakeholders will improve the transparency and legitimacy of the engineering operation. The participation of all those affected by the ethical problem is important and needs to be clarified.

The resolution of conflict cannot rest in the hands of one or two individuals. Decisions can affect a wide range of people. Ideally, decisions should not be taken by one person. To improve the quality of decisions, problems should be solved by means of group discussion and participation. All stakeholders in a situation must be involved - for legal as well as ethical reasons.

These principles must be applied in business, with decisions based on the expressed viewpoints of all stakeholders in a given situation - even indirect stakeholders. Potential clients should also be recognized as stakeholders because their choice to do business with a firm may be based on the firm's reputation for ethical behavior (Sonnesyn 1990).

Decide who will be affected by the decisions made. It is a good idea to involve them from the beginning to get their input. This could be anyone who is affected by the problem, with a stake in the outcome of the problem or anyone having decision-making power. Confer with all the necessary persons (i.e. clients and colleagues, as appropriate) regarding the ethical dimensions and the potential risks and consequences of alternative courses of action.



It is important to communicate and consult with those affected in order to gain their support. Having a wider stakeholder input will also help towards a better buy-in when it comes to implementation. Decide who the stakeholders are, who can best represent them, what their primary motivation is and how you should involve them.

A good place to start with problem recognition is an opening discussion to get all necessary stakeholder viewpoints on the table. This offers viewpoints on the problem from all different angles. Perceived symptoms can be categorized as either hard or soft. Hard data is hard scientific, factual information. Soft data involves human factors such as feelings, opinions, attitudes, personality conflicts, frustrations, and hearsay. It is important to study both hard and soft data to fully understand the problem. When the symptoms are discussed, the nature of the problem may shift from what it originally seemed.



## **STEP 3: Explore optional solutions**

### **What is the solution to this problem?**

This step involves formulating and devising a full range of alternatives. This is a vital step towards establishing agreement for the final decision. From the information gathered, alternative actions are formulated. One must look for a number of alternative solutions. The first solution is not necessarily the best one and a few alternatives should be considered.

Problem solving involves developing a choice of strategies. It is unusual for only one solution to immediately present itself as the obvious and ideal answer. Sometimes it is the least undesirable solution that ends up being chosen as the best solution. Potential strategies are explored that will address and permanently eliminate the root cause. In this step a complete list of possible solutions is generated.

A comprehensive list is necessary as this stops you from being impulsive and following the first reasonable-sounding idea which may end up being incomplete or unbalanced. It also prevents likely courses of action being overlooked.

Produce an exhaustive list by tapping into the creativity to come up with every possible, conceivable solution that could be thought of. Often people will have their own idea of the best solution so it is important to hear everyone's input and get all the solutions documented.


A range of alternatives are first generated, and then in the next step, evaluated in terms of cost, time, and complexity of each corrective action being considered. Each alternative is weighed according to its advantages and disadvantages. The alternative with the most advantages and the least disadvantages is then selected.



## STEP 4: Evaluate solutions


**What options do we have? Evaluate and prioritise each solution in accordance with the general interests of those involved.**

In this step, each idea is evaluated and compared. Each alternative is weighed according to its advantages and disadvantages and the alternative with the most advantages and the least disadvantages is then selected.

	<p><b>"No problem can stand the assault of sustained thinking."</b></p> <p><i>Voltaire (Francois-Marie Arouet), French author, wit and philosopher (1694-1778)</i></p>
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### Tips for Evaluating Solutions

Identify the key values and principles involved. What meanings and limitations are typically attached to these competing values? (For example, rarely is confidential information held in absolute secrecy; however, typically decisions about access by third parties to sensitive content should be contracted with clients.)

	<p><b>"Every problem contains within itself the seeds of its own solution."</b></p> <p><i>Stanley Arnold</i></p>
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The ethical values and principles which in your professional judgment are most relevant to the issue or dilemma, should be ranked. Why would you prioritize one competing value/principle over another? (For example, your client's right to choose a beneficial course of action could bring hardship or harm to others who would be affected.)





"As long as one keeps searching, the answers come."

*Joan Baez*

- Eradicate unacceptable alternatives, i.e. those that are impractical, illegal or improper.
- Finally, if possible, settle on at least three ethically justifiable options.
- Analyse these options in turn and establish which ethical principles and values are involved.

### Questions to ask:

*"What would solve the problem?"*

*"What strategy could resolve the root cause?"*

*"What solutions have already been thought of?"*

*"What approaches haven't been thought of?"*

*"How could we stop this situation from recurring?"*

*"What different methods might work?"*

*"What crazy ideas might help?"*



Take account of your own motives and try to detach them from your decision. Try to detach your emotions or feelings from the equation and focus on the consequences to the affected parties.

Examine your personal ethical code of conduct. Pondering ethical issues requires a strong sense of right and wrong. Sometimes it helps in solving a dilemma to ask your conscience what the right thing to do is.

Consider the consequences - what will happen if you come down on one side of the moral dilemma versus the other. Think of the effect on those involved. Will anyone be hurt or suffer unjustly? Take secondary parties into account as well; for example, children. Listen to your instincts. What is your gut reaction in terms of the right thing to do? Often the nagging gut feel is sending you an important message.



Should any of the options require the sacrifice of any ethical principle, evaluate the facts and assumptions carefully. Separate solid facts from beliefs, desires, theories, suppositions, unsupported conclusions, opinions, and rationalizations. Bear in mind the credibility of sources, especially when they are self-interested, ideological or biased. Carefully consider the benefits, burdens and risks to each role-player.



**What would the most ethical person you know do?**

**Think of the person you know or know of (in real life or fiction) who has the strongest character and best ethical judgment. Then ask yourself: what would that person do in your situation?**

Come to a conclusion about what is not true and what consequences are most likely to occur. Evaluate the viable alternatives according to personal conscience. Prioritize the values so that you can choose which values to advance and which to subordinate. Determine who will be helped the most and harmed the least. Consider the worst-case scenario. Can ethically questionable conduct be avoided by changing goals or methods, or by getting consent?

Once the facts have been ascertained, we should ask ourselves the following questions when trying to resolve a moral issue:

- Are you treating others as you would want to be treated?
- Would you be comfortable if your reasoning and decision were to be publicized?
- Would you be comfortable if your children were observing you?
- What benefits and what harms will each course of action produce, and which alternative will lead to the best overall consequences?
- What moral rights do the affected parties have, and which course of action best respects those rights?
- Which course of action treats everyone the same, except where there is a morally justifiable reason not to, and does not show favoritism or discrimination?
- Which course of action advances the common good?
- Which course of action develops moral virtues?





### **QUICK INTEGRITY CHECK**

**Here's a simplified version called the Integrity Check, borrowing a bit from the Rotary Club's 4-way test, Stephen Covey's 7-habits, and Police Dynamics training**

- 1) Is it true?**
- 2) Is it just?**
- 3) Does it build trust into the relationship?**
- 4) Is it a win-win?**

*Sheriff Ray Nash*



## STEP 5: Select and justify a solution

### Which is the best solution for all concerned?

In this step a workable solution is decided upon.

Decision-making is deciding on the most suitable way to solve or handle a specific problem or situation after considering the different alternatives. During this step the choice is made. The best alternative must be selected.

All the previous steps were in preparation for this step to ensure that decision-making works properly. One of the alternative solutions generated before is chosen as the course of action forward. One strategy has to be decided on from all the options and it has to be one that everyone will be behind and accept.

The final decision has to be rational and objective. Basing the decision on the work done at the previous steps helps avoid unilateral decisions taken using political power, personal preference or poor leadership.



**There is a time in the life of every problem when it is big enough to see, yet small enough to solve.**

*Mike Leavitt*

Develop an action plan that is consistent with the ethical priorities that have been determined as central to the dilemma. Can you support or justify your action plan with the values/principles on which the plan is based?





**Three "ethics checks" to help individuals decide what is right:**

- 1. Is it legal?**  
**Will I be violating either civil law or company policy?**
- 2. Is it balanced?**  
**Is it fair to all concerned in the short term as well as the long term?**  
**Does it promote win-win relationships?**
- 3. How will it make me feel about myself?**  
**Will it make me proud?**  
**Would I feel good if my decision was published in the newspaper?**  
**Would I feel good if my family knew about it?**

*Blanchard and Peale (1988)*

This step is about evaluation. This involves comparative evaluation where poorest options are taken out of the equation and the options that remain are weighed against each other; the alternatives are ranked, scored and prioritised until a final choice is made. The objective is to find the best solution using a rational, practical method.

Decision-making implies using judgment, i.e. the application of knowledge, experience and common sense to analyse a matter logically or sum up a situation correctly in order to reach an acceptable conclusion between the more and less important aspects of a matter, followed by level-headed action. In short, one's sense of judgment allows one to make correct and intelligent decisions. It enables one to choose between two alternatives, in a scientific manner.



Answer **yes** or **no** to the following questions:

*(taken from Team Problem Solving, p111)*

<b>DECISION CHECKLIST</b>	<b>Yes</b>	<b>No</b>
<b>Quiz Question.....</b>	<b>✓</b>	<b>X</b>
1. Does it solve the problem and the root cause?		
2. Will it realistically accomplish the objectives?		
3. Does it satisfy all established criteria?		
4. Does it satisfy all people involved and affected?		
5. Can workable action plans be developed to implement it?		
6. Is there time to implement it?		
7. Do the personnel and resources exist to make it work?		
8. Will its implementation end the recurrence of the problem?		
9. Have all its risks, disadvantages and possible consequences been considered?		
10. Is it the best choice in terms of: a) Benefits b) Costs c) Risks d) Commitment e) Workability?		

The tricky part about this step is to achieve consensus decision so that there is ownership and buy-in for the implementation. This is not always easy as people possess different viewpoints, however, the advantage of this step-by-step problem solving/decision making procedure is that everyone has a chance to be heard and all angles are taken into account.

No-one must feel left out and they should be encouraged to make an objective stand and lend support to the decision that the group feels is the best one overall. Develop a plan of how to implement the decision that maximizes the benefits and minimises the costs and risks and then implement the plan.





## Exercise 4

### Case Problems

Here are three practical Engineering examples of “ethical dilemmas”

1. An Engineer is required to design a “Pressure Vessel” using a specific “Design Code” that requires a material thickness of 20mm. The designer is asked to reduce the thickness of the material in order to reduce costs for the customer who is planning to buy a large number of these vessels. What does he do?
2. An Engineer is responsible for the disposal of “Hazardous Chemical Waste” and due to the high costs involved is asked by the CEO to arrange to have the materials dumped in the river that runs past the outer perimeter of the factory. Does he comply?
3. During the design of a pumping station a particular type of pump is specified for the task. There are 3 possible suppliers with some minor technical differences that would not have a significant impact on the effectiveness of the design, but the one supplier is a little more expensive than the other two. This supplier offers the Engineer a free 10 day holiday in Mauritius if he buys the pumps from them. What does the Engineer do?

Consider the situation presented in the case study and write your thoughts on what you would do to resolve the issue:





## **Exercise 5**

### **Workplace project for presentation at the next workshop**

How do you apply ethics in your work situation?

Select a workplace project which involves ethical issues and use that as the basis to write a report and prepare a 10 minute presentation which involves suitable media. This report and presentation will be evaluated at the next workshop to assess your understanding of the requirements of Outcome 8 - “Conducts his or her engineering activities ethically”

**How do you apply ethics in your work?**





## **ASSESSMENT TEST**

Complete the Assessment Test in Appendix 1 (30 minutes are allocated for this).



## **GROUP ACTIVITY**

Report and 10 minute presentation evaluation.



## **CLASS DISCUSSION**

Discuss Case Studies (Appendix 2) and Programme administration.



## **SECTION 3**

### ***GENERIC GUIDING PRINCIPLES***



# **GENERIC GUIDING PRINCIPLES**

## **1. Competency Standard.**

The SAIMEchE Competency Standard is the fundamental document underpinning the journey to Professional Competence. It is the foundation document informing all aspects of the training programme that relates the requirements of competency to the working environment of the developing engineer. It is the standard of practice against which all activities of a competent and professional engineer is measured.

## **2. Outcomes.**

The eleven outcomes are the fundamental building blocks on the path to competency. Demonstrating an understanding of these outcomes as they relate to the day-to-day working environment will indicate that a level of competency has been reached, which will enable the candidate to function at a professional level within the commercial and business environment.

## **3. Assessment Criteria.**

The assessment criteria are the requirements against which the candidate is evaluated in order to determine understanding and competency. These are objective criteria which will ensure capability and transparency, and set a standard that ensures a proficient level of competency and professionalism as required by industry and in the interests of public health and safety.

## **4. Range Statements.**

The range statement sets the boundaries of the requirements of each outcome and determines the limits of competency as required for professional practice. In the case of Outcome 8, the boundaries set are specifically limited to the contents of the code which serves as the benchmark for ethical behavior within the profession.



# A

## PPENDICES

### APPENDIX 1

#### ASSESSMENTS/ TESTS

#### INITIAL TEST (SECTION 1)

- Instructions**
- In the following test you will be required to answer all questions.
  - You are required to obtain 100%.
  - If you do not get them all right, revise all the learning material and redo the test.

Answer **true** or **false** to the following questions:

		True ✓	False x
1.	A Registered Person can continue to practise if he becomes insolvent as long as he is medically fit.		
2.	A Registered Person may not divulge any information that is considered confidential by his employer unless this is required by law or the Rules of Conduct.		
3.	A Registered Engineer has no need at any time to pay attention to public safety and can ignore public health and the interests of the public in general.		
4.	In reaching recommendations or forming opinions, honest and objective facts must be used by Registered Engineers as the basis of any engineering decisions given to clients or employers.		
5.	If a Registered Engineer becomes medically unfit, and this is declared so by a registered medical practitioner, he may continue to practise and any other Registered Engineer who knows about the situation does not have to inform anyone.		



6.	When involved in any project which concerns a number of interested and affected parties, conflicts of interest arising from various design concepts and proposals need not be taken into account.		
7.	A Registered Engineer needs to be aware of the importance of his work and proposals and their influence upon the environment, ensuring that there is no adverse impact.		
8.	Registered Persons must disclose to their clients, in writing, particulars of any royalty or other benefit which accrues or may accrue to them as a result of the work.		
9.	The conduct of a Registered Engineer must be ordered so as to uphold the dignity, standing and reputation of the profession.		
10.	When undertaking work, acceptable professional standards can be compromised if it is in the interest of the client or employee who is paying the Registered Person to advance the development of his business.		
11.	Work or services provided by the Registered Person need only be of a quality required by the client and the standards can be adjusted to suit the employers' requirements.		
12.	Acceptable practices need not be adhered to by a Registered Person if he stands to benefit financially from work carried out on any project that requires his professional skills.		
13.	A Registered Engineer can advertise his professional services in such a manner that enables him to secure work even though it may exaggerate his ability and skill as this is an acceptable advertising practice within South African society.		
14.	Registered persons must discharge their duties to their employers effectively with knowledge, skill, due care and diligence.		



15.	Any information, under normal circumstances, including documents, drawings, reports and electronic data can be destroyed after a period of 6 years from the date when the work was completed.		
16.	Once a Registered Engineer has completed his degree or diploma and has been accepted as a Registered Person by ECSA he is no longer required to do any further study during the course of his career.		
17.	If any information in respect of work performed by a Registered Engineer or any other person under their direction is issued it must bear the name of the organization concerned.		
18.	Generally accepted norms of professional conduct do not apply to Registered Persons who are employed by companies that have their own Codes of conduct and Rules and Standards which may not require sincerity and integrity.		
19.	Registered Persons must always ensure adequate supervision of, and take responsibility for, work carried out by people who work for them.		
20.	A Registered Engineer must respect the interests of other people and always maintain the honour of their profession in all their endeavours.		
21.	When the Council considers any act to be prima facie an act of improper conduct a Registered Person must provide the Council with any information which may enable the Council to establish the facts.		
22.	Excellence is not something that is necessary, and is not encouraged by the Engineering Profession.		
23.	A Registered Person must respond within 60 days to correspondence received from clients, colleagues and Council in so far as it relates to work or proceedings in terms of the Rules of Conduct.		
24.	A Registered Engineer may not undertake or offer to undertake work of a nature for which their education, training and experience have not rendered them competent to perform.		



25.	Registered persons must ensure that, while engaged as partners, directors, members or employees of a business undertaking which performs work, the control over the work is exercised, and the responsibility in respect thereof is carried out by a Registered Person other than a person registered as a candidate in terms of section 18(1)(b) of the Engineering Professions Act (Act 46 Of 2000)		
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## ASSESSMENT TEST (SECTION 2)

1. What are the 5 steps in the practical ethical decision-making model?


2. What document is the primary reference document when making ethical decisions?

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3. How would you go about establishing what the central ethical problem is?


4. Why must other people be taken into consideration when evaluating ethical issues?


5. Why would a number of solutions be considered when trying to solve an ethical dilemma?


6. List some of the factors you would take into consideration while evaluating a possible solution to an ethical problem.




7. Comment on what role project costs play when considering a solution to an ethical issue.


8. Describe how ethical issues are a factor in matters of sustainable development.




## APPENDIX 2

### Alumnus football

by Grantland Rice

Bill Jones had been the shining star upon his college team.  
His tackling was ferocious and his bucking was a dream.  
When husky William took the ball beneath his brawny arm  
They had two extra men to ring the ambulance alarm.

Bill hit the line and ran the ends like some mad bull amuck.  
The other team would shiver when they saw him start to buck.  
And when some rival tackler tried to block his dashing pace,  
On waking up, he'd ask, "Who drove that truck across my face?"

Bill had the speed - Bill had the weight - Bill never bucked in vain;  
From goal to goal he whizzed along while fragments, strewed the plain,  
And there had been a standing bet, which no one tried to call,  
That he could make his distance through a ten-foot granite wall.

When he wound up his college course each student's heart was sore.  
They wept to think bull-throated Bill would sock the line no more.  
Not so with William - in his dreams he saw the Field of Fame,  
Where he would buck to glory in the swirl of Life's big game.

Sweet are the dreams of college life, before our faith is nicked -  
The world is but a cherry tree that's waiting to be picked;  
The world is but an open road-until we find, one day,  
How far away the goal posts are that called us to the play.

So, with the sheepskin tucked beneath his arm in football style,  
Bill put on steam and dashed into the thickest of the pile;  
With eyes ablaze he sprinted where the laurelled highway led -  
When Bill woke up his scalp hung loose and knots adorned his head.

He tried to run the ends of life, but with rib-crushing toss  
A rent collector tackled him and threw him for a loss.  
And when he switched his course again and dashed into the line  
The massive Guard named Failure did a toddle on his spine.

Bill tried to punt out of the rut, but ere he turned the trick  
Right Tackle Competition scuttled through and blocked the kick.  
And when he tackled at Success in one long, vicious prod  
The Fullback Disappointment steered his features in sod.



Bill was no quitter, so he tried a buck in higher gear,  
But Left Guard Envy broke it up and stood him on his ear.  
Whereat he aimed a forward pass, but in two vicious bounds  
Big Centre Greed slipped through a hole and rammed him out of bounds.

But one day, when across the Field of Fame the goal seemed dim,  
The wise old coach, Experience, came up and spoke to him.  
"Oh Boy," he said, "the main point now before you win your bout  
Is keep on bucking Failure till you've worn the piker out!"

"And, kid, cut out this fancy stuff - go in there, low and hard;  
Just keep your eye upon the ball and plug on, yard by yard,  
And more than all, when you are thrown or tumbled with a crack,  
Don't sit there whining - hustle up and keep on coming back;

"Keep coming back with all you've got, without an alibi,  
If Competition trips you up or lands upon your eye,  
Until at last above the din you hear this sentence spilled:  
'We might as well let this bird through before we all get killed.'

"You'll find the road is long and rough, with soft spots far apart,  
Where only those can make the grade who have the Uphill Heart.  
And when they stop you with a thud or halt you with a crack,  
Let Courage call the signals as you keep on coming back.

"Keep coming back, and though the world may romp across your spine,  
Let every game's end find you still upon the battling line;  
For when the One Great Scorer comes to mark against your name,  
**He writes - not that you won or lost - but how you played the Game."**



## APPENDIX 3

### ETHICAL SCENARIOS

Consider each situation and answer the following questions:

- Is there an ethical problem?
- What are the primary references to the *Ethics Code*?
- What should the Engineer do?
- What could the Engineer have done to avoid the situation?

#### Scenario

A professor supplements his income by consulting. He won a bid for a large project that was billed according to his professional hourly rate; yet he uses his graduate students to do a lot of the work under his close supervision and pays them a lower hourly rate. Opportunities for applied experience in the field are limited in this geographical area, and students are even willing to work for free to gain some applied experience that they need to meet their graduate school requirements.

#### Scenario

A consultant has a Ph.D. in engineering but is not registered. When asked by potential clients about his credentials, he represents himself as a consultant trained in engineering (i.e. a qualified engineer) and able to provide all the services that a registered engineer provides.

#### Scenario

An employee wants to be coached by an engineer with whom he has had an extensive coaching relationship in the past. The new employer of the Candidate agrees to retain and pay for the engineer's services. After the coaching relationship is re-established, the Coach approaches his client (the Candidate) and asks if she would recommend him for additional work in the new company.



## **Scenario**

An engineer feels he has been harmed by the unethical behavior of an unregistered engineer who is practicing outside of his area of competence. Consequently, the engineer files an ethics charge with the ECSA.

## **Scenario**

An engineer was asked by another consulting firm to develop a specification for a client organization. The engineer paid a “finder’s fee” to the consulting firm that brings him into the organization. The organization is quite pleased with the work, comes directly to the engineer, and asks him to quote for a related project.

## **Scenario**

An engineer in a large organization conceived and designed a major research project; however, an intern collected and analyzed the data under the engineer’s supervision. The engineer wrote a paper to be presented at a professional conference and listed himself as first author and the intern as second author. When the engineer showed the paper to the intern, he protested that he should be first author since he did all of the work.

## **Scenario**

A group of engineers from different companies in one industry decided to develop a specification. The engineering consultant hired by the consortium wrote criteria for the specification. One engineer has a very difficult time meeting the study requirements and takes some short cuts. The engineering consultant has no way to determine if the guidelines were followed.



## **Scenario**

An engineer who works for a consulting firm asked another engineer employed by a client firm out for a date. They hit it off and are now engaged to be married.

## **Scenario**

An engineer was retained by an organization to conduct an audit of its engineering practices in preparation for a safety audit. Several years later, a plaintiff's attorney contacts the engineer and asked him to serve as an expert witness in a safety case against the same company.



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# **R**ECORDING OF REPORTS



## **Formats for recording the portfolio of evidence**

During the course of the candidate phase training, the Candidate will accumulate a portfolio of evidence comprising the reports supporting the various exercises covered in these guidelines for each Outcome.

Note that the PDP Administration will provide a web site document system that will allow the candidate to store all the PDP documents created as a back-up facility and will enable the candidate to allow access by the Mentor for any reviews that are required.



# A **ASSESSMENT PROCESS**

## **Guide to the Candidate**

You will be assessed against Outcome 8.

### **In order to determine your level of competence you will be tested by:**

- Tests done during the workshop and evaluated by fellow candidates and your mentor
- Written assignments (practical tasks given to demonstrate understanding of this Outcome through application in a work setting)
- Knowledge assessment and presentation (i.e. 10 minutes oral presentation using Power Point). Please Note: Oral presentations may need to be taped for moderation and re-assessment procedures.

### **You will need to prepare yourself in the following ways:**

- Familiarise yourself with the contents of this guideline
- Familiarise yourself with the reporting formats required
- Familiarise yourself with the references listed
- Do the written assignments as required by this workshop
- For oral presentations of reports, a ten minute presentation is required to summarise the exercise performed





**Note:**

A detailed briefing on the exact requirements was given to you by the Mentor/Assessor at the Introductory Workshop in order for you to prepare for the assessment process.

**The evidence you will be judged on includes:**

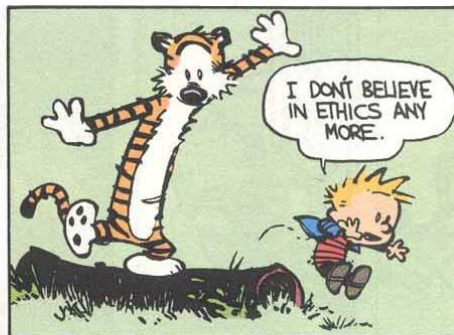
- Your proven competence in all areas questioned in the presentation (Competent or Not Yet Competent)
- The practical tasks compiled in your Portfolio of Evidence

***Good luck, and remember, the mentor/assessor is there to help you.***



# calvin and Hobbes

by WATKINSON



GET WHAT YOU CAN WHILE THE GETTING'S GOOD - THAT'S WHAT I SAY! MIGHT MAKES RIGHT! THE WINNERS WRITE THE HISTORY BOOKS!

